Hensall Sewage Lagoon and Collection System Annual Performance Report

Prepared For:
The Municipality of Bluewater

Operating Authority:

OCWA
ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Reporting Period of January 1 – December 31, 2024

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Overview

The following report was prepared by Ontario Clean Water Agency on behalf of The Municipality of Bluewater in accordance with:

- Condition 11(4) (a) through (m) cited in Environmental Compliance Approval (ECA) #A-500-4203225238 issued May 8, 2024, to The Corporation of the Municipality of Bluewater.
- Schedule E (4) cited in Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) #045-W601 issued June 20, 2023, to The Corporation of the Municipality of Bluewater.

System Process Description

The Hensall Sewage Lagoon is located at 39868 Rodgerville Road, Hensall, Ontario. The facility has a rated capacity of 980 m^3/d and is comprised of the following components:

- Wastewater collection (WWC) system and sewage pumping station (SPS)
- Three facultative lagoons with supplementary treatment
- Intermittent Sand Filters (ISF)

Raw Wastewater Collection

Raw sewage flows by gravity through the collection system to the Richmond Street SPS. The Richmond Street SPS has two submersible pumps that pump sewage to the Hensall Sewage Lagoon through a 200 mm forcemain. Milltronics monitor wet well levels, which control the start/stop cycle of all pumps and alarms. The station has a 250 mm overflow that discharges into a municipal drain and a standby generator.

Sewage Lagoons

Sewage comes through an inlet structure with three weirs. Sewage flows over the weirs to enter the lagoon cells. Flow over the weirs can be blocked by placing stop-gates to prevent flow into any individual cell. Generally, Cells 1 and 3 operate in parallel with raw sewage divided equally between both cells. Sewage then overflows to Cell 2. There is a minimum total hydraulic retention time of 60 days and sufficient storage to store the inflow during the freezing period when the sand filters cannot operate.

Aluminum sulfate is added to the lagoons to coagulate suspended particles in the sewage. The coagulated particles grow to sufficient size where they readily settle. This assists in removing phosphorous from the wastewater before being discharged from the lagoon.

Intermittent Sand Filters (ISF)

The ISF provides filtration and treatment of effluent from the lagoon cells during the non-freezing periods. The filters are a two-cell system where either of the filter beds can be operational while the other is removed from service and still maintain the design capacity of the facility. Effluent from the ISF is fed by gravity to a discharge chamber and then into Black Creek.

System Facts:

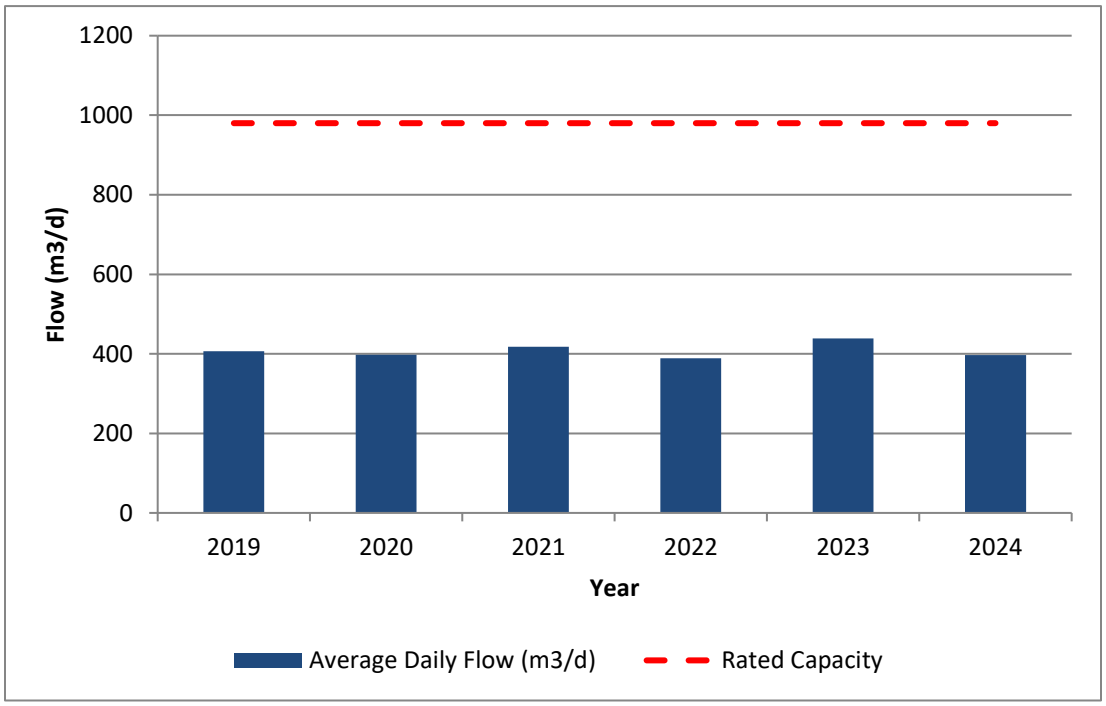
Environmental Compliance Approval	#A-500-4203225238 (issued May 8, 2024)
CLI Environmental Compliance Approval	#045-W601 (issued June 20, 2023)
Rated Capacity	980 m^3/d
Receiving Water	Black Creek

The Hensall Sewage Lagoon and WWC system was operated in accordance with the provincial regulations as required in ECA #A-500-4203225238 and CLI-ECA #045-W601.

Influent and Effluent Flow Monitoring

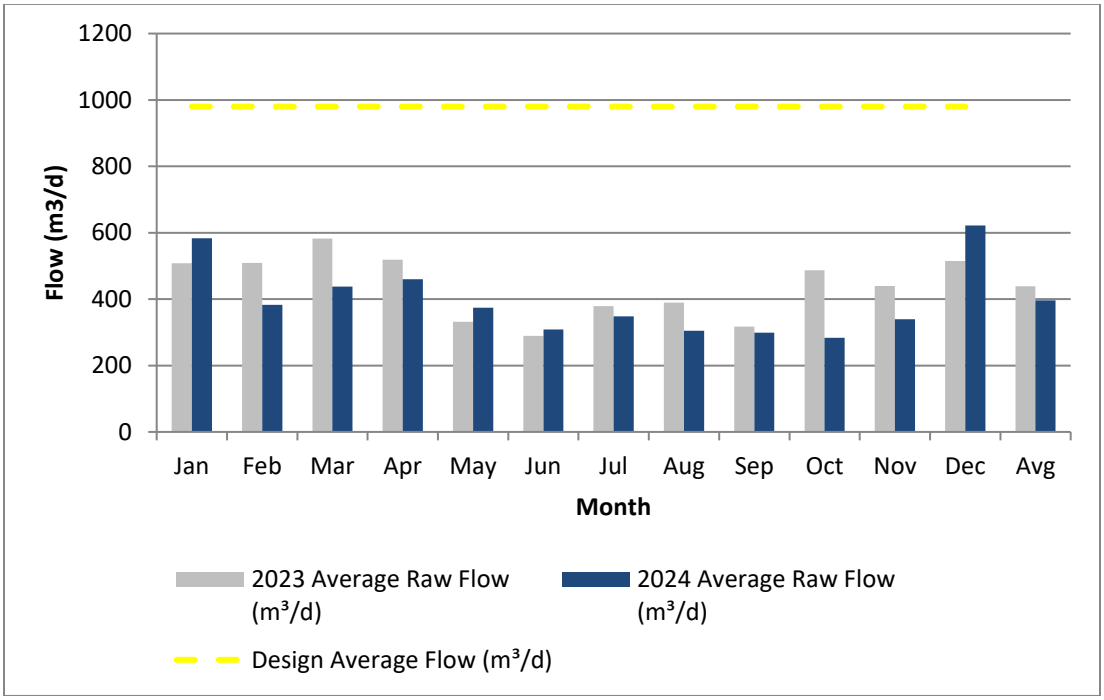
The Hensall Sewage Lagoon is rated to treat an average daily flow of 980 m^3. Refer to Figure 1 for a comparison of the average daily flow for the last six years against the rated capacity. The Hensall Sewage Lagoon is currently at 40% of the rated capacity of 980 m^3/d.

Figure 1: *Influent Flows 2019-2024*



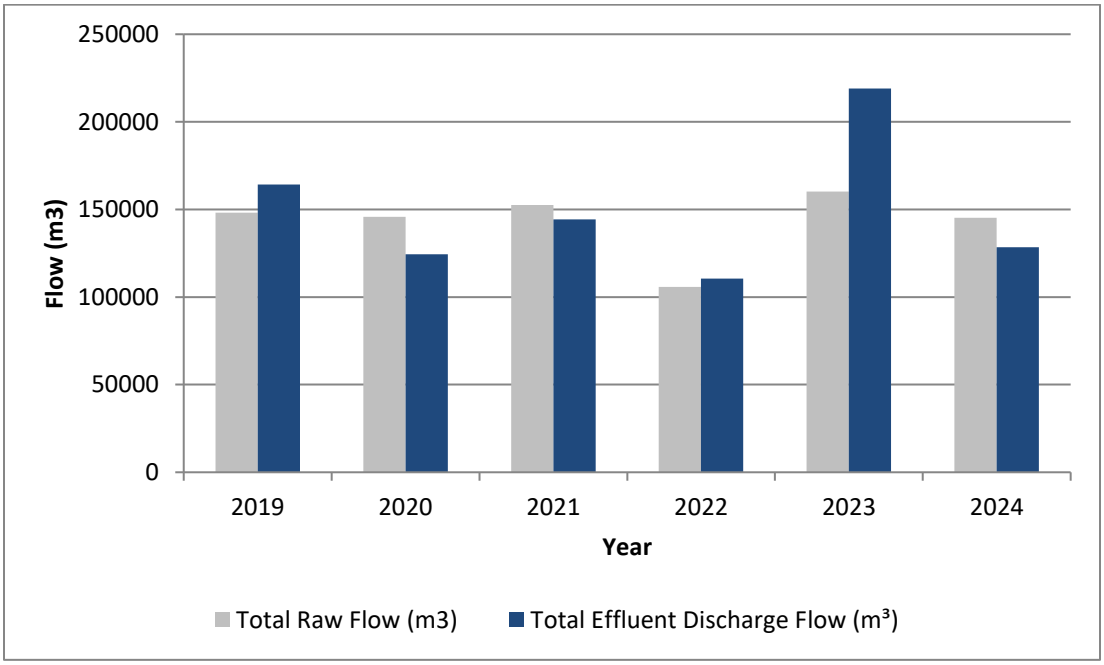
The raw sewage average daily flow was 397 m^3/d in 2024 and 439 m^3/d in 2023. This 10% annual decrease is attributed to drier weather. Refer to Figure 2 for 2023 and 2024 average daily flows by month and corresponding annual averages.

