

## Permit Fact Sheet

### General Information

|                                                                             |                                                                                                                                                                                                                                                               |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Permit Number                                                               | WI-0029033-12-0                                                                                                                                                                                                                                               |
| Permittee Name and Address                                                  | City of Park Falls<br>P O Box 146 880 S. Case Avenue, Park Falls, WI 54552                                                                                                                                                                                    |
| Permitted Facility Name and Address                                         | City of Park Falls<br>880 South Case Avenue, Park Falls, Wisconsin                                                                                                                                                                                            |
| Permit Term                                                                 | January 01, 2027 to December 31, 2031                                                                                                                                                                                                                         |
| Discharge Location                                                          | East bank of the Flambeau River ½ mile downstream of Hwy 182 bridge. It is marked with a pole numbered FWWTP 001 outfall (SE ¼ SW ¼ of section 24; T40N-R1W)                                                                                                  |
| Receiving Water                                                             | North fork of the Flambeau River within the Upper North Fork Flambeau River Watershed in the Upper Chippewa River Drainage Basin in Price County                                                                                                              |
| Stream Flow (Q <sub>7,10</sub> )                                            | 260 cfs                                                                                                                                                                                                                                                       |
| Stream Classification                                                       | At the outfall, the stream is Warm Water Sport Fishery (WWSF), recreational water, non-public water supply and within the ceded territory.                                                                                                                    |
| Wild Rice Impacts:<br>(no specific wild rice standards exist at this time.) | No impacts identified at this location. This conclusion of no impact is based on the low effluent volume in comparison to the river volume and the distance to inventoried rice beds downstream in the Dairyland Reservoir. (Evaluation completed March 2017) |
| Discharge Type                                                              | Existing continuous                                                                                                                                                                                                                                           |
| Annual Average Design Flow (MGD)                                            | 1.055 MGD                                                                                                                                                                                                                                                     |
| Industrial or Commercial Contributors                                       | No                                                                                                                                                                                                                                                            |
| Plant Classification                                                        | A4 - Ponds, Lagoons and Natural Systems; P - Total Phosphorus; D - Disinfection; SS - Sanitary Sewage Collection System                                                                                                                                       |
| Approved Pretreatment Program?                                              | N/A                                                                                                                                                                                                                                                           |

### Facility Description

The City of Park Falls owns and operates a wastewater treatment plant designed to treat 1.055 million gallons per day (MGD) of domestic wastewater, currently treats an average of 349,000 gallons per day (July 2021 to May 2026 data). Although the design flow is greater than 1.0 MGD, this facility is not considered a major discharger because the actual flows are well below 1.0 MGD on a consistent basis.

The facility consists of a bar screen located in the main lift station before the plant, two aerated lagoons operated one after another (in series). The second lagoon is separated into four cells by three baffles with the aeration added to the first cell. Within the lagoons naturally occurring bacteria and organisms present in the wastewater metabolize organic matter. Biological phosphorus removal is enhanced by chemical (ferric chloride) addition between the two lagoons. The cleaned wastewater (effluent) is seasonally disinfected (May 1 through September 30 annually) as needed by a chlorination/dechlorination system prior to discharge to the North Fork of the Flambeau River.

## Substantial Compliance Determination

There have been several minor violations of effluent limits, missed samples, and late reporting. However, the facility has taken the necessary steps to correct their actions, and nothing further is required.

After a desktop review of all discharge monitoring reports, CMARs, land app reports, compliance schedule items, and a site visit on April 30, 2026, by Arthur Ryzak, WDNR, 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)                                                                                                                                                                  |
| 701                      | INFLUENT<br>An average of 0.310 MGD<br>(June 2021- June 2026)       | 24-hour flow proportional composite samples shall be collected from the main lift station.                                                                                                                                                                   |
| 001                      | EFFLUENT<br>An average of 0.349 MGD<br>(July 2021 to May 2026 data) | 24-hour flow proportional composite samples shall be collected from Manhole C between the last aerated pond and the chlorine contact tank and the grab samples shall be collected from Manhole G prior to discharge to the North Fork of the Flambeau River. |
| 002                      | SLUDGE<br>Removal has not occurred since 1999.                      | Representative samples shall be collected from the accumulated sludge from the ponds at various locations and depths that are combined for analysis.                                                                                                         |
| 101                      | IN-PLANT<br>Flow is not a required parameter.                       | Measurements shall be taken for each rainfall event.                                                                                                                                                                                                         |

## Permit Requirements

### 1 Influent – Monitoring Requirements

#### 1.1 Sample Point Number: 701- INFLUENT TO PLANT

| Monitoring Requirements and Limitations |            |                 |                  |                      |       |
|-----------------------------------------|------------|-----------------|------------------|----------------------|-------|
| Parameter                               | Limit Type | Limit and Units | Sample Frequency | Sample Type          | Notes |
| Flow Rate                               |            | MGD             | Daily            | Continuous           |       |
| BOD5, Total                             |            | mg/L            | 5/Week           | 24-Hr Flow Prop Comp |       |
| Suspended Solids, Total                 |            | mg/L            | 5/Week           | 24-Hr Flow Prop Comp |       |

### Changes from Previous Permit:

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

The sample frequency for **BOD5** and **Total Suspended Solid** has changed from 3 times a week to 5 times a week to match the effluent monitoring frequencies.

### Explanation of Limits and Monitoring Requirements

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

## Inplant - Monitoring and Limitations

### Sample Point Number: 101- GENERAL PLANT

| Monitoring Requirements and Limitations |            |                 |                  |             |       |
|-----------------------------------------|------------|-----------------|------------------|-------------|-------|
| Parameter                               | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes |
| Precipitation                           |            | in/day          | Per Occurrence   | Measure     |       |

### 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.

### Explanation of Limits and Monitoring Requirements

**Precipitation** – This is an operational parameter, not a permit requirement and is not listed within the permit but is available on the eDMR. Measuring wet weather events is a tool that assists the facility in maintaining a healthy treatment system.

## 2 Surface Water - Monitoring and Limitations

### 2.1 Sample Point Number: 001- EFFLUENT

| Monitoring Requirements and Limitations |             |                 |                  |                      |       |
|-----------------------------------------|-------------|-----------------|------------------|----------------------|-------|
| Parameter                               | Limit Type  | Limit and Units | Sample Frequency | Sample Type          | Notes |
| Flow Rate                               |             | MGD             | Daily            | Continuous           |       |
| BOD5, Total                             | Monthly Avg | 30 mg/L         | 3/Week           | 24-Hr Flow Prop Comp |       |
| BOD5, Total                             | Weekly Avg  | 45 mg/L         | 3/Week           | 24-Hr Flow           |       |

| Monitoring Requirements and Limitations |                          |                 |                  |                      |                                                                                                                                                                    |
|-----------------------------------------|--------------------------|-----------------|------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter                               | Limit Type               | Limit and Units | Sample Frequency | Sample Type          | Notes                                                                                                                                                              |
|                                         |                          |                 |                  | Prop Comp            |                                                                                                                                                                    |
| Suspended Solids, Total                 | Monthly Avg              | 30 mg/L         | 3/Week           | 24-Hr Flow Prop Comp |                                                                                                                                                                    |
| Suspended Solids, Total                 | Weekly Avg               | 45 mg/L         | 3/Week           | 24-Hr Flow Prop Comp |                                                                                                                                                                    |
| pH Field                                | Daily Max                | 9.0 su          | 5/Week           | Grab                 |                                                                                                                                                                    |
| pH Field                                | Daily Min                | 6.0 su          | 5/Week           | Grab                 |                                                                                                                                                                    |
| E. coli                                 | Geometric Mean - Monthly | 126 #/100 ml    | Weekly           | Grab                 | Monitoring and limit effective May - September.                                                                                                                    |
| E. coli                                 | % Exceedance             | 10 Percent      | Monthly          | Calculated           | Monitoring and limit effective May - September.                                                                                                                    |
| Chlorine, Total Residual                | Monthly Avg              | 38 ug/L         | 5/Week           | Grab                 | Monitoring and limit effective May - September when chlorine is in use.                                                                                            |
| Chlorine, Total Residual                | Weekly Avg               | 38 ug/L         | 5/Week           | Grab                 | Monitoring and limit effective May - September when chlorine is in use.                                                                                            |
| Chlorine, Total Residual                | Daily Max                | 38 ug/L         | 5/Week           | Grab                 | Monitoring and limit effective May - September when chlorine is in use.                                                                                            |
| Nitrogen, Ammonia (NH3-N) Total         | Monthly Avg              | 108 mg/L        | Weekly           | 24-Hr Flow Prop Comp |                                                                                                                                                                    |
| Nitrogen, Ammonia (NH3-N) Total         | Weekly Avg               | 108 mg/L        | Weekly           | 24-Hr Flow Prop Comp |                                                                                                                                                                    |
| Nitrogen, Ammonia (NH3-N) Total         | Daily Max - Variable     | mg/L            | Weekly           | 24-Hr Flow Prop Comp | Enter the daily ammonia result on the eDMR and compare it to the Nitrogen, Ammonia Variable Limit column to determine compliance.                                  |
| Nitrogen, Ammonia Variable Limit        |                          | mg/L            | Weekly           | See Table            | Using the daily pH result look up the applicable ammonia limit using the table in the Ammonia Limitation permit section and report the variable limit on the eDMR. |
| Phosphorus, Total                       | Monthly Avg              | 1.0 mg/L        | Weekly           | 24-Hr Flow           |                                                                                                                                                                    |

