

# Permit Fact Sheet

## General Information

|                                 |   |          |
|---------------------------------|---|----------|
| Permit Number:                  | WI-0060925-11-0   |          |
| Permittee Name:                 | Stone Lake Sanitary District  |          |
| Address:                        | P.O. Box 193  |          |
| City/State/Zip:                 | Stone Lake WI 54876   |          |
| Discharge Location:             | Stone Lake Road, Stone Lake, Wisconsin (SW¼ - NE¼ of Section 13; T39N-R10W)   |          |
| Receiving Water:                | The Groundwater within the Trego Lake and Middle Namekagon River Watershed in the St. Croix River Drainage Basin in Washburn County |          |
| Discharge Type:                 | Existing seasonal discharges  |          |
| Design Flow(s)                  | Annual Average  | 0.03 MGD |
| Significant Industrial Loading? | No  |          |
| Operator at Proper Grade?       | Yes   |          |
| Approved Pretreatment Program?  | N/A   |          |

## Facility Description

Stone Lake Sanitary District owns and operates a domestic wastewater treatment system. The plant designed to treat 30,000 gallons per day, currently treats an average of 14,000 gallons per day (2019- 2023 data). The treatment system consists of two clay-lined stabilization ponds operated in series. In each pond naturally occurring bacteria already in the wastewater treat the waste stream by metabolizing the organic matter. From the ponds the treated water (called effluent) is discharged intermittently to a seepage cell. Due to the large capacity of the stabilization ponds and pond leakage effluent is discharged to the seepage cells on average two days each year in October. The sandy soil in the bottom of the seepage cell continues to treat the water as it percolates through the soil eventually reaching groundwater. There are three monitoring wells located around the seepage cells that can be used to assess any groundwater impacts of the discharge.

## Substantial Compliance Determination

There have been no formal enforcement actions, effluent exceedances, or missed samples during the permit term.

After a desk top review of all discharge monitoring reports, CMARS, CMOM, and a site visit on June 23, 2023, by Arthur Ryzak, WDNR, the Stone Lake Sanitary District has been found to be in substantial compliance with their current permit.

Compliance determination entered by Arthur Ryzak, Compliance Engineer, on June 30, 2023.

| Sample Point Designation |  |  |
|--------------------------|--|--|
| Sample Point Number      | Discharge Flow, Units, and Averaging Period                    | Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)              |
| 701                      | <b>INFLUENT</b><br>An average of 0.014 MGD<br>(2019-2023 data) | Representative influent samples shall be collected at the main lift station, located on Division Street. |
| 001                      | <b>EFFLUENT</b><br>An average of 0.296 MGD during periods      | Representative samples shall be collected at the end of the  |

| Sample Point Designation |   |   |
|--------------------------|---|---|
| Sample Point Number      | Discharge Flow, Units, and Averaging Period                     | Sample Point Location, Waste Type/Sample Contents and Treatment Description (as applicable)   |
|                          | of discharge. On average two days each October (2019-2023 data) | discharge pipe into the seepage cell.   |
| 002                      | <b>SLUDGE</b><br>Sludge has not been removed from the facility. | Sludge samples shall be collected from the two stabilization ponds at a time and in a manner that will provide a representative sample for analysis. Removal of sludge from the ponds is not anticipated during this permit term. |

| Sample Point Designation For Groundwater Monitoring Systems |   |
|---|---|
| Sample Pt & Well Name                                       | Comments  |
| 802 (MW 2)  | Non-point of standard down gradient well located northwest of the seepage cell. |
| 803 (MW 3)  | Non-point of standard side gradient well located south of pond 2.               |
| 804 (MW 4)  | Upgradient well used to calculated PALs located east of pond 1.                 |

## 1 Influent – Monitoring Requirements

### 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            | Total Daily          |   |
| BOD5, Total                             |            | mg/L            | 2/Month          | 24-Hr Flow Prop Comp |   |
| Suspended Solids, Total                 |            | mg/L            | 2/Month          | 24-Hr Flow Prop Comp |   |
| Nitrogen, Total Kjeldahl                |            | mg/L            | Monthly          | 24-Hr Flow Prop Comp |   |
| Nitrogen, Organic Total                 |            | mg/L            | Monthly          | Calculated           | Organic nitrogen = TKN (mg/L) - Ammonia nitrogen (mg/L) |
| Nitrogen, Ammonia (NH3-N) Total         |            | mg/L            | Monthly          | 24-Hr Flow Prop Comp |   |

## Changes from Previous Permit:

Influent limitations and monitoring requirements were re-evaluated for the proposed permit term and no changes were required in this permit section. Sampling requirements and frequencies are the same as the previous permit.