Figure 2: *Average Daily Flows by Month*



Refer to Figure 3 for the total raw and effluent flow in 2023 and 2024. Variances in effluent flow are due to raw incoming flow volumes and the corresponding amount of contents in the lagoons.

Figure 3*: Total Raw and Effluent Flow 2019-2024*

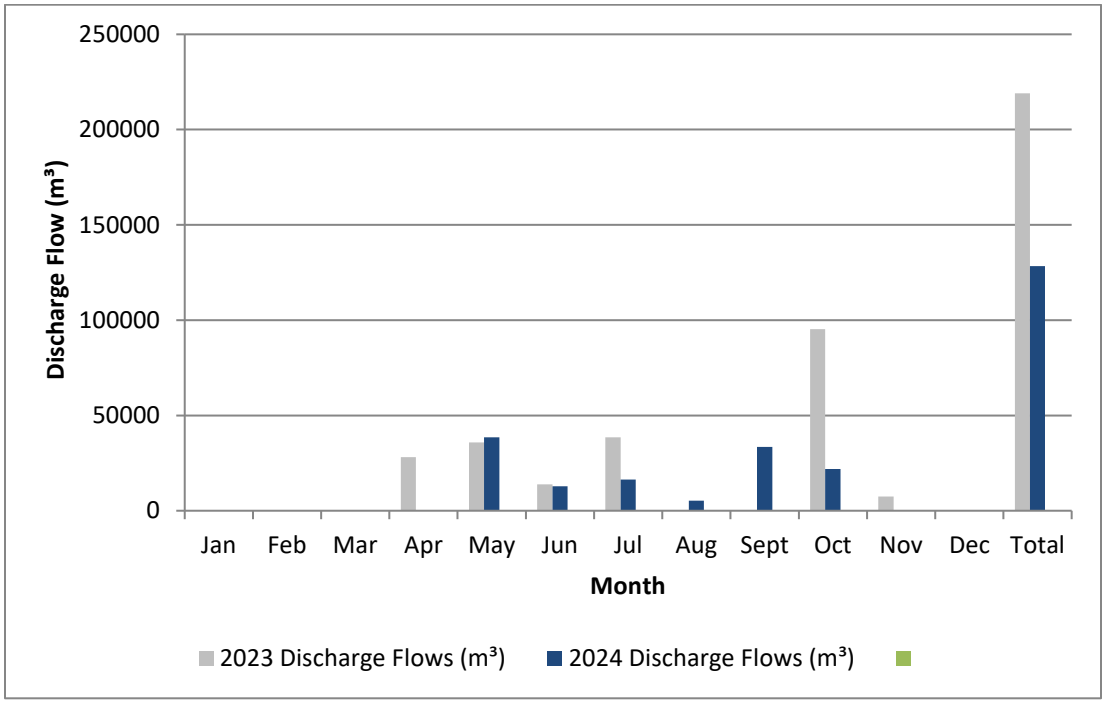


In 2024, the Hensall Sewage Lagoon discharged 128 372 m^3 of effluent. This 41% decrease from 2023 is consistent with reduced raw inflow in 2024. The average daily discharge flow was 910 m^3/d in 2024 versus 1214 m^3/d in 2023.

The maximum daily discharge flow in 2024 was 3990 m^3 recorded on May 6, 2024. This exceeded the maximum daily hydraulic loading rate on the ISF of 3615 m^3/d as required in the ECA. This non-compliance was reported to the MECP. For details, see 'Summary of Efforts Made to Achieve Design Objectives'.

Discharge periods in 2024 included: May 6 to May 31, June 17 to August 9, and September 9 to October 18. Periods when the discharge was off was due to rest/maintenance of the ISF. Refer to Figure 4 for final effluent total monthly flows for 2023 and 2024.

Figure 4*: Final Effluent Total Monthly Flows*



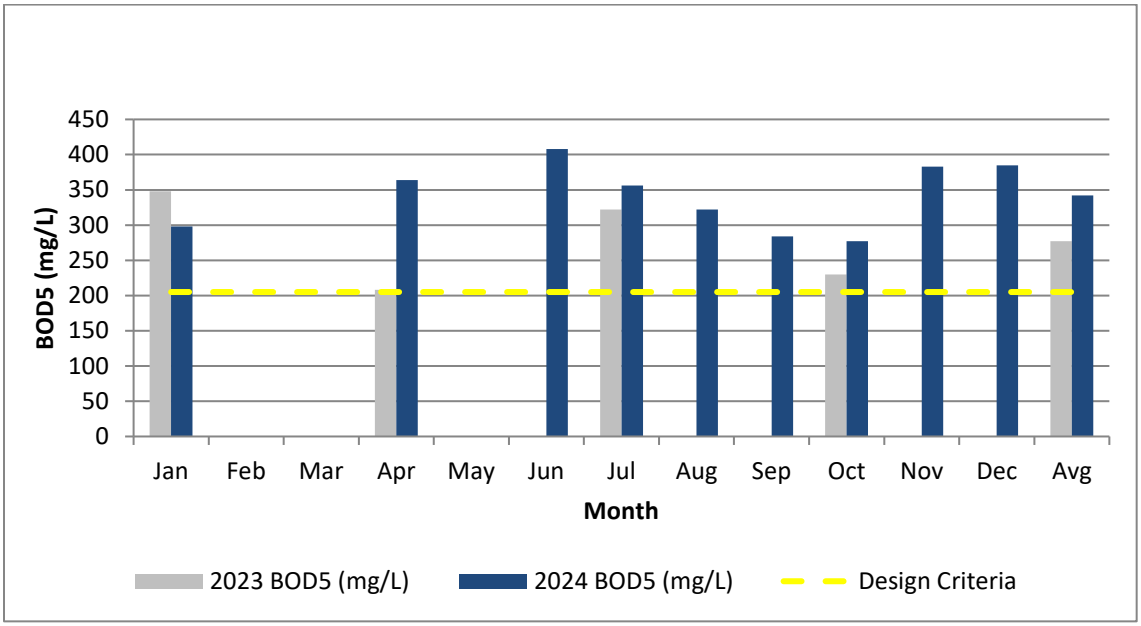
Influent Data

Influent is monitored through a grab sample for Biological Oxygen Demand (BOD_5), Total Suspended Solids (TSS), Total Phosphorous (TP), and Total Kjeldahl Nitrogen (TKN). Prior to the new ECA in May 2024, raw influent samples were obtained quarterly; subsequent the new ECA, they are now obtained monthly. However, a monthly raw influent sample was not obtained in May, 2024, due to OCWA not receiving the ECA until June 26, 2024. A non-compliance was reported for the missed sample.

Influent parameters are measured against the design criteria of the Hensall Sewage Lagoon. Values above design concentration can result in ineffective treatment of raw sewage and can lead to effluent limit exceedances. In 2024, all influent parameters were above design concentration for multiple months; however, this did not affect effluent water quality, which continues to meet ECA limits. This increase is attributed to less dilution from less overall precipitation.

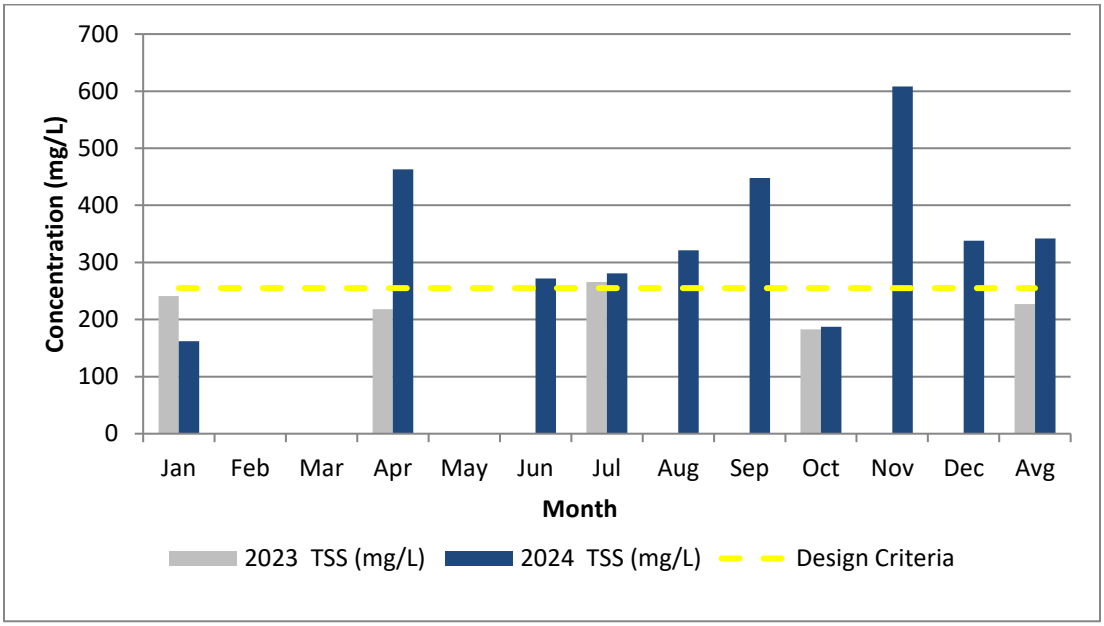
In 2024, the average raw BOD_5 concentration was 342 mg/L, a 23% increase from 2023. Refer to Figure 5 for a comparison of 2024 raw BOD_5 concentrations to 2023 concentrations. The Total BOD_5 loading rate in 2024 was 9.24 kg/ha/d; this value did not exceed the ECA requirement of being below 22 kg/ha/d.