| Monitoring Requirements and Limitations |            |                 |                   |                      |                                                                                                                                                              |
|-----------------------------------------|------------|-----------------|-------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter                               | Limit Type | Limit and Units | Sample Frequency  | Sample Type          | Notes                                                                                                                                                        |
|                                         |            |                 |                   | Prop Comp            |                                                                                                                                                              |
| Copper, Total Recoverable               |            | ug/L            | Weekly            | 24-Hr Comp           | Monitoring is required in 2029.                                                                                                                              |
| Hardness, Total as CaCO <sub>3</sub>    |            | ug/L            | Monthly           | 24-Hr Comp           | Monitoring is required in 2029.                                                                                                                              |
| Nitrogen, Total Kjeldahl                |            | mg/L            | See Listed Qtr(s) | 24-Hr Flow Prop Comp | See the Nitrogen Series Monitoring permit section for testing schedule.                                                                                      |
| Nitrogen, Nitrite + Nitrate Total       |            | mg/L            | See Listed Qtr(s) | 24-Hr Flow Prop Comp | See the Nitrogen Series Monitoring permit section for testing schedule.                                                                                      |
| Nitrogen, Total                         |            | mg/L            | See Listed Qtr(s) | Calculated           | Total Nitrogen = Total Nitrogen Kjeldahl (mg/L) + Nitrite + Nitrate Nitrogen (mg/L). See the Nitrogen Series Monitoring permit section for testing schedule. |

## 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.

- **Monitoring Frequencies** - The sample frequency for BOD<sub>5</sub>, Total Suspended Solids and Ammonia Nitrogen has been changed from three times a week to 5 times a week. Chlorine and pH have changed from 5 times a week to daily. The frequency change was implemented to meet standard monitoring frequencies which are based on the size and type of facility.
- **Copper and Hardness** – Monitoring is required during the 2029 calendar year to collect information to determine if monitoring and limits are necessary to protect water quality during the next permit reissuance.

## 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 July 21, 2026.

**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.

Previously permitted monitoring frequencies for BOD<sub>5</sub>, total suspended solids, pH, chlorine and ammonia fall below the standard monitoring frequency outlined in guidance. The sample frequencies were based on actual average flow 0.349

MGD. The WWTP was designed at 1 MGS, the WWTP will not see the loadings that were planned for within the permit term. The City of Park Falls has a good compliance history with little variability in the effluent. There has been two minor phosphorus exceedances associated with accepting paper mill sludge from the abandoned Flambeau Papers Mill, the facility has had no effluent exceedances during the prior permit term. The reduced monitoring frequency is continued in the proposed permit, and the set monitoring frequency is consistent with requirements of state code. If performance levels begin to vary during the permitted term, the department may re-evaluate current sampling frequencies and implement more frequent monitoring via permit modification or at permit reissuance.

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

### 3 Land Application - Monitoring and Limitations

| Municipal Sludge Description                                                                                                                                             |                       |                              |                                                                                                                                                                                          |                          |              |                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------------|----------------------------------------|
| Sample Point                                                                                                                                                             | Sludge Class (A or B) | Sludge Type (Liquid or Cake) | Pathogen Reduction Method                                                                                                                                                                | Vector Attraction Method | Reuse Option | Amount Reused/Disposed (Dry Tons/Year) |
| 002                                                                                                                                                                      | B                     | Liquid                       | Sludge was last removed in 1999 and removal is not anticipated this permit term. If removal is needed see the land application and schedule sections of the permit for more information. |                          |              |                                        |
| Does sludge management demonstrate compliance? Yes                                                                                                                       |                       |                              |                                                                                                                                                                                          |                          |              |                                        |
| Is additional sludge storage required? No                                                                                                                                |                       |                              |                                                                                                                                                                                          |                          |              |                                        |
| Is Radium-226 present in the water supply at a level greater than 2 pCi/liter? No, the most recent sample (March 2026) for the municipal well system was 0.16 pCi/liter. |                       |                              |                                                                                                                                                                                          |                          |              |                                        |
| Is a priority pollutant scan required? No                                                                                                                                |                       |                              |                                                                                                                                                                                          |                          |              |                                        |

#### 3.1 Sample Point Number: 002- LAGOON SLUDGE

| Monitoring Requirements and Limitations |              |                 |                  |             |       |
|-----------------------------------------|--------------|-----------------|------------------|-------------|-------|
| Parameter                               | Limit Type   | Limit and Units | Sample Frequency | Sample Type | Notes |
| Solids, Total                           |              | Percent         | Once             | Composite   |       |
| Arsenic Dry Wt                          | Ceiling      | 75 mg/kg        | Once             | Composite   |       |
| Arsenic Dry Wt                          | High Quality | 41 mg/kg        | Once             | Composite   |       |
| Cadmium Dry Wt                          | Ceiling      | 85 mg/kg        | Once             | Composite   |       |
| Cadmium Dry Wt                          | High Quality | 39 mg/kg        | Once             | Composite   |       |
| Copper Dry Wt                           | Ceiling      | 4,300 mg/kg     | Once             | Composite   |       |
| Copper Dry Wt                           | High Quality | 1,500 mg/kg     | Once             | Composite   |       |
| Lead Dry Wt                             | Ceiling      | 840 mg/kg       | Once             | Composite   |       |
| Lead Dry Wt                             | High Quality | 300 mg/kg       | Once             | Composite   |       |

| Monitoring Requirements and Limitations       |              |                 |                  |             |                                                                                                                                                                                                         |
|-----------------------------------------------|--------------|-----------------|------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Parameter                                     | Limit Type   | Limit and Units | Sample Frequency | Sample Type | Notes                                                                                                                                                                                                   |
| Mercury Dry Wt                                | Ceiling      | 57 mg/kg        | Once             | Composite   |                                                                                                                                                                                                         |
| Mercury Dry Wt                                | High Quality | 17 mg/kg        | Once             | Composite   |                                                                                                                                                                                                         |
| Molybdenum Dry Wt                             | Ceiling      | 75 mg/kg        | Once             | Composite   |                                                                                                                                                                                                         |
| Nickel Dry Wt                                 | Ceiling      | 420 mg/kg       | Once             | Composite   |                                                                                                                                                                                                         |
| Nickel Dry Wt                                 | High Quality | 420 mg/kg       | Once             | Composite   |                                                                                                                                                                                                         |
| Selenium Dry Wt                               | Ceiling      | 100 mg/kg       | Once             | Composite   |                                                                                                                                                                                                         |
| Selenium Dry Wt                               | High Quality | 100 mg/kg       | Once             | Composite   |                                                                                                                                                                                                         |
| Zinc Dry Wt                                   | Ceiling      | 7,500 mg/kg     | Once             | Composite   |                                                                                                                                                                                                         |
| Zinc Dry Wt                                   | High Quality | 2,800 mg/kg     | Once             | Composite   |                                                                                                                                                                                                         |
| Nitrogen, Total Kjeldahl                      |              | Percent         | Per Application  | Composite   |                                                                                                                                                                                                         |
| Nitrogen, Ammonium (NH <sub>4</sub> -N) Total |              | Percent         | Per Application  | Composite   |                                                                                                                                                                                                         |
| Phosphorus, Total                             |              | Percent         | Per Application  | Composite   |                                                                                                                                                                                                         |
| Phosphorus, Water Extractable                 |              | % of Tot P      | Per Application  | Composite   |                                                                                                                                                                                                         |
| Potassium, Total Recoverable                  |              | Percent         | Per Application  | Composite   |                                                                                                                                                                                                         |
| PCB Total Dry Wt                              | Ceiling      | 50 mg/kg        | Once             | Composite   | See the Sludge Analysis for PCBs permit section.                                                                                                                                                        |
| PCB Total Dry Wt                              | High Quality | 10 mg/kg        | Once             | Composite   | See the Sludge Analysis for PCBs permit section.                                                                                                                                                        |
| PFOA + PFOS                                   |              | ug/kg           | Once             | Calculated  | Monitor for PFOA + PFOS between 01/01/2027 - 06/30/2027 to meet the requirements of PFAS General Permit (WI-0012345-0). Report the sum of PFOA and PFOS. See PFAS permit sections for more information. |
| PFAS Dry Wt                                   |              |                 | Once             | Grab        | Perfluoroalkyl and Polyfluoroalkyl Substances based on updated DNR PFAS List. See PFAS Permit Sections for more                                                                                         |