## Explanation of Limits and Monitoring Requirements

Influent monitoring is needed to assess loading to the facility and treatment performance. The parameters and sampling frequency are appropriate for a land treatment system (s. NR 206.09(2), Wis. Adm. Code).

## 2 Land Treatment – Monitoring and Limitations

### Sample Point Number: 001- EFFLUENT TO SEEPAGE POND

| Monitoring Requirements and Limitations |             |                 |                  |             |   |
|---|-------------|-----------------|------------------|-------------|---|
| Parameter                               | Limit Type  | Limit and Units | Sample Frequency | Sample Type | Notes   |
| Flow Rate                               |             | MGD             | Daily            | Total Daily |   |
| BOD5, Total                             | Monthly Avg | 50 mg/L         | 2/Month          | Grab        |   |
| Solids, Total Dissolved                 |             | mg/L            | 2/Month          | Grab        |   |
| pH Field                                |             | su              | 2/Month          | Grab        |   |
| Nitrogen, Total Kjeldahl                |             | mg/L            | Monthly          | Grab        |   |
| Nitrogen, Organic Total                 |             | mg/L            | Monthly          | Calculated  | Organic nitrogen = TKN (mg/L) - Ammonia nitrogen (mg/L)           |
| Nitrogen, Ammonia (NH3-N) Total         |             | mg/L            | Monthly          | Grab        |   |
| Nitrogen, Nitrite + Nitrate Total       |             | mg/L            | Monthly          | Grab        |   |
| Chloride                                |             | mg/L            | Monthly          | Grab        |   |
| Nitrogen, Total                         |             | mg/L            | Monthly          | Calculated  | Total nitrogen = TKN (mg/L) + (Nitrite + Nitrate) nitrogen (mg/L) |

## Changes from Previous Permit:

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

The monitoring frequency for Total Kjeldahl Nitrogen, Total Organic Nitrogen, Total Ammonia Nitrogen, Total Nitrite + Nitrate Nitrogen and Total Nitrogen has been reduced from twice a month to monthly.

## Explanation of Limits and Monitoring Requirements

All requirements for land treatment of municipal wastewater are determined in accordance with NR 206 Wis. Adm. Code. The monitoring frequency and limits for Flow, BOD5, Suspended Solids, Dissolved Solids, Chloride and pH have not changed from the previous permit term. All categorical limits are based on NR 206.08(1) Wis. Adm. Code. More information on the limitations can be found in the “Stone Lake Sanitary District – Land Disposal System Evaluation Report, WPDES Permit # WI-0060925” memo dated May 2, 2024.

**BOD** – Limitations are consistent with facilities approved or modified prior to January 1, 1985 (NR 206.05 Wis. Adm. Code). Monitoring for BOD5 is included to track changes in wastewater characteristics and to assess the organic load discharged to the treatment system.

**Nitrogen monitoring frequency** – Approximately 25 years ago (6<sup>th</sup> reissuance) the department waived groundwater monitoring. To document compliance nitrogen monitoring (Total Kjeldahl Nitrogen, Total Organic Nitrogen, Total Ammonia Nitrogen, Total Nitrite + Nitrate Nitrogen and Total Nitrogen) was required twice a month. Groundwater monitoring is being reinstated this permit term; therefore, the monitoring frequency can be reduced to match the influent frequencies.

**Sampling Frequency** - The “Monitoring Frequencies for Individual Wastewater Permits” guidance document (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 fairness and 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. The department has determined at this time that the facility meets the guidance and no changes in the monitoring frequency is required this permit term.