Figure 5: *Raw BOD_5 Concentrations*



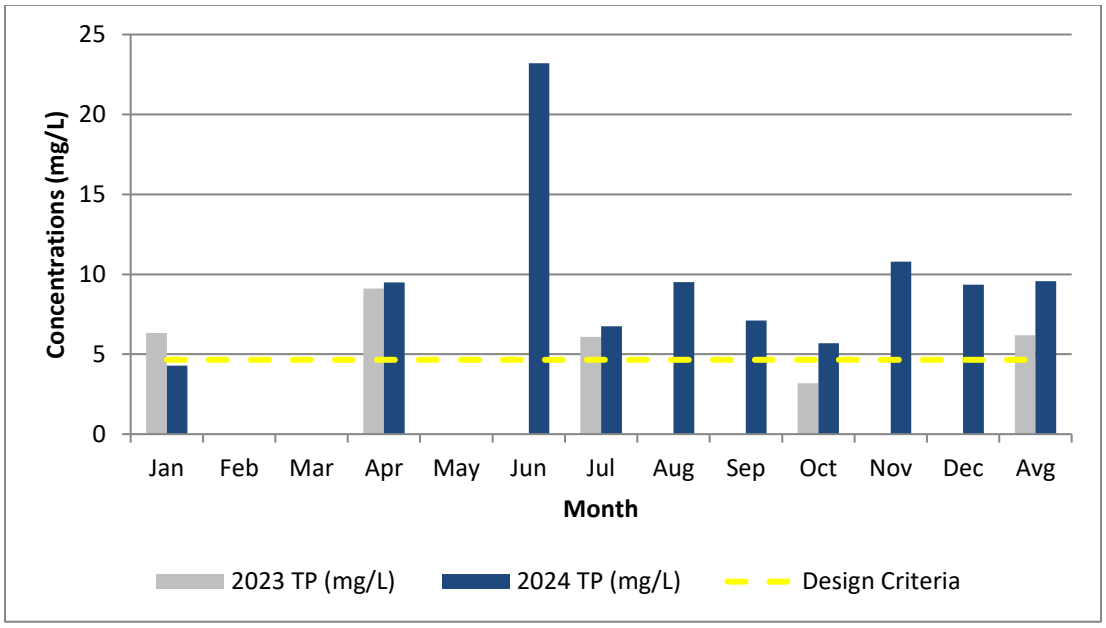
In 2024, the average raw TSS concentration was 342 mg/L, a 51% increase from 2023. Refer to Figure 6 for a comparison of 2024 raw TSS concentrations to 2023 concentrations.

Figure 6: *Raw TSS Concentrations*



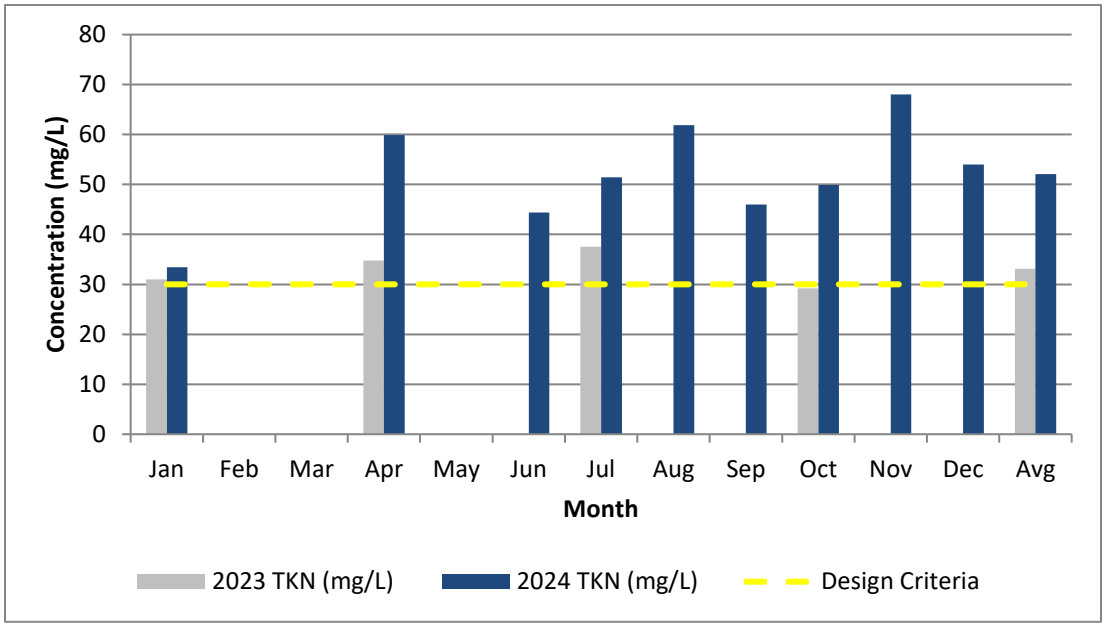
In 2024, the average raw TP concentration was 10 mg/L, a 55% increase from 2023. Refer to Figure 7 for a comparison of 2024 raw TP concentrations to 2023 concentrations.

Figure 7: *Raw TP Concentrations*



In 2024, the average raw TKN concentration was 53 mg/L, a 57% increase from 2023. Refer to Figure 8 for a comparison of 2024 raw TKN concentrations to 2023 concentrations.

Figure 8: *Raw TKN Concentrations*



Imported Sewage

The Hensall Sewage Lagoon received 20.36 m^3 of septage in 2024. Refer to Table 1 below for details. The current ECA requires sampling of septage upon receipt at the lagoon for each hauler monthly. Note, however, that no samples were obtained in 2024 due to this ECA requirement not coming into effect until May 8, 2024.

Table 1: *Septage Received in 2024*

Date Septage Received	Origin	Hauler
January 22, 2024	General Coach Canada, Hensall	CT Environmental
February 22, 2024	Sugarbush Campground, Bayfield	Grand Bend Sanitation
March 6, 2024	Hensall Holding Tank	PP Pumping

Effluent Monitoring

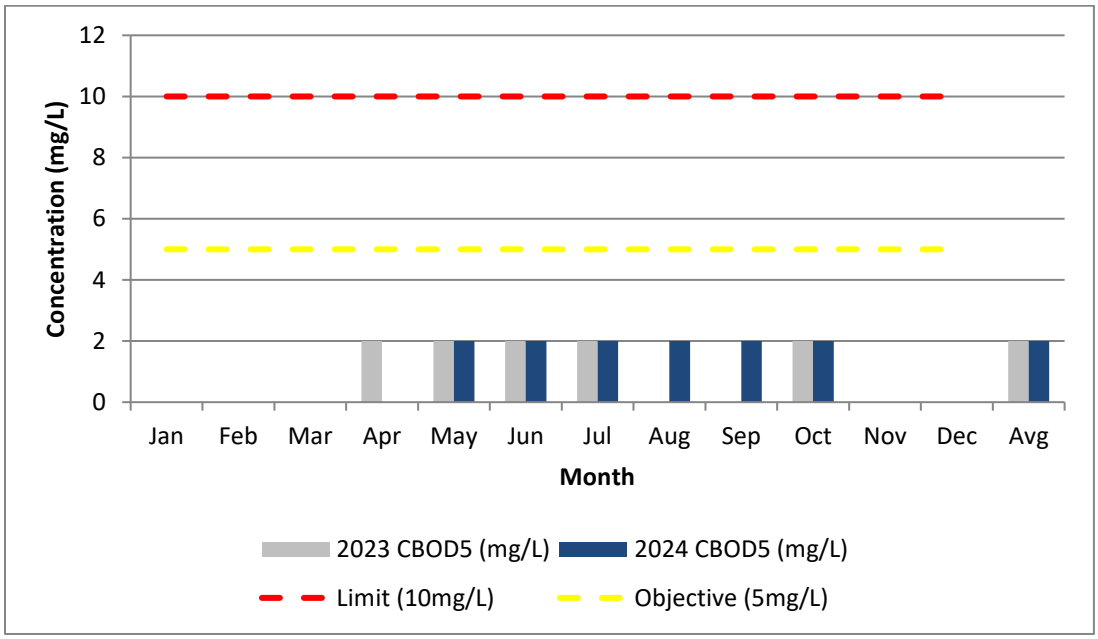
The lagoon effluent is permitted to be discharged between April 16 and November 30 in accordance with the ECA. For a list of all discharge periods in 2024, see 'Influent and Effluent Flow Monitoring'.

Effluent from the Hensall Sewage Lagoon is sampled twice weekly through grab samples and analyzed for Carbonaceous Biological Oxygen Demand ($CBOD_5$), TSS, TP, Total Ammonia Nitrogen (TAN), TKN, Nitrate (NO_3), Nitrite (NO_2), E. coli, pH, and Temperature. Note that ECA requirements to analyze effluent samples for TKN, NO_3, and NO_2 did not come into effect until May, 2024, and this analysis did not occur until June, 2024, when the ECA was received by OCWA. Missed effluent parameter analysis in the month of May was reported as a non-compliance to the MECP. For details on objective and limit exceedances, refer to 'Summary of Efforts Made to Achieve Design Objectives'**.**

Comparison to Compliance Limits and Objectives

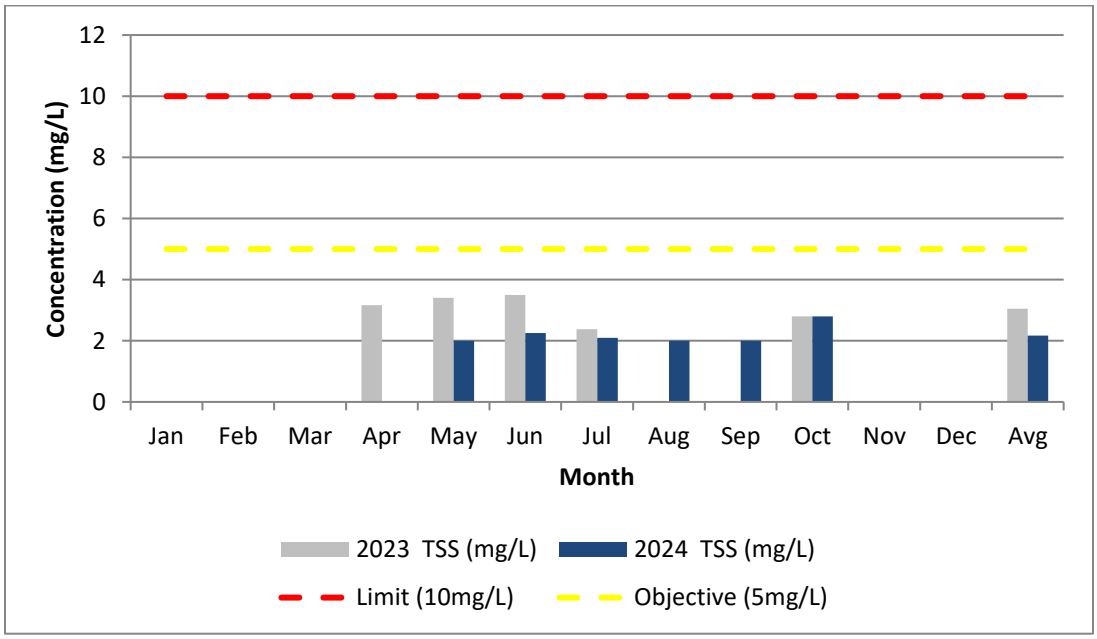
In 2024, the average monthly effluent $CBOD_5$ concentration was 2.0 mg/L, equal to the 2023 value. The limit and objective was met throughout the year. Refer to Figure 9 for a comparison of 2024 monthly effluent $CBOD_5$ concentrations to 2023 concentrations.