| Monitoring Requirements and Limitations |            |                 |                  |             |              |
|-----------------------------------------|------------|-----------------|------------------|-------------|--------------|
| Parameter                               | Limit Type | Limit and Units | Sample Frequency | Sample Type | Notes        |
|                                         |            |                 |                  |             | information. |

## 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.

- **List 1** (Metals), **PCBs** and **PFAS** monitoring is required during the second year of the permit term (2028).
- Because it’s recommended that **List 2** (Nutrients) are monitored with List 1 monitoring, they have been added to the table.
- Due to changes within the **land application forms**, the 3400-049 (“Characteristics Report”), 3400-052 (“Other Methods of Disposal”) and 3400-055 (Annual Land Application”) will need to be submitted each year.
- Monitoring for **PFAS** is required pursuant to s. NR 204.06(2)(b)9., Wis. Adm. Code. To maintain compliance with General Permit, WI-0012345-0, “PFAS Monitoring for Sewage Sludge (Biosolids) Generators” language has been added to the permit to restate that monitoring for PFOA+PFOS is required by June 30, 2027. If the PFOA+PFOS result is under 20 ug/kg General Permit, WI-0012345-0, “PFAS Monitoring for Sewage Sludge (Biosolids) Generators” will be discontinued. If the results are over 20 ug/kg, General Permit section 5.4 must be followed (See link <https://dnr.wisconsin.gov/sites/default/files/topic/Wastewater/PFASMonitoringforSewageSludgeGenerators-GeneralPermit.pdf>). Based on the requirements of this section the Individual Permit WI-0029033-12-0 for the City of Park Falls may be modified to include additional sludge PFAS conditions.

## Explanation of Limits and Monitoring Requirements

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

**List 2 Nutrient monitoring** – Monitoring for List 2 (Nutrients) is highly recommended at the same time as the monitoring of List 1 (Metals) in year 2 of the permit (2028). Results will assist in the determination of the acres needed for land application of sludge should it be necessary. The number of acres needed is also required for the Sludge Management Schedule (see schedules for more information).

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

- Sludge analysis during the second year of the permit term has been included. There are check boxes available on the electronic forms to identify if desludging didn’t occur.

- Sludge characteristics report (3400-049) – at the top of the form check “yes” or “no” in the box identifying if any land application occurred that year. Complete the form if required or identify the year samples will be or have been taken in the comments section.
- 3400-052 (“Other Methods of Disposal”) and 3400-055 (“Annual Land Application”) - The reports are technically 2 separate forms that are now combined in one location but separated onto two different tabs. If you answer “No” to both listed questions the forms are complete. If you need to answer “Yes” to either question the corresponding form tabs will go from gray to blue indicating information can be entered on the report.

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

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

## 4 Schedules

### 4.1 Operation and Needs Review (ONR) & Facility Plan

| This compliance schedule requires the permittee to achieve compliance by the specified date.<br><b>Required Action</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Due Date</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <p><b>Submit ONR Report:</b> The ONR shall evaluate operation and maintenance procedures; existing equipment; chemical storage; CMOM program implementation; and recommended actions such as operational changes or minor/major upgrades of the treatment works. An implementation schedule shall be submitted as a part of the ONR.</p> <p>If the ONR concludes that the operational improvements are expected to maintain compliance the permittee is not required to comply with subsequent milestones identified below in this schedule (‘Preliminary Facility Plan’, ‘Final Plans and Specifications’, and ‘Progress Report’).</p> <p>If the ONR indicates the existing treatment works is not capable of providing adequate wastewater treatment and a facility plan is recommended by the permittee or the department. The permittee shall initiate development of a facility plan and comply with the remaining required actions in this schedule of compliance</p> | 12/31/2028      |
| <p><b>Preliminary Facility Plan:</b> A Comprehensive Facility Plan shall be required if the department determines that consistent future compliance with permit limitations and conditions will not result from improved system operation and maintenance as part of the ONR. The permittee shall submit a Comprehensive Facility Plan to the department for approval in compliance with Wis. Admin. Code ch. NR 110. The Comprehensive Facility Plan must evaluate alternatives for compliance with limits and actions identified by the ONR and shall identify if further actions are needed for upgrades or equipment replacement.</p>                                                                                                                                                                                                                                                                                                                                   | 12/31/2029      |
| <p><b>Final Plans and Specifications:</b> Submit final plans and specifications for treatment facility modifications as needed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 12/31/2030      |
| <p><b>Progress Report:</b> Submit a progress report summarizing actions taken to date and a schedule for the next five years to complete the upgrade.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12/31/2031      |

## Explanation of Schedule

*Operation and Needs Review (ONR) & Facility Plan* - The permittee utilizes chemical addition at the WWTP which needs storage meets meet current code requirements. A ONR report will look at this and the facility as a whole to determine potential issues and solutions.

## 4.2 Sludge Management Plan

| Required Action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Due Date |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <p>Submit a Sludge Management Plan: The permittee shall submit an update to the management plan for approval if removal of sludge will occur during this permit term. The plan shall demonstrate compliance with ch. NR 204 Wis. Adm. Code and at minimum address 1) How and where is sludge sampled; 2) Available sludge storage details and location(s); 3)How will the sludge be removed with details on volume, characterization and how will the treatment plant continue to function during the draw-down; 4) Describe the type of transportation and spreading vehicles and loading and unloading practices; 5) Identify approved land application sites, apply for needed sites, site limitations, total acres needed and vegetative cover management; 6) Specify record keeping procedures including site loading; 7) Address contingency plans for adverse weather and odor/nuisance abatement; and 8) Include any other pertinent information such as other disposal options that may be used or specifications of any pretreatment processes</p> <p>Once approved, all sludge management activities shall be conducted in accordance with the plan. Any changes to the plan must be approved by the Department prior to implementing the changes. No desludging may occur unless approval from the Department is obtained. Daily logs shall be kept that record where the sludge has been disposed.</p> <p>The plan is due at least 60 days prior to desludging.</p> |          |

## Explanation of Schedule

*Sludge Management Plan* - If the lagoons are to be de-sludged during this permit term a management plan is needed to show compliance with ch. NR 204, Wis. Adm. Code. There are outlines available to assist in plan development.

## Attachments

Water Flow Schematic last updated in 2021.