## 3 Groundwater – Monitoring and Limitations

### 3.1 Groundwater Monitoring System for Stone Lake Groundwater Monitoring System

**Location of Monitoring system:** Located around the treatment units.

**Wells to be Monitored:** 802 (MW 2), 803 (MW 3), 804 (MW 4)

**Well Used To Calculate PALs:** 804 (MW 4)

**Point of Standards Application Well(s):** None of the identified wells meet the criteria to be a point of standard well.

| Parameter                                    | Units    | Preventative Action Limit | Enforcement Standard | Frequency |
|--|----------|---------------------------|----------------------|-----------|
| Depth To Groundwater                         | feet     | *****                     | N/A                  | 2/Year    |
| Groundwater Elevation                        | feet MSL | *****                     | N/A                  | 2/Year    |
| Nitrogen, Nitrite + Nitrate (as N) Dissolved | mg/L     | 2.0                       | 10                   | 2/Year    |
| Chloride Dissolved                           | mg/L     | 125                       | 250                  | 2/Year    |
| pH Field                                     | su       | *****                     | N/A                  | 2/Year    |
| Nitrogen, Total Kjeldahl Dissolved           | mg/L     | *****                     | N/A                  | 2/Year    |

|                             |      |       |     |        |
|-----------------------------|------|-------|-----|--------|
| Nitrogen, Ammonia Dissolved | mg/L | 0.97  | 9.7 | 2/Year |
| Nitrogen, Organic Dissolved | mg/L | ***** | N/A | 2/Year |
| Solids, Total Dissolved     | mg/L | ***** | N/A | 2/Year |

### Changes from Previous Permit:

Groundwater limitations and monitoring requirements were re-evaluated for the proposed 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.

- Groundwater monitoring has been reinstated for monitoring well 802, 803 and 804.
- Preventative Action Limits (PALs) and Enforcement Standards (ES) found in NR 140.10 Table 1 and NR 140.12 Table 2, Wis. Adm. Code have been included.

### Explanation of Limits and Monitoring Requirements

Groundwater limits and requirements are determined in accordance with ch NR 140 Wis. Adm. Code. Indicator parameter Preventative Action Limit (PAL) values are established per ch NR 140.20 Wis. Adm. Code. For more information, please refer to the “Stone Lake Sanitary District – Land Disposal System Evaluation Report, WPDES Permit # WI-0060925” memo dated May 2, 2024

Groundwater monitoring was waived in the 6th permit reissuance (approximately 25 years ago). This waiver was allowed because it was felt the effluent met groundwater standards. Even though the department can reduce groundwater sampling a full waiver from sampling is not an option (s. NR 206.10 Wis. Adm. Code). Therefore, sampling of all three monitoring wells is needed to determine compliance with ch. NR140 Wis. Adm. Code. Sampling guidelines can be found in the Groundwater Sampling Field Manual, PUBL-DG-038 96, WDNR Publication, 1996 (<https://dnr.wisconsin.gov/sites/default/files/topic/DrinkingWater/Publications/DG038.pdf>).

Because there isn’t historic monitoring results, PAL and ES per ss. NR 140.10 and NR 140.12 Wis. Adm. Code have been applied for the parameters (Nitrite + Nitrate Nitrogen Dissolved, Dissolved Chloride, and Ammonia Nitrogen Dissolved). Indicator parameter groundwater limits and exemptions (including ACLs) will be calculated during the next permit reissuance using background groundwater sample results. Any exceedances will be evaluated in conjunction with the background groundwater sample results per s. NR 140.24 Wis. Adm. Code.

## 4 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 has not been removed 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, during the most recent set of samples (2023) the result was 0.988 pCi/L. |                       |                              |  |                          |              |  |
| If yes, special monitoring and recycling conditions will be included in the permit to track any potential problems in                                       |                       |                              |  |                          |              |  |

| 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) |
| land applying sludge from this facility   |                       |                              |                           |                          |              |  |
| Is a priority pollutant scan required? No   |                       |                              |                           |                          |              |  |
| Priority pollutant scans are required once every 10 years at facilities with design flows between 5 MGD and 40 MGD, and once every 5 years if design flow is greater than 40 MGD. |                       |                              |                           |                          |              |  |