Figure 9: *Effluent $CBOD_5$ Concentrations*



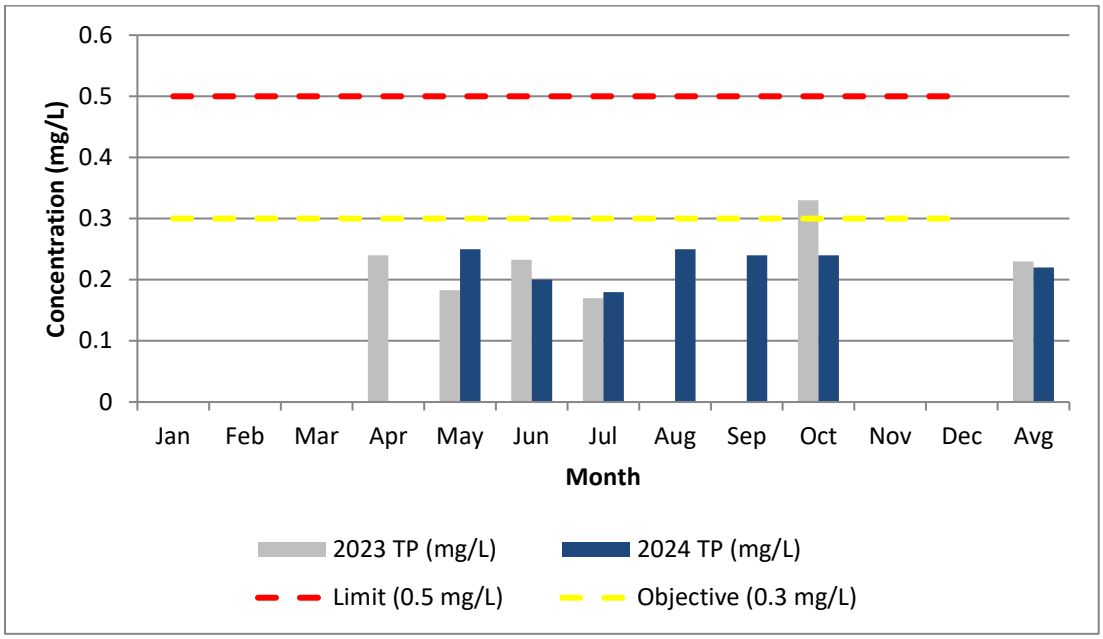
In 2024, the average monthly effluent TSS concentration was 2.2 mg/L, a 29% decrease from 2023. The limit and objective was met throughout the year. Refer to Figure 10 for a comparison of 2024 monthly effluent TSS concentrations to 2023 concentrations.

Figure 10: *Effluent TSS Concentrations*



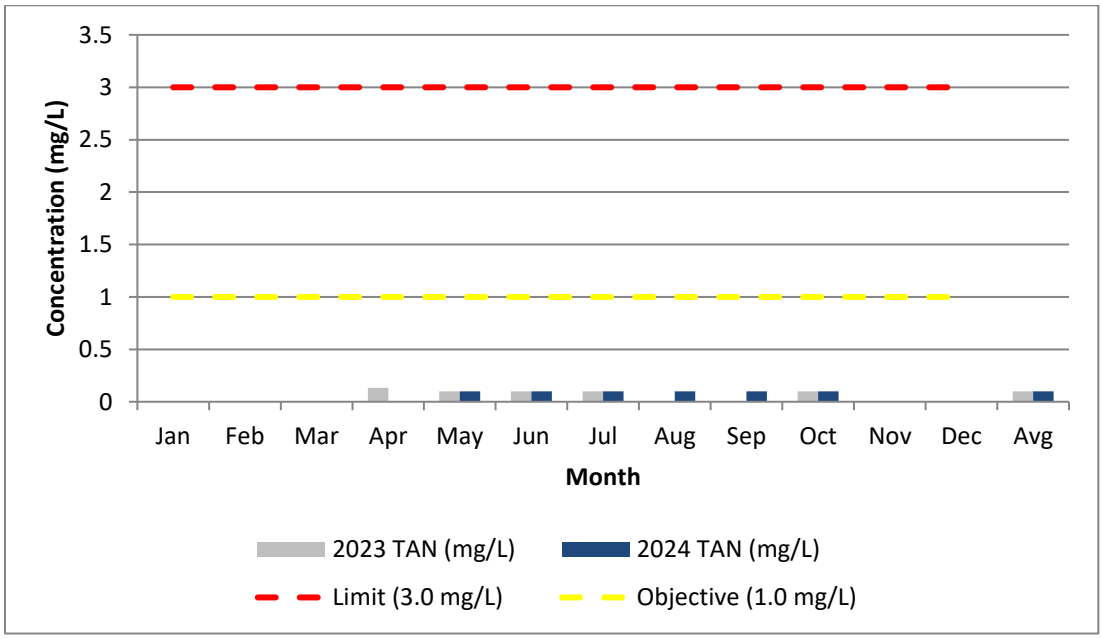
In 2024, the average monthly effluent TP concentration was 0.2 mg/L, a 4% decrease from the 2023 value. The limit and objective was met throughout 2024. Refer to Figure 11 for a comparison of 2024 monthly effluent TP concentrations to 2023 concentrations.

Figure 11: *Effluent TP Concentrations*



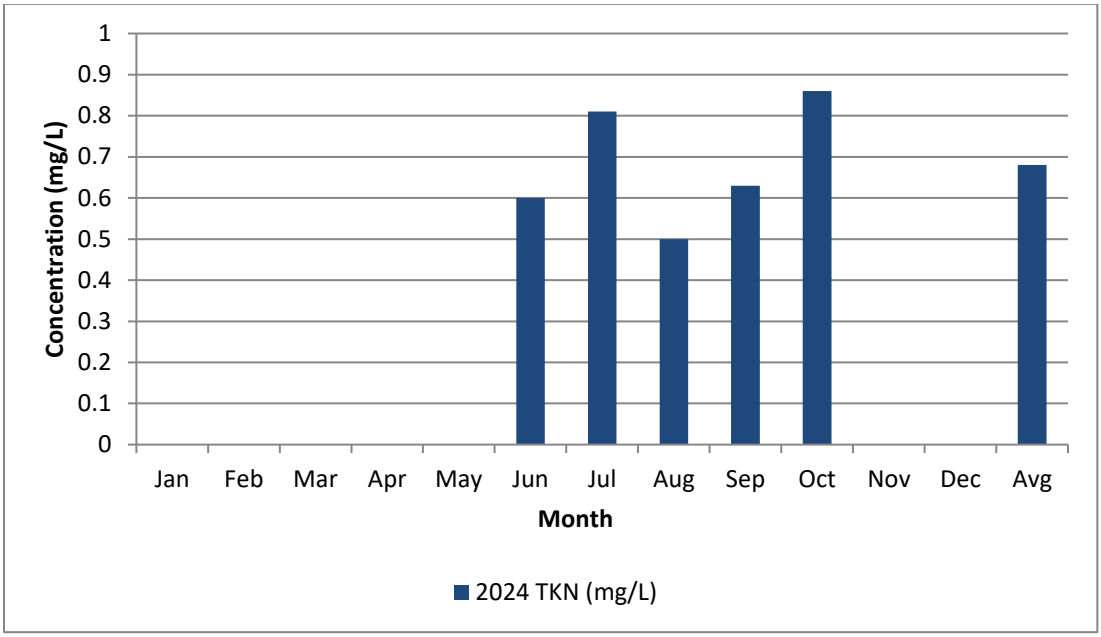
In 2024, the average monthly effluent TAN concentration was 0.1 mg/L, equal to the 2023 value. The limit and objective was met throughout the year. Refer to Figure 12 for a comparison of 2024 monthly effluent TAN concentrations to 2023 concentrations.

Figure 12: *Effluent TAN Concentrations*



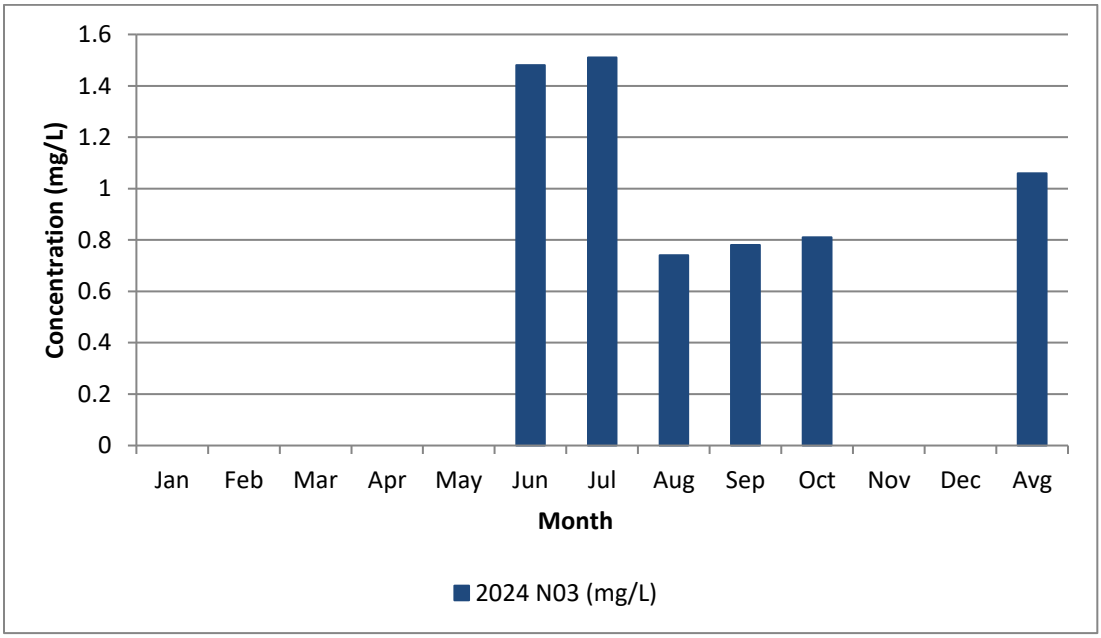
In 2024, the average monthly effluent TKN concentration was 0.68 mg/L. There is no objective or limit for TKN. Refer to Figure 13 for 2024 concentrations.