Water Quality Based Effluent Limits memo dated July 21, 2026

## Justification Of Any Waivers From Permit Application Requirements

No waivers requested or granted as part of this permit reissuance

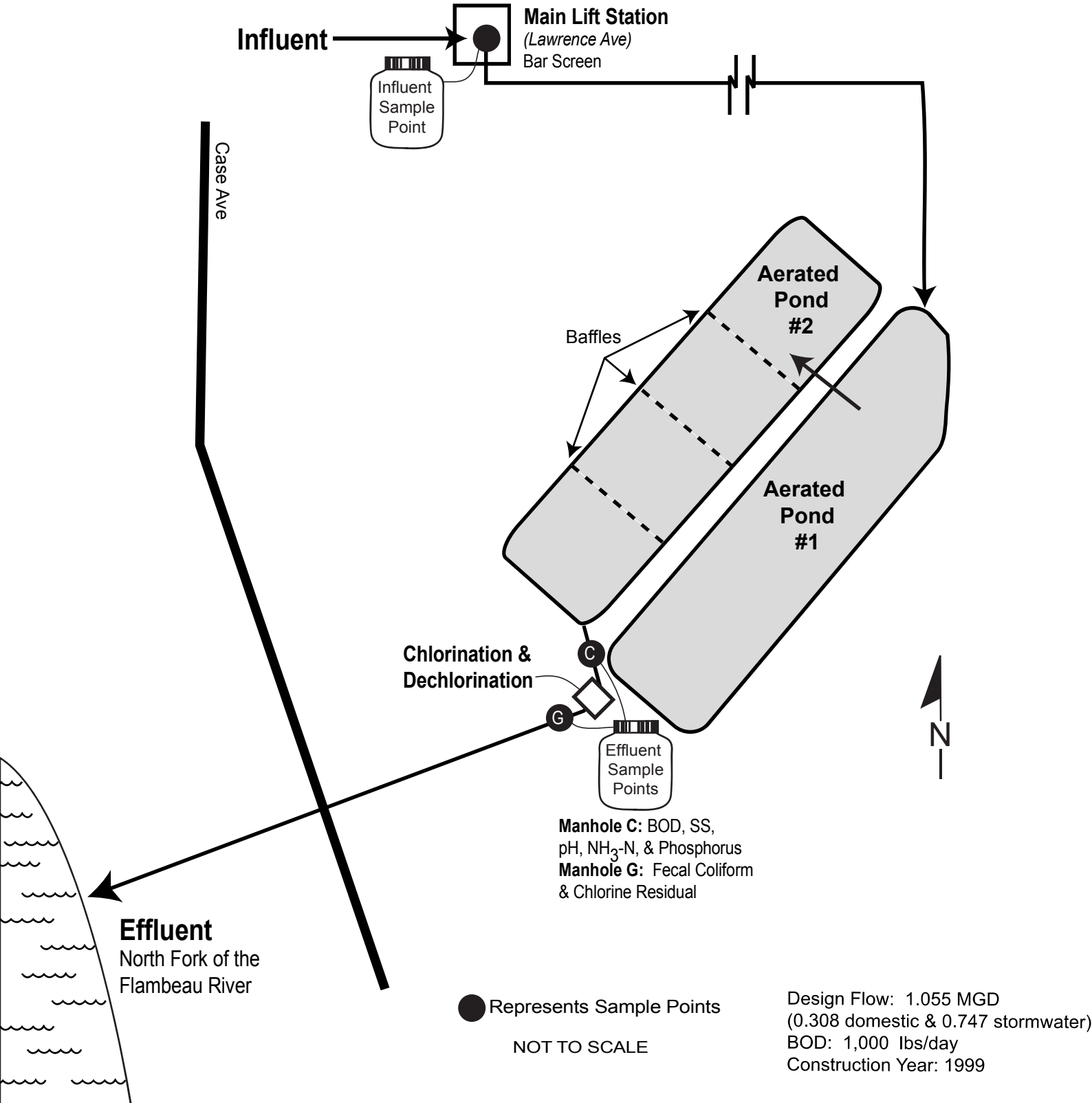
**Prepared By:** Sheri A. Snowbank

Wastewater Specialist

**Date:** August 20, 2026

# City of Park Falls Wastewater Treatment Facility

The Park Falls wastewater treatment facility consists of two aerated ponds operated in series. Seasonal disinfection by chlorination and dechlorination is available if needed. Effluent is discharged to the North Fork of the Flambeau River. The diagram below shows the treatment units and sampling locations.



# CORRESPONDENCE/MEMORANDUM

State of Wisconsin

DATE: July 21, 2026

TO: Sheri Snowbank – NOR/Spooner Service Center

FROM: Michael Polkinghorn – NOR/Rhineland Service Center



SUBJECT: Water Quality-Based Effluent Limitations for the City of Park Falls  
WPDES Permit No. WI-0029033-12-0

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 City of Park Falls in Price County. This municipal wastewater treatment facility (WWTF) discharges to the North Fork Flambeau River, located in the Upper North Fork Flambeau River Watershed in the Upper Chippewa River Basin. The evaluation of the permit recommendations is discussed in more detail in the attached report.

Based on our review, the following recommendations are made on a chemical-specific basis at Outfall 001:

| Parameter                                      | Daily Maximum | Daily Minimum | Weekly Average  | Monthly Average                | Footnotes |
|------------------------------------------------|---------------|---------------|-----------------|--------------------------------|-----------|
| Flow Rate                                      |               |               |                 |                                | 1         |
| BOD <sub>5</sub>                               |               |               | 45 mg/L         | 30 mg/L                        | 1, 2      |
| TSS                                            |               |               | 45 mg/L         | 30 mg/L                        | 1, 2      |
| pH                                             | 9.0 s.u.      | 6.0 s.u.      |                 |                                | 1, 2      |
| <i>E. coli</i><br>May – September              |               |               |                 | 126 #/100 mL<br>geometric mean | 1, 3      |
| Chlorine (Total Residual)<br>May – September   | 38 µg/L       |               | <b>38 µg/L</b>  | <b>38 µg/L</b>                 | 1, 4, 5   |
| Ammonia Nitrogen                               | Variable      |               | <b>108 mg/L</b> | <b>108 mg/L</b>                | 1, 4, 6   |
| Phosphorus                                     |               |               |                 | 1.0 mg/L                       | 1, 7      |
| Copper (Total Recoverable)                     |               |               |                 |                                | 8         |
| Hardness (Total as CaCO <sub>3</sub> )         |               |               |                 |                                | 9         |
| TKN,<br>Nitrate+Nitrite, and<br>Total Nitrogen |               |               |                 |                                | 1, 10     |
| Acute WET                                      |               |               |                 |                                | 11        |

Footnotes:

1. No changes from the current permit.
2. These limits are based on the Warm Water Sport Fish (WWSF) community of the immediate receiving water as described in s. NR 210.05(1), Wis. Adm. Code.
3. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
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. Chlorine WQBELs are required to control the discharge of the chlorination and dechlorination additives.

6. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit.

**Daily Maximum Ammonia Nitrogen Limits**

| Effluent pH<br>s.u.           | Limit<br>mg/L | Effluent pH<br>s.u.        | Limit<br>mg/L | Effluent pH<br>s.u.        | Limit<br>mg/L |
|-------------------------------|---------------|----------------------------|---------------|----------------------------|---------------|
| $6.0 \leq \text{pH} \leq 6.1$ | 108           | $7.0 < \text{pH} \leq 7.1$ | 66            | $8.0 < \text{pH} \leq 8.1$ | 14            |
| $6.1 < \text{pH} \leq 6.2$    | 106           | $7.1 < \text{pH} \leq 7.2$ | 59            | $8.1 < \text{pH} \leq 8.2$ | 11            |
| $6.2 < \text{pH} \leq 6.3$    | 104           | $7.2 < \text{pH} \leq 7.3$ | 52            | $8.2 < \text{pH} \leq 8.3$ | 9.4           |
| $6.3 < \text{pH} \leq 6.4$    | 101           | $7.3 < \text{pH} \leq 7.4$ | 46            | $8.3 < \text{pH} \leq 8.4$ | 7.8           |
| $6.4 < \text{pH} \leq 6.5$    | 98            | $7.4 < \text{pH} \leq 7.5$ | 40            | $8.4 < \text{pH} \leq 8.5$ | 6.4           |
| $6.5 < \text{pH} \leq 6.6$    | 94            | $7.5 < \text{pH} \leq 7.6$ | 34            | $8.5 < \text{pH} \leq 8.6$ | 5.3           |
| $6.6 < \text{pH} \leq 6.7$    | 89            | $7.6 < \text{pH} \leq 7.7$ | 29            | $8.6 < \text{pH} \leq 8.7$ | 4.4           |
| $6.7 < \text{pH} \leq 6.8$    | 84            | $7.7 < \text{pH} \leq 7.8$ | 24            | $8.7 < \text{pH} \leq 8.8$ | 3.7           |
| $6.8 < \text{pH} \leq 6.9$    | 78            | $7.8 < \text{pH} \leq 7.9$ | 20            | $8.8 < \text{pH} \leq 8.9$ | 3.1           |
| $6.9 < \text{pH} \leq 7.0$    | 72            | $7.9 < \text{pH} \leq 8.0$ | 17            | $8.9 < \text{pH} \leq 9.0$ | 2.6           |