### Sample Point Number: 002- SLUDGE

| Monitoring Requirements and Limitations |              |                 |                  |             |       |
|---|--------------|-----------------|------------------|-------------|-------|
| Parameter                               | Limit Type   | Limit and Units | Sample Frequency | Sample Type | Notes |
| Solids, Total                           |              | Percent         | Once             | Composite   |       |
| Arsenic Dry Wt                          | Ceiling      | 75 mg/kg        | Once             | Composite   |       |
| Arsenic Dry Wt                          | High Quality | 41 mg/kg        | Once             | Composite   |       |
| Cadmium Dry Wt                          | Ceiling      | 85 mg/kg        | Once             | Composite   |       |
| Cadmium Dry Wt                          | High Quality | 39 mg/kg        | Once             | Composite   |       |
| Copper Dry Wt                           | Ceiling      | 4,300 mg/kg     | Once             | Composite   |       |
| Copper Dry Wt                           | High Quality | 1,500 mg/kg     | Once             | Composite   |       |
| Lead Dry Wt                             | Ceiling      | 840 mg/kg       | Once             | Composite   |       |
| Lead Dry Wt                             | High Quality | 300 mg/kg       | Once             | Composite   |       |
| Mercury Dry Wt                          | Ceiling      | 57 mg/kg        | Once             | Composite   |       |
| Mercury Dry Wt                          | High Quality | 17 mg/kg        | Once             | Composite   |       |
| Molybdenum Dry Wt                       | Ceiling      | 75 mg/kg        | Once             | Composite   |       |
| Nickel Dry Wt                           | Ceiling      | 420 mg/kg       | Once             | Composite   |       |
| Nickel Dry Wt                           | High Quality | 420 mg/kg       | Once             | Composite   |       |
| Selenium Dry Wt                         | Ceiling      | 100 mg/kg       | Once             | Composite   |       |
| Selenium Dry Wt                         | High Quality | 100 mg/kg       | Once             | Composite   |       |
| Zinc Dry Wt                             | Ceiling      | 7,500 mg/kg     | Once             | Composite   |       |
| Zinc Dry Wt                             | High Quality | 2,800 mg/kg     | Once             | Composite   |       |
| Nitrogen, Total Kjeldahl                |              | Percent         | Per Application  | Composite   |       |
| Nitrogen, Ammonia (NH3-N) Total         |              | Percent         | Per Application  | Composite   |       |

| Monitoring Requirements and Limitations |              |                 |                  |             |  |
|---|--------------|-----------------|------------------|-------------|--|
| Parameter                               | Limit Type   | Limit and Units | Sample Frequency | Sample Type | Notes  |
| 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   | Required once in the 2026 calendar year.   |
| PCB Total Dry Wt                        | High Quality | 10 mg/kg        | Once             | Composite   |  |
| PFOA + PFOS                             |              | ug/kg           | Once             | Calculated  | Report the sum of PFOA and PFOS. See PFAS Permits Sections for more information. |

### Changes from Previous Permit:

Sludge limitations and monitoring requirements were re-evaluated for the proposed 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), PCB and PFOA+PFOS monitoring is required during the second full year of the permit term (2026).
- Because it’s recommended that List 2 (Nutrients) are monitored with the 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.

### Explanation of Limits and Monitoring Requirements

Requirements for 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).

**List 2 Nutrient monitoring** – Monitoring for list 2 (nutrients) is highly recommended at the same time as the monitoring of List 1 (metals) in the second full year of the permit (2026). 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).

**PFAS** - The presence and fate of PFAS in municipal and industrial sludges is an emerging public health concern. EPA is currently developing a risk assessment to determine future land application rates and expects to release this risk assessment by the end of 2024. In the interim, the department has developed the “Interim Strategy for Land Application of Biosolids and Industrial Sludges Containing PFAS”.

Collecting sludge data on PFAS concentrations from a wide range of wastewater treatment facilities will help protect public health from exposure to elevated levels of PFAS and determine the department’s implementation of EPA’s

recommendations. To quantitate this risk, PFAS sampling has been included in the proposed WPDES permit pursuant to ss. NR 214.18(5)(b) and NR 204.06(2)(b)9., Wis. Adm. Code.