Figure 13: *Effluent TKN Concentrations*



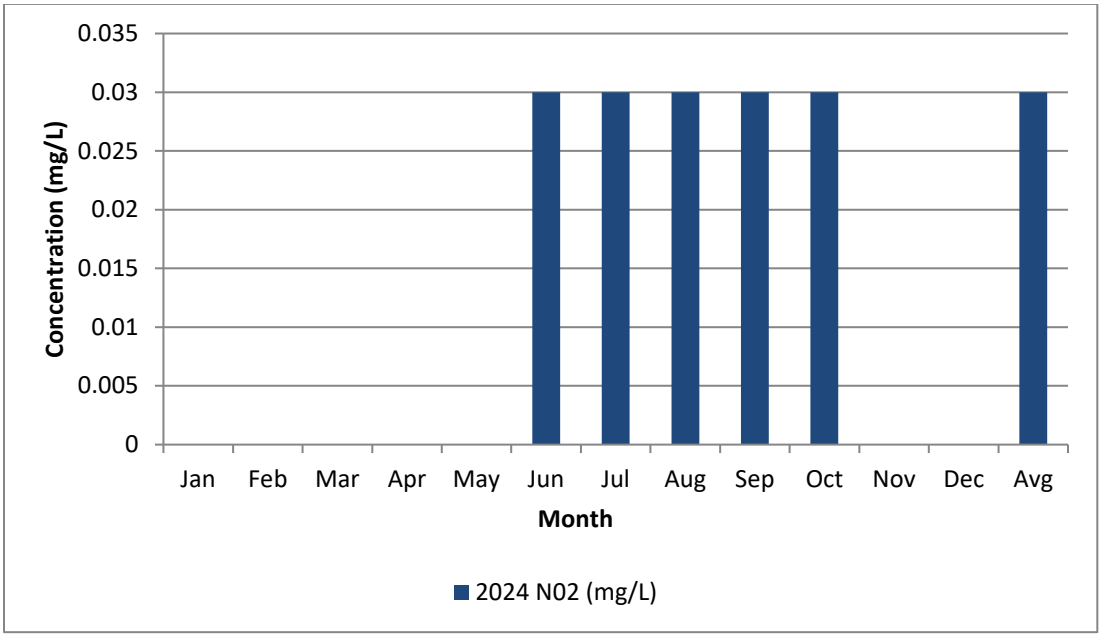
In 2024, the average monthly effluent NO_3 concentration was 1.06 mg/L. There is no objective or limit for NO_3. Refer to Figure 14 for 2024 NO_3 concentrations.

Figure 14: *Effluent NO_3 Concentrations*



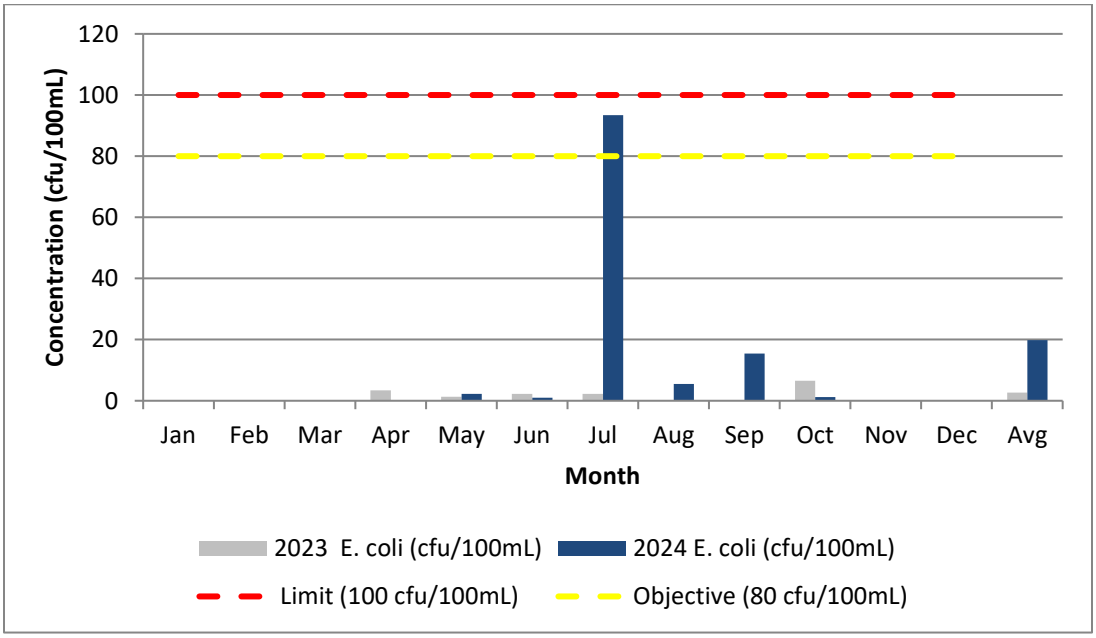
In 2024, the average monthly effluent NO_2 concentration was 0.03 mg/L. There is no objective or limit for NO_2. Refer to Figure 15 for 2024 NO_2 concentrations.

Figure 15: *Effluent NO_2 Concentrations*



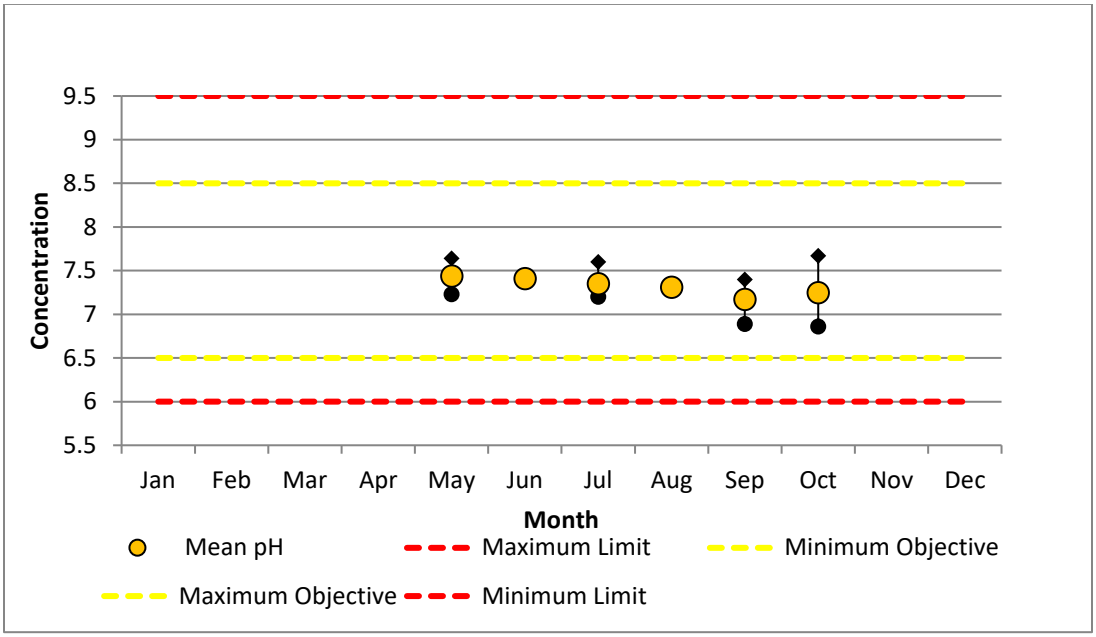
In 2024, the average monthly effluent E. coli concentration was 20 cfu/100mL, a 632% increase from 2023. This increase was from a high E. coli result on July 30, cause unknown. Because of this result, the objective was not met in July; the limit was met throughout the year. Refer to Figure 16 for a comparison of 2024 annual effluent E. coli concentrations to 2023 concentrations.

Figure 16: *Effluent E. coli Concentrations*



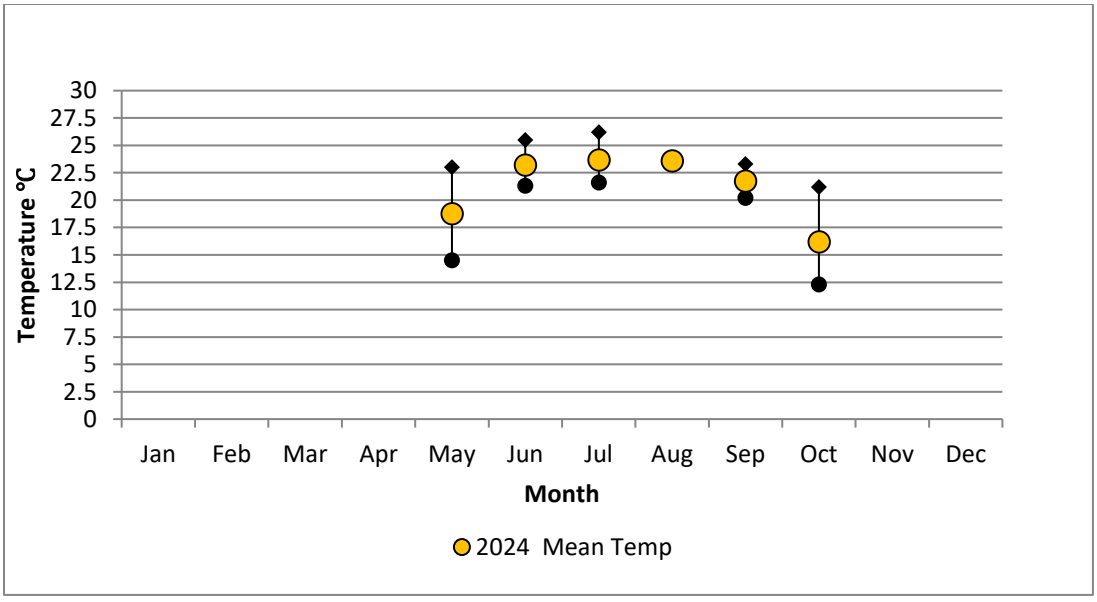
In 2024, effluent pH ranged from 6.9 to 7.7. Objectives and limits were met throughout 2024. Refer to Figure 17 for a comparison of 2024 monthly effluent pH values to the objectives and limits.