7. This is a state technology-based limit as described in subch. II of NR 217, Wis. Adm. Code, and became effective in the current permit on 07/01/2022.
8. Weekly monitoring for 1 year is recommended during the reissued permit term.
9. Hardness monitoring is recommended because of the relationship between hardness and daily maximum limits based on acute toxicity criteria.
10. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate ( $\text{NO}_3$ ), nitrite ( $\text{NO}_2$ ), and total Kjeldahl nitrogen (TKN) (all expressed as N).
11. Three acute whole effluent toxicity tests are recommended during the reissued permit term. 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. 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. If a satisfactory phosphorus chemical SOP is established and implemented at the facility prior to permit reissuance, then acute WET testing is not recommended in the reissued permit.

Please consult the attached report for details regarding the above recommendations. If there are any questions or comments, please contact Michael Polkinghorn at (715) 360-3379 or Michael.Polkinghorn@wisconsin.gov and Diane Figiel at Diane.Figiel@wisconsin.gov.

Attachments (2) – Narrative & discharge area map.

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## Water Quality-Based Effluent Limitations for City of Park Falls

**WPDES Permit No. WI-0029033-12-0**

Prepared by: Michael A. Polkinghorn

### PART 1 – BACKGROUND INFORMATION

#### Facility Description

Preliminary treatment consists of a bar screen located in the main lift station before the WWTF. Secondary treatment consists of two aerated lagoons operated in series. Naturally occurring bacteria and organisms present in the wastewater metabolize organic matter to meet discharge standards. The second lagoon is separated into four cells by three baffles where only the first cell is aerated. Ferric chloride is utilized between the two lagoons for chemical phosphorus treatment. After the second lagoon wastewater is disinfected seasonally from May – September by chlorination and dechlorination. Effluent is discharged on a continuous basis to the east bank of the North Fork of the Flambeau River, approx. 0.5 mi downstream of the Highway 182 bridge.

Attachment #2 is a discharge area map of Outfall 001.

#### Existing Permit Limitations

The current permit, which expired on 06/30/2026, includes the following effluent limitations and monitoring requirements.

| Parameter                                       | Daily<br>Maximum | Daily<br>Minimum | Weekly<br>Average | Monthly<br>Average             | Footnotes |
|-------------------------------------------------|------------------|------------------|-------------------|--------------------------------|-----------|
| Flow Rate                                       |                  |                  |                   |                                |           |
| BOD <sub>5</sub>                                |                  |                  | 45 mg/L           | 30 mg/L                        | 1, 2      |
| TSS                                             |                  |                  | 45 mg/L           | 30 mg/L                        | 1, 2      |
| pH                                              | 9.0 s.u.         | 6.0 s.u.         |                   |                                | 1, 2      |
| <i>E. coli</i><br>May – September               |                  |                  |                   | 126 #/100 mL<br>geometric mean | 1, 3      |
| Chlorine (Total<br>Residual)<br>May – September | 38 µg/L          |                  | <b>38 µg/L</b>    | <b>38 µg/L</b>                 | 1, 4, 5   |
| Ammonia Nitrogen                                | Variable         |                  | <b>108 mg/L</b>   | <b>108 mg/L</b>                | 1, 4, 6   |
| Phosphorus                                      |                  |                  |                   | 1.0 mg/L                       | 7         |
| TKN,<br>Nitrate+Nitrite, and<br>Total Nitrogen  |                  |                  |                   |                                | 8         |

## Footnotes:

1. **These limitations are not being evaluated as part of this review.** Because the water quality criteria (WQC), reference effluent flow rates, and receiving water characteristics have not changed, limitations for these water quality characteristics do not need to be re-evaluated at this time.
2. These limits are based on the Warm Water Sport Fish (WWSF) community of the immediate receiving water as described in s. NR 210.05(1), Wis. Adm. Code.
3. Additional final limit: No more than 10 percent of *E. coli* bacteria samples collected in any calendar month may exceed 410 count/100 mL.
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. Chlorine WQBELs are required to control the discharge of the chlorination and dechlorination additives.
6. The variable daily maximum ammonia nitrogen limit table corresponding to various effluent pH values may be included in the permit in place of the single limit.

**Daily Maximum Ammonia Nitrogen Limits**

| Effluent pH<br>s.u. | Limit<br>mg/L | Effluent pH<br>s.u. | Limit<br>mg/L | Effluent pH<br>s.u. | Limit<br>mg/L |
|---------------------|---------------|---------------------|---------------|---------------------|---------------|
| 6.0 ≤ pH ≤ 6.1      | 108           | 7.0 < pH ≤ 7.1      | 66            | 8.0 < pH ≤ 8.1      | 14            |
| 6.1 < pH ≤ 6.2      | 106           | 7.1 < pH ≤ 7.2      | 59            | 8.1 < pH ≤ 8.2      | 11            |
| 6.2 < pH ≤ 6.3      | 104           | 7.2 < pH ≤ 7.3      | 52            | 8.2 < pH ≤ 8.3      | 9.4           |
| 6.3 < pH ≤ 6.4      | 101           | 7.3 < pH ≤ 7.4      | 46            | 8.3 < pH ≤ 8.4      | 7.8           |
| 6.4 < pH ≤ 6.5      | 98            | 7.4 < pH ≤ 7.5      | 40            | 8.4 < pH ≤ 8.5      | 6.4           |
| 6.5 < pH ≤ 6.6      | 94            | 7.5 < pH ≤ 7.6      | 34            | 8.5 < pH ≤ 8.6      | 5.3           |
| 6.6 < pH ≤ 6.7      | 89            | 7.6 < pH ≤ 7.7      | 29            | 8.6 < pH ≤ 8.7      | 4.4           |
| 6.7 < pH ≤ 6.8      | 84            | 7.7 < pH ≤ 7.8      | 24            | 8.7 < pH ≤ 8.8      | 3.7           |
| 6.8 < pH ≤ 6.9      | 78            | 7.8 < pH ≤ 7.9      | 20            | 8.8 < pH ≤ 8.9      | 3.1           |
| 6.9 < pH ≤ 7.0      | 72            | 7.9 < pH ≤ 8.0      | 17            | 8.9 < pH ≤ 9.0      | 2.6           |

7. This is a state technology-based limit as described in subch. II of NR 217, Wis. Adm. Code, and became effective in the current permit on 07/01/2022.
8. As recommended in the Department's October 1, 2019 Guidance for Total Nitrogen Monitoring in Wastewater Permits, annual total nitrogen monitoring is recommended for all minor municipal permittees. Sections 283.37(5) and 283.55(1)(e), Wis. Stats, and ss. NR 200.065(1)(g) and NR 200.065(1)(h), Wis. Adm. Codes, provide the authority to request this monitoring during the permit term. Total Nitrogen is the sum of nitrate (NO<sub>3</sub>), nitrite (NO<sub>2</sub>), and total Kjeldahl nitrogen (TKN) (all expressed as N).

**Receiving Water Information**

- Name: North Fork Flambeau River
- Waterbody Identification Code (WBIC): 2225000
- Classification used in accordance with chs. NR 102 and 104, Wis. Adm. Code: Warm Water Sport Fish (WWSF) community, non-public water supply and recreational use.
- Low Flows used in accordance with chs. NR 106 and 217, Wis. Adm. Code: The following 7-Q<sub>10</sub> and 7-Q<sub>2</sub> values are from USGS for Station NW ¼, SW ¼, Section 24, T40N – R1W, approx. 0.3 mi upstream of Outfall 001.