**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.

## 5 Schedules

### 5.1 Well Locations

| Required Action  | Due Date   |
|--|------------|
| Record the location of each well: If global positioning system (GPS) data for the locations of each monitoring well are not available, the permittee will coordinate and obtain their measurement. These data shall be converted to latitude and longitude in a decimal degrees format. Data should show accuracy to one horizontal foot per NR 141.065(2) Wis. Adm. Code. | 12/31/2024 |

### 5.2 Land Treatment Management Plan

A management plan is required for the land treatment system.

| Required Action  | Due Date   |
|--|------------|
| Land Treatment Management Plan Submittal: Submit an update to the management plan to optimize the land treatment system performance and demonstrate compliance with ch. NR 206, Wis. Adm. Code. The land treatment system shall be operated in accordance with the approved management plan. | 12/31/2024 |

### 5.3 Lagoon Leakage Assessment

| Required Action   | Due Date   |
|---|------------|
| <b>Influent Flow Meter Calibration:</b> Submit a report of the standard operating procedures, including calibration, capable of taking consistent representative influent data. | 03/31/2025 |
| <b>Leakage Report:</b> The permittee shall submit a report evaluating if the lagoons are leaking.   | 12/31/2025 |



|   |            |
|---|------------|
| Evaluation of both influent and effluent data collected, supporting calculations, and determination of leakage rate.  |            |
| <b>Final Lagoon Leakage Report:</b> A written report summarizing the results of the evaluation shall be submitted to the department if the lagoon is found to have sub-standard leakage rate. The report shall include a final compliance plan for mediation of the lagoon system. If construction is planned this report shall include plans and specifications and/or facility plans. | 12/31/2026 |

## 5.4 Sludge Management Plan

| Required Action  | Due Date |
|--|----------|
| <p><b>Submit a Sludge Management Plan:</b> The permittee shall submit a 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 drawdown; 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 Schedules

**Well Locations** - Accurate well information is needed to ensure the requirements of NR 140 Wis. Adm. Code are met.

**Land Treatment Management Plan** - A management plan is a required to update the plan that will outline changes to the land treatment system that will further optimize the efficiencies of the system.

**Lagoon Leakage Assessment** – The treatment pond appears to have been leaking over a long period of time. A study is required to determine to what extent the pond is leaking and to evaluate what repairs should be initiated by the sanitary district.

**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 created in February 2008

“Stone Lake Sanitary District – Land Disposal System Evaluation Report, WPDES Permit # WI-0060925” memo dated May 2, 2024

### Expiration Date:

September 30, 2029

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

N/A – Land treatment facility

**Prepared By: Sheri A. Snowbank      Wastewater Specialist**

**Date:** June 26, 2024

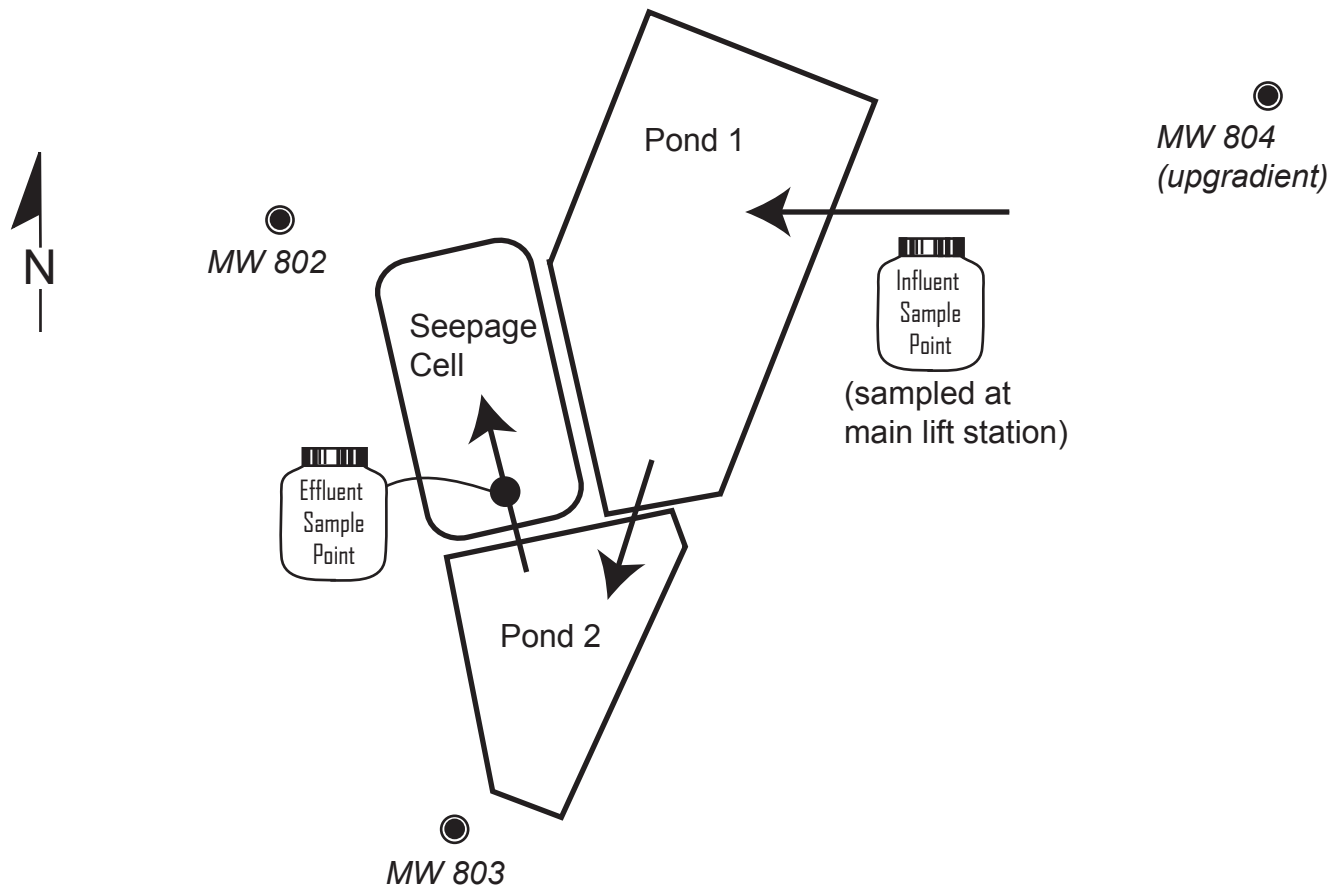
**Date updated based on Factcheck comments:** No comments (8/7/2024)