Figure 17: *Effluent pH Values*



In 2024, effluent Temperatures ranged from 12.3 °C to 26.2 °C. There are no objectives or limits for Temperature. Refer to Figure 18 for monthly effluent Temperature values in 2024.

Figure 18: *Effluent Temperatures*



Average waste loadings for 2024 were calculated for $CBOD_5$, TSS, TP, and TAN. No loading limits were exceeded. Refer to Table 2 for details.

Table 2: *Average Waste Loadings in 2024*

Effluent Parameter	Average Waste Loading Limit (kg/d)	2024 Loading (kg/d)
$CBOD_5$	9.8	1.82
Total Suspended Solids	9.8	1.97
Total Phosphorus	0.49	0.2
Total Ammonia Nitrogen	2.94	0.09

Deviations from Monitoring Schedule

Deviations from the 2024 sample calendar are outlined in Table 3. Refer to Appendix C for the 2025 sampling schedule.

Table 3: *Summary of Deviations from Monitoring Schedule*

Scheduled Date	Collected Date	Reason for Deviation
May 6	May 9	Discharge season began May 6
June 17	June 20	Discharge re-started June 17 after period of ISF rest/maintenance
June 25	June 26	Operator schedule
September 9	September 11	Holiday accommodation

Effluent Quality Assurance

Effluent quality assurance is evaluated by monitoring parameters and changes in the lagoons. Operational staff monitor plant performance by conducting in-house tests on dissolved oxygen, pH, and temperature. Staff also monitor and record chemical dosages and any adverse observations in the lagoon cells. Data collected from these tests and sample results provide valuable information to the operators to make the appropriate adjustments in the treatment process and take corrective actions before the plant reaches its effluent limits.

Summary of Efforts Made to Achieve Design Objectives

Hensall Lagoons has had two non-compliances in 2024. On May 6, 2024, the daily hydraulic loading rate onto the ISF was 3990 m^3/d, exceeding the maximum loading rate (3615 m^3/d) by 375 m^3. This was determined to be due to Operator error whereby the cycle times on one of the filter pumps were mistakenly switched from 55 minutes rest/5 minutes on to 5 minutes rest/55 minutes on. This lasted until May 7, 2024, at which time the error was corrected and flows adjusted. To prevent this in the future, discussions were held regarding double checking filter run times after they have been set. The second non-compliance resulted from a missed raw influent sample and missed analysis of effluent parameters due to not obtaining the new ECA until June 26, 2024. Both non-compliances were reported to the MECP.

Design objectives were not exceeded more then 50% of the time in 2024 and there were no trends in deterioration of final effluent quality. The average influent flow has not exceeded 80% of the rated capacity. Given there were no effluent limit exceedances in 2024, no investigation nor contingency measures were taken in response. Refer to Table 4 for details on the one objective exceedance in 2024.

Table 4: *Summary of Objective Exceedance*

Month	Parameter	Concentration (cfu/100ml)	Objective (cfu/100ml)
July	E. coli	93	80

Operating Problems and Corrective Actions

In 2024, the biggest challenge for the Hensall Sewage Lagoons and WWC system was Operator error related to discharge rates on the ISF. Corrective actions taken include reversing the incorrect run times upon discovery of the error and discussing checking run times after they have been set to prevent a reoccurrence of this issue.

Capital and major maintenance recommendations have been submitted by OCWA to the Municipality of Bluewater to address ongoing maintenance requirements for the collection system and sewage lagoons to continue to produce high quality effluent. Items included on the list for 2025 are:

- Pump rebuilds/replacements – Main SPS
- UPS replacement – Main SPS
- Float system replacement – Main SPS
- Verbatim replacement – Hensall Lagoon
- ISF pipe repairs – Hensall Lagoon
- Chamber board replacement – Hensall Lagoon

Maintenance Activities

Preventative and corrective maintenance is assigned and monitored within the Workplace Management System (WMS) program. Refer to Appendix A for the 2024 maintenance summary. Refer to Table 5 for a list of repairs and replacements that occurred in 2024.

Table 5: *Major Maintenance in 2024*

Major Maintenance Wastewater
Alum Pump Repairs – Hensall Lagoon
Pump Starter Replacement – Main SPS
Inlet Structure Deep Clean – Hensall Lagoon
Wet Well Cleaning – Main SPS
Float Replacement – Hensall Lagoon

Calibration Records

Pierce Services and Solutions Inc. calibrated influent and effluent flow meters and the wet well level sensor on March 18, 2024. Flow meters met the accuracy tolerance of being within 15% of the actual flow rate. Operational staff complete routine pH meter calibrations and verifications. Refer to Appendix B for 2024 Calibration Records.

Sludge Generation

In 2024, the Hensall Sewage Lagoon generated 157 m^3 of sludge; no sludge was hauled. It is estimated that approximately 161 m^3 of sludge will be generated in 2025.

Table 6: *Sludge Volumes over a Five-Year Interval*

Hensall Lagoon	2020 Sludge Volume (m^3)	2021 Sludge Volume (m^3)	2022 Sludge Volume (m^3)	2023 Sludge Volume (m^3)	2024 Sludge Volume (m^3)
Total (Cells 1-3)	22 325	22 468	22 616	22 768	22 925

Complaints

There were no complaints were received for the Hensall Sewage Lagoon or WWC system in 2024.

Bypass, Overflows, Spills and Abnormal Discharge Events

The ECA requires additional daily sampling for bypass, overflow or spill events. There were no bypass, spill or overflow events in 2024.

Summary of Efforts made to achieve conformance with F-5-1

The Municipality of Bluewater has a separated collection system, therefore a Pollution Prevention Control Program is not required to be established or maintained.

There is one designed overflow within the collection system for the protection against basement flooding, damage to equipment/property and prevention of treatment process wash out. Although there were no overflows in 2024, it has been recommended that pump rebuilds/replacements, float system upgrades and ISF pipe repairs are completed in 2025. These projects are recommended to be undertaken to reduce and/or eliminate future overflows, bypasses or spills.

Notice of Modification to the Works

There were no 'Notice of Modification to Sewage Works' forms completed in 2024.

Alterations to the Wastewater Collection System

No alterations to the collection system posed any significant threat to the drinking water systems in 2024.

Additional Information the Water Supervisor Requires

No additional information requests have been made.

Appendix A

Maintenance Summary

				Workorder Details			
WO #	Asset ID	Asset Description	Location Description	Work Order Description	Status	Schedule Start	Actual Finsh
3714284	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	1/1/24 12:00 AM	1/4/24 03:09 PM
3714843	0000249165	MCC - 01 HENSALL RICHMOND PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	MCC Hensall PS Insp/Service (1y/ 3y) 5695	CLOSE	1/1/24 12:00 AM	12/9/24 03:21 PM
3714846	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	1/1/24 12:00 AM	1/5/24 02:47 PM
3762094	0000249181	PUMP DIAPHRAGM 01 ALUM	5695, Hensall WWL & CS, Process, Secondary Treatment	Inspected alum pumps not functioning properly 5695	CLOSE		1/12/24 02:18 PM
3769929	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	2/1/24 12:00 AM	2/12/24 01:43 PM
3770406	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	2/1/24 12:00 AM	2/6/24 02:05 PM
3783617			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	2/1/24 12:00 AM	2/12/24 01:45 PM
3806016	0000156288	METER FLOW 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Meter Flow 01 PS Calibration (1y) 6676	CLOSE	4/1/24 12:00 AM	3/22/24 08:26 AM
3806019	0000249166	METER FLOW	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Meter Flow Calibration (1y) 6676	CLOSE	4/1/24 12:00 AM	3/22/24 08:31 AM
3806229	0000121359	PUMP SUBMERSIBLE 01	5695, Hensall WWL & CS, Process, Headworks	Trouble shot sewage pump #1 Faulting out 5695	CLOSE		6/4/24 03:41 PM
3812167	0000249167	METER LEVEL	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Meter Level Insp/Service (1y) 5695	CLOSE	3/1/24 12:00 AM	4/12/24 09:10 AM
3812172	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	3/1/24 12:00 AM	3/8/24 07:38 AM
3812667	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	3/1/24 12:00 AM	3/8/24 07:57 AM
3827219			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	3/1/24 12:00 AM	3/8/24 08:02 AM
3857341	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	4/1/24 12:00 AM	4/15/24 09:34 PM
3857833	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	4/1/24 12:00 AM	4/5/24 03:03 PM
3874488			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	4/1/24 12:00 AM	4/15/24 09:42 PM
3884070			5695, Hensall WWL & CS	Air Valve Insp/Pump Out (6m) 5695	CLOSE	4/1/24 12:00 AM	4/17/24 06:38 PM
3909471	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	5/1/24 12:00 AM	5/21/24 12:37 PM
3909960	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	5/1/24 12:00 AM	5/10/24 09:53 AM
3925894			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	5/1/24 12:00 AM	5/21/24 12:41 PM