7-Q<sub>10</sub> = 260 cubic feet per second (cfs)

7-Q<sub>2</sub> = 500 cfs

Harmonic Mean Flow = 435 cfs using a drainage area of 721 mi<sup>2</sup>

The Harmonic Mean has been estimated based on average flow and the 7-Q<sub>10</sub> using an equation from U.S. EPA's *Technical Support Document for Water Quality-Based Toxics Control* (March 1991, EPA/505/2-90-001, pgs. 88-89).

- Hardness = 73 mg/L as CaCO<sub>3</sub>. This value represents the geometric mean of data (n = 9, July 1995 – April 2012) from historic WET testing.
- % of low flow used to calculate limits in accordance with s. NR 106.06(4)(c)5., Wis. Adm. Code: 25%.
- Source of background concentration data: Metals data from the Wisconsin State Lab of Hygiene from the Flambeau River in Price and Rusk counties (1994 – 2010) are used for this evaluation. The numerical values are shown in the tables below. If no data is available, the background concentration is assumed to be negligible and a value of zero is used in the computations. Background data for calculating effluent limitations for phosphorus are described later in this evaluation.
- Multiple dischargers: None.
- Impaired water status: The Lower Park Falls Flowage (North Fork Flambeau River) is on the Clean Water Act Section 303(d) list for mercury and other unspecified metals impairments. The affected segment starts approx. 0.1 mi upstream of the 1<sup>st</sup> Street bridge and continues approx. 1.8 mi downstream.

### **Effluent Information**

- Design flow rate(s):  
Annual average = 1.055 million gallons per day (MGD)  
For reference, the actual average flow from July 2021 – May 2026 was 0.349 MGD.
- Hardness = 153 mg/L as CaCO<sub>3</sub>. This value represents the geometric mean of four samples collected in February 2025 – March 2025 which were reported on the permit application.
- 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).
- Wastewater source: Domestic wastewater with no industrial contributors.
- Water supply: Municipality waterworks.
- Additives: City of Park Falls has included 4 additives in the permit application that have the potential to be present in Outfall 001. These additives are listed below:
  - Hawkins Chlorine – Disinfection.
  - Hawkins Sodium Bisulfite – Dechlorination.
  - Hawkins Ferric Chloride – Phosphorus removal.
  - Hawkins Sulfuric Acid 40% – pH control.
  - 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. This is the case upon initial review of the listed additives and the facility is not requesting increased dosages or use frequencies. Therefore, an additive review is not needed at this time.
- Effluent characterization: This facility is categorized as a minor municipality, so the permit application required effluent sample analyses for a limited number of common pollutants, as specified in s. NR 200.065, Table 1, Wis. Adm. Code, primarily metal substances plus chloride and hardness.
- Effluent data for substances for which a single sample was analyzed is shown in the tables in Part 2, in the column titled “MEAN EFFL. CONC.”. Otherwise, substances with multiple effluent data are

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shown in the tables below or in their respective parts in this evaluation. Effluent ammonia nitrogen data is included for informational purposes.

**Ammonia Nitrogen Effluent Data**

| Statistics             | Conc. (mg/L) |
|------------------------|--------------|
| 1-day P <sub>99</sub>  | 44           |
| 4-day P <sub>99</sub>  | 27           |
| 30-day P <sub>99</sub> | 19           |
| Mean*                  | 15           |
| Std                    | 8.4          |
| Sample size            | 252          |
| Range                  | <0.1 - 32.9  |

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

**Copper & Chloride Effluent Data**

| Sample Date           | Copper (µg/L) | Chloride (mg/L) |
|-----------------------|---------------|-----------------|
| 02/25/2025            | 40            | 125             |
| 03/03/2025            | 46            | 120             |
| 03/06/2025            | 39            | 120             |
| 03/10/2025            | 31            | 121             |
| 03/13/2025            | 30            |                 |
| 03/17/2025            | 31            |                 |
| 03/20/2025            | 23            |                 |
| 03/24/2025            | 27            |                 |
| 03/27/2025            | 33            |                 |
| 03/31/2025            | 17            |                 |
| 04/03/2025            | 24            |                 |
| Mean                  |               | 122             |
| 1-day P <sub>99</sub> | 44            |                 |
| 4-day P <sub>99</sub> | 27            |                 |

The following table presents the average concentrations and loadings at Outfall 001 from July 2021 – May 2026 for all parameters with limits in the current permit to meet the requirements of s. NR 201.03(6), Wis. Adm. Code:

**Parameters with Effluent Limits**

| Parameter        | Average Measurement* |
|------------------|----------------------|
| BOD <sub>5</sub> | 8.8 mg/L             |
| TSS              | 7.1 mg/L             |
| pH field         | 7.4 s.u.             |
| <i>E. coli</i>   | 7.9 #/100 mL**       |
| Chlorine (TR)    | <30 µg/L             |
| Ammonia Nitrogen | 15 mg/L              |

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| Parameter  | Average Measurement* |
|------------|----------------------|
| Phosphorus | 0.60 mg/L            |

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

\*\* The average measurement for bacteria is calculated as a geometric mean. Values reported below the LOD are replaced with a value of 1 for the calculation of the geometric mean.

## PART 2 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR TOXIC SUBSTANCES – EXCEPT AMMONIA NITROGEN

Permit limits for toxic substances are required whenever any of the following occur:

1. The maximum effluent concentration exceeds the calculated limit (s. NR 106.05(3), Wis. Adm. Code)
2. If 11 or more detected results are available in the effluent, the upper 99<sup>th</sup> percentile (or P<sub>99</sub>) 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<sub>10</sub>

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<sub>10</sub> 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.

$$\text{Limitation} = \frac{(\text{WQC}) (Q_s + (1-f) Q_e) - (Q_s - f Q_e) (C_s)}{Q_e}$$

Where:

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

Q<sub>s</sub> = average minimum 1-day flow which occurs once in 10 years (1-day Q<sub>10</sub>)

if the 1-day Q<sub>10</sub> flow data is not available = 80% of the average minimum 7-day flow which occurs once in 10 years (7-day Q<sub>10</sub>).

Q<sub>e</sub> = 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

C<sub>s</sub> = Background concentration of the substance (in units of mass per unit volume) as specified in s. NR 106.06(4)(e), Wis. Adm. Code.

If the receiving water is effluent dominated under low stream flow conditions, the 1-Q<sub>10</sub> method of limit calculation produces the most stringent daily maximum limitations and should be used while making reasonable potential determinations. This is not the case for City of Parks Falls, and the limits are set based on two times the acute toxicity criteria.

The following tables list the calculated WQBELs for this discharge along with the results of effluent

sampling. All concentrations are expressed in terms of micrograms per Liter ( $\mu\text{g/L}$ ), except for hardness and chloride ( $\text{mg/L}$ ).

### Daily Maximum Limits based on Acute Toxicity Criteria (ATC)

RECEIVING WATER FLOW = 208 cfs, (1-Q<sub>10</sub> (estimated as 80% of 7-Q<sub>10</sub>)), as specified in s. NR 106.06(3)(bm), Wis. Adm. Code.

| SUBSTANCE       | REF.<br>HARD.<br>mg/L | ATC   | MAX.<br>EFFL.<br>LIMIT* | 1/5 OF<br>EFFL.<br>LIMIT | MEAN<br>EFFL.<br>CONC. | 1-day<br>P <sub>99</sub> | 1-day<br>MAX.<br>CONC. |
|-----------------|-----------------------|-------|-------------------------|--------------------------|------------------------|--------------------------|------------------------|
| Chlorine        |                       | 19    | 38                      |                          |                        |                          |                        |
| Arsenic         |                       | 340   | 679.6                   | 136                      | <1.2                   |                          | <1.2                   |
| Cadmium         | 153                   | 16.8  | 33.6                    | 6.7                      | <1                     |                          | <1                     |
| Chromium        | 153                   | 2,554 | 5,108                   | 1,022                    | 6                      |                          | 6                      |
| Copper          | 153                   | 23.2  | 46.3                    |                          |                        | 44                       | 46                     |
| Lead            | 153                   | 161   | 322.5                   | 64.5                     | <1                     |                          | <1                     |
| Nickel          | 153                   | 672   | 1,345                   | 269                      | <9                     |                          | <9                     |
| Zinc            | 153                   | 175   | 349.2                   | 69.8                     | 12                     |                          | 12                     |
| Chloride (mg/L) |                       | 757   | 1,514                   | 303                      | 122                    |                          | 125                    |

\* The  $2 \times$  ATC method of limit calculation yields a more restrictive limit than consideration of ambient concentrations and 1-Q<sub>10</sub> flow rates per the changes to s. NR 106.07(3), Wis. Adm. Code, effective 09/01/2016.