**Date updated based on public notice comments:**

Notice of reissuance was published in the Sawyer County Record, PO Box 919, Hayward, WI 54843-0919.

## Stone Lake Sanitary District Wastewater Treatment Plant

The Stone Lake wastewater treatment facility consists of two stabilization ponds operated in series and a seepage cell. There are 3 monitoring wells around the perimeter of the system although monitoring will not be required during this permit term. The diagram below shows the treatment units and sampling locations.



- represents monitoring well locations
  - represents sample locations
- NOT TO SCALE

Design Data:  
 Flow: 0.030 MGD  
 BOD: 51 lbs/day  
 Suspended Solids: 66 lbs/day  
 Construction Yr: 1976

DATE: May 2, 2024

FILE REF: 7204

TO: File

FROM: Woody Myers - WCR



SUBJECT: Stone Lake Sanitary District - Land Disposal System Evaluation Report, WPDES Permit # WI-0060925

**Site Information**

Stone Lake Sanitary District, a municipal facility is located on Stone Lake Road, Stone Lake, Washburn County. Wastewater is currently treated and discharged to groundwater via absorption ponds (seepage cells) located in the E ½ of the NE ¼ of Section 13, T39N, R10W, Town of Stone Lake.

**Land Disposal Effluent & Groundwater Evaluation Summary**

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

| Parameter                   | Current Permit<br>WI-0060925-10 |             | Proposed Permit<br>WI-0060925-11 |             |
|-----------------------------|---------------------------------|-------------|----------------------------------|-------------|
|                             | Limits and Units                | Limit Type  | Limits and Units                 | Limit Type  |
| Flow Rate                   | - MGD                           |             | - MGD                            |             |
| BOD <sub>5</sub>            | 50 mg/l                         | Monthly Avg | 50 mg/l                          | Monthly Avg |
| Total Suspended Solids      | - mg/l                          |             | - mg/l                           |             |
| pH, Field                   | - su                            |             | - su                             |             |
| Nitrogen, Total Kjeldahl    | - mg/l                          |             | - mg/l                           |             |
| Nitrogen, Organic           | - mg/l                          |             | - mg/l                           |             |
| Nitrogen, Ammonia           | - mg/l                          |             | - mg/l                           |             |
| Nitrogen, Nitrite + Nitrate | - mg/l                          |             | - mg/l                           |             |
| Total Dissolved Solids      | - mg/l                          |             | - mg/l                           |             |
| Chloride                    | - mg/l                          |             | - mg/l                           |             |
| Nitrogen, Total             | - mg/l                          |             | - mg/l                           |             |