3957948	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	6/1/24 12:00 AM	6/10/24 09:40 AM
3957953	0000249179	PUMP SUBMERSIBLE 01 FILTER	5695, Hensall WWL & CS, Process, Secondary Treatment	Pump Subm 01 Filter Hensall Lagoon Insp/Service (1y) 5695	CLOSE	6/1/24 12:00 AM	6/17/24 01:43 PM
3957962	0000121359	PUMP SUBMERSIBLE 01 WETWELL PS	5695, Hensall WWL & CS, Process, Headworks	Pump Subm 01 Hensall Lift PS Insp/ Service (1y) 5695	CLOSE	6/1/24 12:00 AM	6/17/24 01:44 PM
3957971	0000249180	PUMP SUBMERSIBLE 02 FILTER	5695, Hensall WWL & CS, Process, Secondary Treatment	Pump Subm 02 Hensall Lagoon Filter Insp/Service (1y) 5695	CLOSE	6/1/24 12:00 AM	6/17/24 01:45 PM
3957980	0000121360	PUMP SUBMERSIBLE 02 WETWELL PS	5695, Hensall WWL & CS, Process, Headworks	Pump Subm 02 Hensall Lift PS Insp/ Service (1y) 5695	CLOSE	6/1/24 12:00 AM	6/17/24 01:46 PM
3958654	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	6/1/24 12:00 AM	6/11/24 02:31 PM
3975082			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	6/1/24 12:00 AM	6/11/24 02:32 PM
4007683	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	7/1/24 12:00 AM	7/10/24 02:37 PM
4008189	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	7/1/24 12:00 AM	7/8/24 03:19 PM
4022245			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	7/1/24 12:00 AM	7/10/24 02:38 PM
4056670	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	8/1/24 12:00 AM	8/13/24 09:44 AM
4057243	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	8/1/24 12:00 AM	8/7/24 10:38 AM
4070258			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	8/1/24 12:00 AM	8/13/24 09:45 AM
4101420	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	9/1/24 12:00 AM	10/7/24 02:39 PM
4102059	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	9/1/24 12:00 AM	9/17/24 10:05 AM
4117089			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Service (1y) 5695	CLOSE	9/1/24 12:00 AM	10/7/24 02:00 PM
4117128			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	9/1/24 12:00 AM	
4117381			5695, Hensall WWL & CS	Filter Sand 01 Insp/ Service (1y) 5695	CLOSE	9/1/24 12:00 AM	
4117384			5695, Hensall WWL & CS	Filter Sand 02 Insp/ Service (1y) 5695	CLOSE	9/1/24 12:00 AM	
4117393			5695, Hensall WWL & CS	Lagoon 01 Insp/Service (1y) 5695	CLOSE	9/1/24 12:00 AM	
4117396			5695, Hensall WWL & CS	Lagoon 02 Insp/Service (1y) 5695	CLOSE	9/1/24 12:00 AM	
4152274	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	10/1/24 12:00 AM	
4152829	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	10/1/24 12:00 AM	

4167551			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	10/1/24 12:00 AM	
4176336			5695, Hensall WWL & CS	Air Valve Insp/Pump Out (6m) 5695	CLOSE	10/1/24 12:00 AM	
4184974			5695, Hensall WWL & CS, Facility	Well Inspection Hensall Lagoons (1y) 5695	CLOSE	10/1/24 12:00 AM	
4201734	0000156286	PANEL ALARM/ DIALER 01 PS	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall PS Testing (1m) 5695	CLOSE	11/1/24 12:00 AM	
4202234	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	11/1/24 12:00 AM	
4214647			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	11/1/24 12:00 AM	
4236975			5695, Hensall WWL & CS	Hensall SPS Low Level Float Repair 5695	COMP		
4244217	0000249176	PANEL ALARM/ DIALER 01	5695, Hensall WWL & CS, Process, Process Control & Monitoring	Alarm Dialer 01 Hensall LagoonTesting (1m) 5695	CLOSE	12/1/24 12:00 AM	12/4/24 02:31 PM
4256903			5695, Hensall WWL & CS	Engine Diesel Hensall Lift PS Insp/ Test (1m) 5695	CLOSE	12/1/24 12:00 AM	12/4/24 02:41 PM
4281296	0000249182	PUMP DIAPHRAGM 02 ALUM	5695, Hensall WWL & CS, Process, Secondary Treatment	Alum pump 2 fail to stop,reset pump watched cycle twice all nornal	COMP		12/30/24 11:46 AM

Appendix B

2024 Calibration Records

Pierce Services
& Solutions Inc.
519.820.4853 Fax 519.824.9402

Instrument Verification Sheet

Client Name: Ontario Clean Water Agency

Date: March 18, 2024

Equipment Description: Level Sensor

Assigned Number: Wet Well Level

Area Located: Hansall Well

Inventory Number: 156303

Instrument Data

Manufacturer: Milltronics

Model Number: MultiRanger Plus

Type: Ultrasonic

Serial Number: N/A

Range: 0 - 3.800 m

Accuracy: +/- 5%

Method Of Calibration: Standard Measurement

Application: Waste Water

Calibration Data

Input %	Input	As Found	As Left	Pass/Fail
	16.70 mA	3.015 m	3.015 m	Pass

Confirmed Run Mode: ✓

Placed back in service: ✓

Comments:

Checked By: Greg Pierce CCST

Signature:

Pierce Services & Solutions Inc.

45 Wilton Road
Guelph, ON N1E 7L6

Phone: 519.820.4853
Fax: 519.824.9402

Flowmeter Report

Verification: X **Calibration:**

Client: OCWA Bluewater
Description: Mag Flow Meter
Manufacturer: Endress Hauser
Model: Promag
Inventory No.: 249166

Location: Hensall Lift Station
Date: 24-Mar-18
Checked By: Greg Pierce
Serial No.: JA02691600

Volocity	Input	As Found	As Left	Pass/Fail
0 m/s	0.00 l/s	0.00 l/s	0.00 l/s	Pass
1.99 m/s	36.41 l/s	36.41 l/s	36.41 l/s	Pass
5.65 m/s	100.00 l/s	100.00 l/s	100.00 l/s	Pass

Confirmed Run Mode: X

Returned to service: X

Service Comments:

Flowmeter Information

Flow Unit: l/s
Meter Size: 150 mm
Pipe Material: Stainless Steel
Liner Material: PU
Range: 0-100 l/s
Tag Number: FIT 100

Comments:
Verification of original calibration

Signature:

Greg Pierce, CCST

Pierce Services & Solutions Inc.

45 Wilton Road
Guelph, ON N1E 7L6

Phone: 519.820.4853
Fax: 519.824.9402

Flowmeter Report

Verification: X **Calibration:**

Client: OCWA Bluewater
Description: Mag Flow Meter
Manufacturer: Endress Hauser
Model: Promag W
Inventory No.:

Location: Hensall Lagoons
Date: 24-Mar-18
Checked By: Greg Pierce
Serial No.: J6052B1600

Volocity	Input	As Found	As Left	Pass/Fail
0 m/s	0.00 l/s	0.00 l/s	0.00 l/s	Pass
42.38 m/s	42.27 l/s	42.27 l/s	42.27 l/s	Pass
2.83 m/s	200.00 l/s	200.00 l/s	200.00 l/s	Pass

Confirmed Run Mode: X

Returned to service: X

Service Comments:

Flowmeter Information

Flow Unit: l/s
Meter Size: 300 mm
Pipe Material: Stainless Steel
Liner Material: PU
Range: 0-200 l/s
Tag Number: FIT 100

Comments:
Verification of original calibration

Signature:

Greg Pierce, CCST

Appendix C

2025 Sample Calendar

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 1 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ December	January 2025					February ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
			1 **STAT**	**2**	**3**	4
5	6	7 □ **Raw**	**8**	**9**	**10**	11
12	**13**	**14**	**15**	**16**	**17**	18
19	**20**	**21**	**22**	**23**	**24**	25
26	**27**	**28**	**29**	**30**	**31**	

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – 1st Truck in Month of Delivery, Every New Truck (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

Revision History

Date	Revision #	Reason for Revision	Revision By
2024-11-05	0	Created 2025 Sampling Calendar	Lisa Benoit
2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 2 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ January	February 2025					March ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
						1
2	**3**	**4** □ **Raw**	**5**	**6**	**7**	8
9	**10**	**11**	**12**	**13**	**14**	15
16	**17** **STAT**	**18**	**19**	**20**	**21**	22
23	**24**	**25**	**26**	**27**	**28**	

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – 1st Truck in Month of Delivery (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

Revision History

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QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 3 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ February	March 2025					April ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
						1
2	**3**	**4** □ **Raw**	**5**	**6**	**7**	8
9	**10**	**11**	**12**	**13**	**14**	15
16	**17**	**18**	**19**	**20**	**21**	22
23	**24**	**25**	**26**	**27**	**28**	29
30	**31**					

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – 1st Truck in Month of Delivery (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

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2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 4 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ March	April 2025					May ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
		1 □ **Raw** □ **Well Water**	**2**	**3**	**4**	5
6	**7**	**8**	**9**	**10**	**11**	12
13	**14**	**15**	**16**	**17**	**18** **STAT**	19
20	**21** **STAT**	**22**	**23**	**24**	**25**	26
27	**28**	**29**	**30**			

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

Revision History

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2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 5 of 12
Reviewed by: QEMS Representative		Approved by: Operations Management

◄ April	May 2025					June ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
				1	**2**	3
4	**5**	**6** □ **Raw** □ **Pre-Filter** □ **Final Effluent**	**7** □ **Final Effluent**	**8**	**9**	10
11	**12**	**13** □ **Final Effluent**	**14** □ **Final Effluent**	**15**	**16**	17
18	**19** **STAT**	**20** □ **Final Effluent**	**21** □ **Final Effluent**	**22**	**23**	24
25	**26**	**27** □ **Final Effluent**	**28** □ **Final Effluent**	**29**	**30**	31

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

Revision History

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QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 6 of 12
Reviewed by: QEMS Representative		Approved by: Operations Management

◄ May	June 2025					July ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
1	**2**	**3** □ **Raw** □ **Final Effluent**	**4** □ **Final Effluent**	**5**	**6**	7
8	**9**	**10** □ **Final Effluent**	**11** □ **Final Effluent**	**12**	**13**	14
15	**16**	**17** □ **Final Effluent**	**18** □ **Final Effluent**	**19**	**20**	21
22	**23**	**24** □ **Final Effluent**	**25** □ **Final Effluent**	**26**	**27**	28
29	**30**					

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
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Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

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2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 7 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ June	July 2025					August ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
		1 **STAT**	**2** □ **Raw** □ **Pre-Filter** □ **Final Effluent**	**3** □ **Final Effluent**	**4**	5
6	**7**	**8** □ **Final Effluent**	**9** □ **Final Effluent**	**10**	**11**	12
13	**14**	**15** □ **Final Effluent**	**16** □ **Final Effluent**	**17**	**18**	19
20	**21**	**22** □ **Final Effluent**	**23** □ **Final Effluent**	**24**	**25**	26
27	**28**	**29** □ **Final Effluent**	**30** □ **Final Effluent**	**31**		

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

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2024-11-05	0	Created 2025 Sampling Calendar	Lisa Benoit
2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 8 of 12
Reviewed by: QEMS Representative		Approved by: Operations Management

◄ July

August 2025

September ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	2
3	**4** **STAT**	**5** □ **Raw** □ **Final Effluent**	**6** □ **Final Effluent**	**7**	**8**	9
10	**11**	**12** □ **Final Effluent**	**13** □ **Final Effluent**	**14**	**15**	16
17	**18**	**19** □ **Final Effluent**	**20** □ **Final Effluent**	**21**	**22**	23
24 31	**25**	**26** □ **Final Effluent**	**27** □ **Final Effluent**	**28**	**29**	30

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
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Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

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2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 9 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ August

September 2025

October ►

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 **STAT**	**2** **□ Raw** **□ Final Effluent**	**3** **□ Final Effluent**	**4**	**5**	6
7	**8**	**9** **□ Final Effluent**	**10** **□ Final Effluent**	**11**	**12**	13
14	**15**	**16** **□ Final Effluent**	**17** **□ Final Effluent**	**18**	**19**	20
21	**22**	**23** **□ Final Effluent**	**24** **□ Final Effluent**	**25**	**26**	27
28	**29**	**30** STAT				

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility.