### Weekly Average Limits based on Chronic Toxicity Criteria (CTC)

RECEIVING WATER FLOW = 65 cfs ( $\frac{1}{4}$  of the 7-Q<sub>10</sub>), as specified in s. NR 106.06(4)(c), Wis. Adm. Code

| SUBSTANCE       | REF.<br>HARD.*<br>mg/L | CTC    | MEAN<br>BACK-<br>GRD. | WEEKLY<br>AVE.<br>LIMIT | 1/5 OF<br>EFFL.<br>LIMIT | MEAN<br>EFFL.<br>CONC. | 4-day<br>P <sub>99</sub> |
|-----------------|------------------------|--------|-----------------------|-------------------------|--------------------------|------------------------|--------------------------|
| Chlorine        |                        | 7.28   |                       | 297                     |                          |                        |                          |
| Arsenic         |                        | 152.2  | 0.49                  | 6,193                   | 1,239                    | <1.2                   |                          |
| Cadmium         | 73                     | 1.92   | 0.233                 | 69.10                   | 13.8                     | <1                     |                          |
| Chromium        | 73                     | 102.09 | 0.242                 | 4,158                   | 831.5                    | 6                      |                          |
| Copper          | 73                     | 7.91   | 0.65                  | 297.0                   |                          |                        | 27                       |
| Lead            | 73                     | 20.66  | 0.227                 | 834.3                   | 166.9                    | <1                     |                          |
| Nickel          | 73                     | 39.99  |                       | 1,602                   | 320.4                    | <9                     |                          |
| Zinc            | 73                     | 91.41  | 0.759                 | 3,676                   | 735.2                    | 12                     |                          |
| Chloride (mg/L) |                        | 395    | 1.39                  | 15,984                  | 3,197                    | 122                    |                          |

\* The indicated hardness may differ from the receiving water hardness because the receiving water hardness exceeded the maximum range in ch. NR 105, Wis. Adm. Code, over which the chronic criteria are applicable. In that case, the maximum of the range is used to calculate the criterion.

### Monthly Average Limits based on Wildlife Criteria (WC)

The effluent characterization did not include any effluent sampling results for substances for which Wildlife Criteria exist.

### Monthly Average Limits based on Human Threshold Criteria (HTC)

RECEIVING WATER FLOW = 109 cfs ( $\frac{1}{4}$  of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

|  | HTC | MEAN<br>BACK- | MO'LY<br>AVE. | 1/5 OF<br>EFFL. | MEAN<br>EFFL. |
|--|-----|---------------|---------------|-----------------|---------------|
|--|-----|---------------|---------------|-----------------|---------------|

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| SUBSTANCE |           | GRD.  | LIMIT       | LIMIT      | CONC. |
|-----------|-----------|-------|-------------|------------|-------|
| Cadmium   | 370       | 0.233 | 24,987      | 4,997      | <1    |
| Chromium  | 3,818,000 | 0.242 | 257,998,467 | 51,599,693 | 6     |
| Lead      | 140       | 0.227 | 9,445       | 1,889      | <1    |
| Nickel    | 43,000    |       | 2,905,642   | 581,128    | <9    |

**Monthly Average Limits based on Human Cancer Criteria (HCC)**

RECEIVING WATER FLOW = 109 cfs (¼ of Harmonic Mean), as specified in s. NR 106.06(4), Wis. Adm. Code.

| SUBSTANCE | HCC  | MEAN<br>BACK-<br>GRD. | MO'LY<br>AVE.<br>LIMIT | 1/5 OF<br>EFFL.<br>LIMIT | MEAN<br>EFFL.<br>CONC. |
|-----------|------|-----------------------|------------------------|--------------------------|------------------------|
| Arsenic   | 13.3 | 0.49                  | 866                    | 173                      | <1.2                   |

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

**Conclusions and Recommendations**

Based on a comparison of the effluent data and calculated effluent limitations, **effluent limitations are required for chlorine**. Limits and/or monitoring recommendations are made in the paragraphs below:

Total Residual Chlorine – Because chlorine is added as a disinfectant, effluent limitations are recommended to assure proper operation of the de-chlorination system. Section NR 210.06(2)(b), Wis. Adm. Code, states, “When chlorine is used for disinfection, the daily maximum total residual chlorine concentration of the discharge may not exceed 0.10 mg/L.” Because the WQBELs are more restrictive, they are recommended instead. **Therefore, the chlorine limits in the current permit are required to continue during the reissued permit term.**

Copper – Considering available effluent data from the current permit term (February 2025 – April 2025), the 1-day P<sub>99</sub>, 4-day P<sub>99</sub>, and daily maximum concentrations are 44, 27, and 46 µg/L respectively. These concentrations are below the calculated copper WQBELs; therefore, **copper limits are not recommended during the reissued permit term**. The 1-day P<sub>99</sub> and daily maximum concentrations were close to exceeding the calculated daily maximum copper WQBEL of 46 µg/L. Due to this and the effluent variability of the copper dataset, **weekly monitoring for 1 year is recommended during the reissued permit term.**

**Quarterly hardness monitoring is also recommended because of the relationship between hardness and daily maximum limits based on acute toxicity criteria.**

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, the effluent flow rate, the lack of indirect dischargers contributing to the collection system, **PFOS and PFOA monitoring is not recommended during the reissued permit term**. The Department may re-evaluate the need for sampling at the next permit reissuance if new information becomes available that suggests PFOS or PFOA may be present in the discharge.

## PART 3 – PHOSPHORUS

### Technology-Based Effluent Limit

Subchapter II of Chapter NR 217, Wis. Adm. Code, requires municipal wastewater treatment facilities that discharge greater than 150 pounds of total phosphorus per month to comply with a monthly average limit of 1.0 mg/L, or an approved alternative concentration limit. Because the City of Parks Falls 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. In addition, the need for a WQBEL for phosphorus must be considered.

### Water Quality-Based Effluent Limits (WQBEL)

Revisions to administrative rules regulating phosphorus took effect on December 1, 2010. These rule revisions include additions to s. NR 102.06, Wis. Adm. Code, which establish phosphorus standards for surface waters. Subchapter III of NR 217, Wis. Adm. Code, establishes procedures for determining WQBELs for phosphorus, based on the applicable standards in ch. NR 102, Wis. Adm. Code.

Section NR 102.06(3)(a), Wis. Adm. Code, specifically names river segments for which a phosphorus criterion of 0.100 mg/L applies. For other stream segments that are not specified in s. NR 102.06(3)(a), Wis. Adm. Code, s. NR 102.06(3)(b), Wis. Adm. Code, specifies a phosphorus criterion of 0.075 mg/L. The phosphorus criterion of 0.100 mg/L applies for North Fork Flambeau River as described in s. NR 102.06(3)(a)13, Wis. Adm. Code.

The conservation of mass equation is described in s. NR 217.13(2)(a), Wis. Adm. Code, for phosphorus WQBELs and includes variables of water quality criterion (WQC), receiving water flow rate (Qs), effluent flow rate (Qe), and upstream phosphorus concentrations (Cs) provided below.

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

Where:

WQC = 0.100 mg/L for North Fork Flambeau River

Qs = 100% of the 7-Q<sub>2</sub> of 500 cfs

Cs = background concentration of phosphorus in the receiving water pursuant to s. NR 217.13(2)(d), Wis. Adm. Code

Qe = effluent flow rate = 1.055 MGD = 1.632 cfs

f = the fraction of effluent withdrawn from the receiving water = 0

Section NR 217.13(2)(d), Wis. Adm. Code, specifies that the background phosphorus concentration used in the limit calculation formula shall be calculated as a median using the procedures specified in s. NR 102.07(1)(b) to (c), Wis. Code. All representative data from the most recent 5 years shall be used, but data from the most recent 10 years may be used if representative of current conditions.