No proposed permit changes

**Table 2 Monitoring Wells**

| Well       | Current Permit<br>WI-0060925-10 |                  | *Proposed Permit<br>WI-0060925-11 |                  |
|------------|---------------------------------|------------------|-----------------------------------|------------------|
|            | Well Location                   | Well Designation | Well Location                     | Well Designation |
| 802 (MW 2) | Not required                    |                  | Down Gradient                     | Not Designated   |
| 803 (MW 3) |                                 |                  | Side-gradient                     | Not Designated   |
| 804 (MW 4) |                                 |                  | Up-gradient                       | Background       |

\* Proposed permit changes

**Table 3 Groundwater Quality Standards**

| Parameter                   | Current Permit<br>WI-0060925-10 |    | *Proposed Permit<br>WI-0060925-11 |           |
|-----------------------------|---------------------------------|----|-----------------------------------|-----------|
|                             | PAL                             | ES | PAL                               | ES        |
| Depth to Groundwater        | Not Required                    |    | N/A                               | N/A       |
| Groundwater Elevation       |                                 |    | N/A                               | N/A       |
| Nitrogen, Nitrite + Nitrate |                                 |    | 2.0 mg/l                          | 10.0 mg/l |
| Chloride                    |                                 |    | 125 mg/l                          | 250 mg/l  |
| pH, Field                   |                                 |    | - su                              | N/A       |
| Nitrogen Total Kjeldahl     |                                 |    | N/A                               | N/A       |
| Nitrogen, Ammonia           |                                 |    | 0.97 mg/l                         | 9.7 mg/l  |
| Nitrogen, Organic           |                                 |    | - mg/l                            | N/A       |
| Total Dissolved Solids      |                                 |    | - mg/l                            | N/A       |

\* Proposed permit changes

**Geology**

The bedrock under this facility is the undivided Trempealeau, Tunnel City and Elk Mound Groups. The Trempealeau Group includes the Jordan and St. Lawrence Formations, the Tunnel City Group includes the Lone Rock Formation and the Elk Mound Group includes the Wonewoc, Eau Claire and Mount Simon Formations. These groups are comprised of sandstone with minor occurrences of dolomite (*Bedrock Geology of Wisconsin, Regional Map Series Northwest Sheet*, Wisconsin Geological and Natural History Survey (WGNHS), 1987). Bedrock is anticipated to be greater than 200 feet below ground surface (bgs) (*Depth to Bedrock in Wisconsin*, WGNHS, 1973). The regolith consists of material ranging from fine gravel to sand. Surface soil primarily consists of the Rosholt sandy loam and the Keweenaw-Pence complex (USDA NRCS Web Soil Survey).

**Hydrogeology**

Depth to groundwater and groundwater elevations were not measure/calculated during this permit term. Regional groundwater is to the Northwest in this area of Washburn County (*Mean Elevation of Water Table*, Map, United States Department of Interior, 1968). The site is approximately 800 feet southeast of Godfrey Creek and 3,500 feet northeast of Little Stone Lake. There are three wells (municipal, other than municipal, private and high-capacity) within a 1,500-foot range of this facility’s groundwater discharge.

**Land Disposal Effluent Quality and Loading Rates**

The following table is the average flow (hydraulic loading), ammonia as nitrogen, chloride and BOD<sub>5</sub> loading summations for the Land Disposal System.

**Table 4 Land Treatment Disposal Loading Averages**

| Year | Flow (MGD) | Ammonia (mg/l) | Chloride (mg/l) | BOD <sub>5</sub> (mg/l) |
|------|------------|----------------|-----------------|-------------------------|
| 2023 | 0.339      | 2.4            | 33              | 16                      |
| 2022 | 0.090      | 0.5            | 186             | 19                      |
| 2021 | 0.094      | 11.9           | 69              | 21                      |
| 2020 | 0.226      | 0.4            | 47              | 5                       |
| 2019 | 0.769      | 1.4            | 5               | 3                       |

**Groundwater Monitoring System and Sampling Frequency**

All parameters are analyzed for the dissolved phase in groundwater. Established groundwater quality standards are found in Table 1 Public Health Groundwater Quality Standards s. NR 140.10 Wis. Adm. Code, and Table 2 Public Welfare Groundwater Standards s. NR 140.12 Wis. Adm. Code. The thresholds of these standards are the Enforcement Standard (ES) and the Preventative Action Limit (PAL).