Revision History

Date	Revision #	Reason for Revision	Revision By
2024-11-05	0	Created 2025 Sampling Calendar	Lisa Benoit
2025-03-14	1	Changed wording for septage to indicate each hauler	Heather Wharram

QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 10 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ September	October 2025					November ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
			1 □ Raw □ Pre-Filter □ Final Effluent	**2** □ Final Effluent	**3**	4
5	**6**	**7** □ Raw □ Final Effluent □ Well Water	**8** □ Final Effluent	**9**	**10**	11
12	**13** STAT	**14** □ Final Effluent	**15** □ Final Effluent	**16**	**17**	18
19	**20**	**21** □ Final Effluent	**22** □ Final Effluent	**23**	**24**	25
26	**27**	**28** □ Final Effluent	**29** □ Final Effluent	**30**	**31**	

Discharge Period: April 16 to November 30 (Daily Hydraulic Loading to Filters not to Exceed 3615 m³/d)

Raw Sample: Monthly Grab (BOD5, TSS, TP, TKN)
Final Effluent: Twice Weekly Grab (CBOD, TSS, TAN, TP, TKN, NO3, NO2, E.coli)
Twice Weekly Grab In-House (pH, Temp)
Pre-Filter: Quarterly Grab (CBOD5, TSS, TP, TAN) (Non-ECA)
Septage: Grab – Each Hauler Monthly (BOD5, TSS, TP, TKN)
Well Water: Bi-Annual Grab (E.coli, Total Coliform)

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QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 11 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ October	November 2025					December ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
						1
2	**3**	**4** □ **Raw**	**5**	**6**	**7**	8
9	**10**	**11** **STAT**	**12**	**13**	**14**	15
16	**17**	**18**	**19**	**20**	**21**	22
23 30	**24**	**25**	**26**	**27**	**28**	29

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QEMS Ontario Clean Water Agency	Sample Schedule 2025 Hensall Sewage Lagoons	Rev. Date: 2025-03-13 Rev.#: 1 Pages: 12 of 12
Reviewed by: QEMS Representative	Approved by: Operations Management	

◄ November	December 2025					January ►
Sun	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**
	1	**2** □ **Raw**	**3**	**4**	**5**	6
7	**8**	**9**	**10**	**11**	**12**	13
14	**15**	**16**	**17**	**18**	**19**	20
21	**22**	**23**	**24**	**25** **STAT**	**26** **STAT**	27
28	**29**	**30**	**31**			

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Appendix D

Monitoring Data

Performance Assessment Report

From 1/1/2024 to 12/31/2024 11:59:59 PM

5695 HENSALL WASTEWATER TREATMENT LAGOON 110000926

	1 / 2024	2/ 2024	3/ 2024	4/ 2024	5/ 2024	6/ 2024	7/ 2024	8/ 2024	9/ 2024	10/ 2024	11/ 2024	12/ 2024	<--Total-->	<--Avg-->	<--Max-->	<-Criteria->
Flows																
Raw Flow: Total - Raw Sewage m³/d	18,087.99	11,088.34	13,577.15	13,793.02	11,593.54	9,259.15	10,793.22	9,444.18	8,977.59	8,800.71	10,511.64	19,278.70	145,205.23			0.00
Raw Flow: Avg - Raw Sewage m³/d	583.48	382.36	437.97	459.77	373.99	308.64	348.17	304.65	299.25	283.89	339.09	621.89		396.74		980.00
Raw Flow: Max - Raw Sewage m³/d	2,108.24	547.72	714.56	991.80	719.87	433.16	746.65	465.94	367.89	483.60	444.40	1,890.89			2,108.24	0.00
Raw Flow: Count - Raw Sewage m³/d	31.00	29.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	366.00			0.00
Eff. Flow: Total - Final Effluent m³/d	0.00	0.00	0.00	0.00	38,506.93	12,847.16	16,410.92	5,257.03	33,493.83	21,856.12	0.00	0.00	128,371.99			0.00
Eff. Flow: Avg - Final Effluent m³/d	0.00	0.00	0.00	0.00	1,481.04	917.65	529.38	584.11	1,116.46	705.04	0.00	0.00		910.44		
Eff. Flow: Max - Final Effluent m³/d	0.00	0.00	0.00	0.00	3,989.69	999.19	1,153.00	907.96	1,746.66	2,364.34	0.00	0.00			3,989.69	0.00
Eff Flow: Count - Final Effluent m³/d	0.00	0.00	0.00	0.00	26.00	14.00	31.00	9.00	30.00	31.00	0.00	0.00	141.00			0.00
Carbonaceous Biochemical Oxygen Demand: CBOD																
Eff: Avg cBOD5 - Final Effluent mg/L	0.00	0.00	0.00	0.00	< 2.00	< 2.00	< 2.00	< 2.00	< 2.00	2.00	0.00	0.00		< 2.00		10.00
Eff: # of samples of cBOD5 - Final Effluent	0.00	0.00	0.00	0.00	8.00	4.00	10.00	2.00	7.00	5.00	0.00	0.00	36.00			0.00
Loading: cBOD5 - Final Effluent kg/d	0.000	0.000	0.000	0.000	< 2.962	< 1.835	< 1.059	< 1.168	< 2.233	< 1.410	0.000	0.000		< 1.82	< 2.96	9.800
Biochemical Oxygen Demand: BOD5																
Raw: Avg BOD5 - Raw Sewage mg/L	298.00	0.00	0.00	364.00	0.00	408.00	356.00	322.00	284.00	277.00	383.00	385.00		341.89	408.00	0.00
Raw: # of samples of BOD5 - Raw Sewage	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.00			0.00
Total Suspended Solids: TSS																
Raw: Avg TSS - Raw Sewage mg/L	162.00	0.00	0.00	463.00	0.00	272.00	281.00	321.00	448.00	187.00	608.00	338.00		342.22	608.00	0.00
Raw: # of samples of TSS - Raw Sewage	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.00			0.00
Eff: Avg TSS - Final Effluent mg/L	0.00	0.00	0.00	0.00	< 2.00	< 2.25	< 2.10	< 2.00	< 2.00	< 2.80	0.00	0.00		< 2.17	< 2.80	10.00
Eff: # of samples of TSS - Final Effluent	0.00	0.00	0.00	0.00	8.00	4.00	10.00	2.00	7.00	5.00	0.00	0.00	36.00			0.00
Loading: TSS - Final Effluent kg/d	0.000	0.000	0.000	0.000	< 2.962	< 2.065	< 1.112	< 1.168	< 2.233	< 1.974	0.000	0.000		< 1.97	< 2.96	9.800
Percent Removal: TSS - Raw Sewage %	0.00	0.00	0.00	0.00	0.00	99.17	99.25	99.38	99.55	98.50	0.00	0.00		99.17	99.55	0.00
Total Phosphorus: TP																
Raw: Avg TP - Raw Sewage mg/L	4.28	0.00	0.00	9.50	0.00	23.20	6.74	9.52	7.10	5.68	10.80	9.35		9.57	23.20	0.00
Raw: # of samples of TP - Raw Sewage	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.00			0.00
Eff: Avg TP - Final Effluent mg/L	0.00	0.00	0.00	0.00	0.25	0.20	0.18	0.25	0.24	0.24	0.00	0.00		0.22	0.25	0.50
Eff: # of samples of TP - Final Effluent	0.00	0.00	0.00	0.00	8.00	4.00	10.00	2.00	7.00	5.00	0.00	0.00	36.00			0.00
Loading: TP - Final Effluent kg/d	0.000	0.000	0.000	0.000	0.365	0.186	0.097	0.143	0.265	0.169	0.000	0.000		0.20	0.36	0.490
Percent Removal: TP - Raw Sewage %	0.00	0.00	0.00	0.00	0.00	99.13	97.27	97.43	96.66	95.77	0.00	0.00		97.25	99.13	0.00
Nitrogen Series																
Raw: Avg TKN - Raw Sewage mg/L	33.40	0.00	0.00	59.90	0.00	44.40	51.40	61.90	46.00	49.90	68.00	54.00		52.10	68.00	0.00
Raw: # of samples of TKN - Raw Sewage	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	9.00			0.00
Eff: Avg TAN - Final Effluent mg/L	0.00	0.00	0.00	0.00	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	0.10	0.00	0.00		< 0.10		3.00
Eff: # of samples of TAN - Final Effluent	0.00	0.00	0.00	0.00	8.00	4.00	10.00	2.00	7.00	5.00	0.00	0.00	36.00			0.00
Loading: TAN - Final Effluent kg/d	0.000	0.000	0.000	0.000	< 0.148	< 0.092	< 0.053	< 0.058	< 0.112	< 0.071	0.000	0.000		< 0.09	< 0.15	2.940
Eff: Avg NO3-N - Final Effluent mg/L	0.00	0.00	0.00	0.00	0.00	1.48	1.51	0.74	0.78	0.81	0.00	0.00		1.06	1.51	0.00
Eff: # of samples of NO3-N - Final Effluent	0.00	0.00	0.00	0.00	0.00	1.00	10.00	2.00	7.00	5.00	0.00	0.00	25.00			0.00
Eff: Avg NO2-N - Final Effluent mg/L	0.00	0.00	0.00	0.00	0.00	< 0.03	< 0.03	< 0.03	< 0.03	0.03	0.00	0.00		< 0.03		0.00
Eff: # of samples of NO2-N - Final Effluent	0.00	0.00	0.00	0.00	0.00	1.00	10.00	2.00	7.00	5.00	0.00	0.00	25.00			0.00
Disinfection																
Eff: GMD E. Coli - Final Effluent cfu/100mL	0.00	0.00	0.00	0.00	2.28	1.00	4.61	5.29	4.55	1.15	0.00	0.00				100.00