The previous limit evaluation (February 2021) resulted in a WQBEL of 2.7 mg/L using a background concentration of 0.034 mg/L, along with taking into account the discharge of Flambeau River Papers, LLC upstream. This discharge has since shut down so only Outfall 001 needs to be considered for the phosphorus WQBEL. Section NR 217.13(2)(d), Wis. Adm. Code, states that the determination of upstream concentrations shall be evaluated at each permit reissuance. Additional data were considered in estimating the background phosphorus concentration.

A review of all available in stream total phosphorus data stored in the Surface Water Integrated Monitoring System (SWIMS) database indicates there are no updated background phosphorus samples taken since the previous limit evaluation. Therefore, the median background total phosphorus concentration of 0.034 mg/L will continue to be used in this evaluation. This value is based on background phosphorus data at the North Fork Flambeau River at Holt's Landing (n = 6, October 2009 – September 2010, SWIMS station ID: 23025), approx. 9.2 mi upstream of Outfall 001.

Substituting a median value of 0.034 mg/L into the limit calculation equation above, the calculated limit is 20 mg/L. The calculated phosphorus WQBEL is less stringent than the state technology-based limit of 1.0 mg/L effective in the current permit. **Therefore, a phosphorus WQBEL is not recommended during the reissued permit term.**

#### Effluent Data

The following table summarizes effluent total phosphorus monitoring data from July 2022 – May 2026 since the state technology-based limit became effective in the current permit on 07/01/2022 for informational purposes.

**Total Phosphorus Effluent Data**

| Statistics             | Conc. (mg/L) |
|------------------------|--------------|
| 1-day P <sub>99</sub>  | 1.5          |
| 4-day P <sub>99</sub>  | 1.0          |
| 30-day P <sub>99</sub> | 0.72         |
| Mean                   | 0.60         |
| Std                    | 0.27         |
| Sample size            | 208          |
| Range                  | 0.22 - 1.71  |

#### **PART 4 – WATER QUALITY-BASED EFFLUENT LIMITATIONS FOR THERMAL**

Surface water quality standards for temperature took effect on October 1, 2010. These regulations are detailed in chs. NR 102 (Subchapter II – Water Quality Standards for Temperature) and NR 106 (Subchapter V – Effluent Limitations for Temperature) of the Wisconsin Administrative Code. Daily maximum and weekly average temperature criteria are available for the 12 different months of the year depending on the receiving water classification.

Due to the amount of upstream flow available for dilution in the limit calculation ( $Q_s:Q_e > 20:1$ ), the lowest calculated limitation is 120° F as a daily maximum as described in s. NR 106.55(6)(a), Wis. Adm. Code. At temperatures above approximately 103° F, conventional biological treatment systems do not function properly and experience upsets. There is no indication that this has ever occurred in this treatment system, so there is no reasonable potential for the discharge to exceed this limit. **Therefore, temperature limits or monitoring are not recommended during the reissued permit term.**

**PART 5 – 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<sub>50</sub> (Lethal Concentration to 50% of the test organisms) greater than 100% effluent, according to s. NR 106.09(2)(b), Wis. Adm Code.
- Chronic testing is usually not recommended where the ratio of the 7-Q<sub>10</sub> to the effluent flow exceeds 100:1. For the City of Parks Falls, that ratio is approximately 159:1. With this amount of dilution, there is believed to be little potential for chronic toxicity effects in the North Fork Flambeau River associated with the discharge from the City of Parks Falls. **Therefore, the need for chronic WET testing will not be considered further.**
- 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.
- Shown below is a tabulation of all available WET data for Outfall 001. Efforts are made to ensure that decisions about WET monitoring and limits are made based on representative data, as specified in s. NR 106.08(3), Wis. Adm Code. Data which is not believed to be representative of the discharge was not included in reasonable potential calculations. The table below differentiates between tests used and not used when making WET determinations. Significant changes were made to WET test methods in 2004 and these changes were assumed to be fully implemented by certified labs by no later than June 2005. Therefore, WET tests conducted from June 2005 to present are included in the table below:

**WET Data History**

| Date<br>Test<br>Initiated | Acute Results<br>LC <sub>50</sub> % |                   |                  |                | Footnotes<br>or<br>Comments |
|---------------------------|-------------------------------------|-------------------|------------------|----------------|-----------------------------|
|                           | <i>C. dubia</i>                     | Fathead<br>minnow | Pass or<br>Fail? | Used in<br>RP? |                             |
| 10/26/2005                | >100                                | >100              | Pass             | Yes            |                             |
| 08/16/2006                | >100                                | >100              | Pass             | Yes            |                             |
| 09/15/2010                | >100                                | >100              | Pass             | No             | 1                           |
| 04/18/2012                | >100                                | >100              | Pass             | Yes            |                             |
| 05/03/2017                | >100                                | >100              | Pass             | Yes            |                             |
| 07/18/2018                | >100                                | >100              | Pass             | Yes            |                             |
| 08/10/2021                | >100                                | >100              | Pass             | Yes            |                             |

## Attachment #1

### Footnotes:

1. *Tests done by S-F Analytical, July 2008 – March 2011.* The DNR has reason to believe that WET tests completed by SF Analytical Labs from July 2008 through March 31, 2011 were not performed using proper test methods. Therefore, WET data from this lab during this period has been disqualified and was not included in the analysis.
- According to s. NR 106.08, Wis. Adm. Code, WET reasonable potential is determined by multiplying the highest toxicity value that has been measured in the effluent by a safety factor, to predict the likelihood (95% probability) of toxicity occurring in the effluent above the applicable WET limit. The safety factor used in the equation changes based on the number of toxicity detects in the dataset. The fewer detects present, the higher the safety factor, because there is more uncertainty surrounding the predicted value. WET limits must be given, according to s. NR 106.08(6), Wis. Adm. Code, whenever the applicable Reasonable Potential equation results in a value greater than 1.0.

$$\text{Acute Reasonable Potential} = [(TUa \text{ effluent}) (B)]$$

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

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

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**

|                                       | <b>Acute</b>                                                                                                                                                    |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>AMZ/IWC</b>                        | Not applicable.<br><b>0 Points</b>                                                                                                                              |
| <b>Historical Data</b>                | Six tests used to calculate RP.<br>No tests failed.<br><b>0 Points</b>                                                                                          |
| <b>Effluent Variability</b>           | Little variability, no violations or upsets, consistent WWTF operations.<br><b>0 Points</b>                                                                     |
| <b>Receiving Water Classification</b> | WWSF community.<br><b>5 Points</b>                                                                                                                              |
| <b>Chemical-Specific Data</b>         | No reasonable potential for limits based on ATC; Ammonia nitrogen limit carried over from the current permit.<br>Chromium, copper, zinc, and chloride detected. |

## Attachment #1

|                                                           | <b>Acute</b>                                                                                                                     |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|                                                           | No additional compounds of concern.<br><b>3 Points</b>                                                                           |
| <b>Additives</b>                                          | One biocide and 3 water quality conditioners added.<br>Permittee has proper P chemical SOPs in place:<br>No.<br><b>21 Points</b> |
| <b>Discharge Category</b>                                 | No industrial contributors.<br><b>0 Points</b>                                                                                   |
| <b>Wastewater Treatment</b>                               | Secondary or better.<br><b>0 Points</b>                                                                                          |
| <b>Downstream Impacts</b>                                 | No impacts known.<br><b>0 Points</b>                                                                                             |
| <b>Total Checklist Points:</b>                            | <b>29 Points</b>                                                                                                                 |
| <b>Recommended Monitoring Frequency (from Checklist):</b> | Three acute tests during permit term.                                                                                            |
| <b>Limit Required?</b>                                    | No.                                                                                                                              |
| <b>TRE Recommended? (from Checklist)</b>                  | No.                                                                                                                              |

- After consideration of the guidance provided in the Department's *WET Program Guidance Document* (2022) and other information described above, **3x acute 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.
- **If a satisfactory phosphorus chemical SOP is established and implemented at the facility prior to permit reissuance, then acute WET testing is not recommended in the reissued permit.**