**Table 5 Groundwater Monitoring Well Data**

| Sample Point | Well Name | Elevation (feet above msl) |                |            |               | Length (feet) |            | Well Type |
|--------------|-----------|----------------------------|----------------|------------|---------------|---------------|------------|-----------|
|              |           | Casing Top                 | Ground Surface | Screen Top | Screen Bottom | Screen Length | Well Depth |           |
| 802          | MW 2      | 1359.68                    |                |            |               |               | 82.8       | WT        |
| 803          | MW 3      | 1360.82                    |                |            |               |               | 86.2       | WT        |
| 804          | MW 4      | 1359.80                    |                |            |               |               | 71.1       | WT        |

All measurements in feet  
 WT-Water table Observation P-Piezometer O-Other

Groundwater sampling results are analyzed for each well to evaluate trends of the regulated compounds in groundwater and to calculate PALs for s. NR 140.22 Wis. Adm. Code Indicator Parameters and to evaluate potential exemptions under s. NR 140.28 Wis. Adm. Code. Groundwater samples were not collected during past permit terms.

**Proposed Groundwater Monitoring Requirements**

**Table 6 Groundwater Quality Sampling Frequency and Limits  
 Outfall 001 Permit WI-0060003-11**

| Sample Point                | Well Name | *Sample Frequency | Well Designation |
|-----------------------------|-----------|-------------------|------------------|
| 802                         | MW 2      | Semi-annually     | Not Designated   |
| 803                         | MW 3      | Semi-annually     | Not Designated   |
| 804                         | MW 4      | Semi-annually     | Background       |
| *Parameter                  | PAL       | ES                | Source           |
| Depth to Groundwater        | N/A       | N/A               | Measured         |
| Groundwater Elevation       | N/A       | N/A               | Measured         |
| Nitrogen, Nitrite + Nitrate | 2.0 mg/l  | 10.0 mg/l         | NR 140 Table 1   |
| Chloride                    | 125 mg/l  | 250 mg/l          | NR 140 Table 2   |
| pH, Field                   | N/A       | N/A               | Calculated       |
| Nitrogen, Kjeldahl          | N/A       | N/A               | Measured         |
| Nitrogen, Ammonia           | 0.97 mg/l | 9.7 mg/l          | NR 140 Table 1   |
| Nitrogen, Organic           | N/A       | N/A               | Calculated       |
| Total Dissolved Solids      | N/A       | N/A               | Calculated       |

\* Proposed permit changes

**Indicator Parameter PALs and Groundwater Exemptions**

Indicator parameter groundwater limits and exemptions (including ACLs) are calculated using background groundwater sample results. Because no sample results were collected a calculation is not possible. The ss. NR 140.10 and NR 140.12 Wis. Adm. Code PALs and ESs have been applied for the appropriate parameters. Any exceedances observed during the next permit term will be evaluated in conjunction with the background groundwater sample results per s. NR 140.24 Wis. Adm. Code.

## **Conclusions**

In the past the facility had been given a waiver from collecting and analyzing groundwater samples. The three groundwater monitoring wells are still in place and appear to be competent. The department can reduce groundwater sampling if proper facility conditions exist, however a full waiver for sampling is not an option per s. NR 206.10 Wis. Adm. Code. Groundwater sampling is needed to determine compliance with ch. NR140 Wis. Adm. Code regulations.

The three groundwater monitoring wells should be sampled per *Groundwater Sampling Field Manual*, PUBL-DG-038 96, WDNR Publication, 1996, at the frequency and for the parameters listed in Table 6 of this report.

No changes to the effluent sampling parameters or their limits are recommended.

No indicator parameter PALs or exemptions could be calculated due to lack of sampling.

## **Compliance Schedule Recommendations**

The s. NR 206.07 (2)(h) 1. Wis. Adm. Code requires a land disposal management plan for facilities with land disposal systems. The facility should review their plan within 90 days of permit reissuance and any revisions should be submitted to the department for approval.

The groundwater monitoring well latitude/longitude need to be provided in decimal degrees. These should be provided to the department within 90 days after the permit reissuance.