

# Brechin/Lagoon City Sewage Treatment Plant

---

## Annual Wastewater Performance Report

Prepared For: The Township of Ramara

Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup>, 2024

Issued: March 17, 2025

Revision: 0

Operating Authority:



## **Table of Contents**

Background .....	1
Summary and Interpretation of Monitoring Data	
Summary of Influent Flow Data .....	2
Hydraulic Reserve Capacity.....	3
Summary of Effluent Flow Data.....	3, 4
Final Effluent Parameter Summary.....	6
Description of Operating Problems Encountered.....	10
Summary of Maintenance .....	10
Summary of Effluent Quality Ensurance and Control Measures .....	10, 11
Summary of Calibration and Maintenance on Effluent Monitoring Equipment.....	11
Summary of Efforts Made and Results Achieved to Meet Effluent Objective .....	11, 12
Volume of Sludge Generated in Reporting Period .....	17
Summary of Complaints Received during the Reporting Period.....	17
Summary of By-passes, Spills and Other Discharges .....	17
Status update on Initial Effluent Characterization .....	17
Any other information the District Manger Requires from time to time .....	17
Summary of Efforts Made to Reduce Collection System Overflows .....	17, 18

## **List of Tables**

<b>Table 1</b>	Historical Sewage Flows and Generation Rates
<b>Table 2</b>	Minimum Raw Sewage Sampling Requirements
<b>Table 3</b>	Minimum Effluent Sampling Requirements
<b>Table 4</b>	2024 Annual Average Concentration and Loading
<b>Table 5</b>	Brechin Lagoon City WWTP Operational Challenges
<b>Table 6</b>	Brechin/Lagoon City WWTP – Summary of Influent and Final Effluent Monitoring Equipment
<b>Table 7</b>	Efforts Made to Meet the Effluent Objectives of Condition 9
<b>Table 8</b>	Monthly CBOD5 Final Effluent Concentration Objective Comparisons
<b>Table 9</b>	Monthly TSS Final Effluent Concentration Objective Comparisons
<b>Table 10</b>	Monthly TP Final Effluent Concentration Objective Comparisons
<b>Table 11</b>	Monthly E. Coli Final Effluent Concentration Objective Comparisons
<b>Table 12</b>	Monthly pH Final Effluent Concentration Objective Comparisons
<b>Table 13</b>	Weekly Final Effluent pH, Temperature and Calculated Un-ionized Ammonia
<b>Table 14</b>	Monthly Influent Sample Result Concentration Averages
<b>Table 15</b>	Monthly Sludge Generation Volumes

## **Appendicies**

<b>Appendix I</b>	Performance Assessment Report
<b>Appendix II</b>	Annual Calibration Reports
<b>Appendix III</b>	Biosolids Summary

## **Background:**

The Environmental Compliance Approval (ECA) No. 1114-745MQT issued on June 6<sup>th</sup>, 2007 was revoked and replaced by ECA No. 8497-8D3TU7 issued on June 28<sup>th</sup>, 2012. The Ontario Clean Water Agency was the operating authority during the reporting period January 1<sup>st</sup> - December 31<sup>st</sup>, 2024.

The Brechin/Lagoon City Sewage Works complies with all requirements of the regulating authorities and operates under:

- Environmental Compliance Approval (ECA) No. 8497-8D3TU7 issued June 28, 2012
- Environmental Compliance Approval (CLI-ECA) No. 147-W601 Issue 2 issued July 22, 2024

*Environmental Certificate of Approval (ECA) No. 8497-8D3TU7 Section 9(5) requires the Performance Report to contain the following:*

- a) Summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 5, including an overview of the success and adequacy of the sewage Works;*
- b) a description of any operating problems encountered and corrective actions taken;*
- c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;*
- d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;*
- e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;*
- f) a description of efforts made and results achieved in meeting the Design Objectives of Condition 4;*
- g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;*
- h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;*
- i) a summary of all By-pass, spill or abnormal discharge events;*
- j) Status update of the initial effluent characterization as per Condition 8 subsection (1) until it has been completed and the required report has been submitted; and*
- k) any other information the District Manager requires from time to time*

*Environmental Compliance Approval (CLI-ECA) No. 147-W601 Issue 2 issued July 22, 2024 Section 4.6 requires the Performance Report to contain the following:*

- a) A summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.*

- b) *A summary of any operating problems encountered and corrective actions taken.*
- c) *A summary of all calibration, maintenance and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.*
- d) *A summary of complaints related to the Sewage Works received during the reporting period and nay steps taken to address the complaints.*
- e) *A summary of Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.*
- f) *A summary of all Collection System Overflow(s) and Spill(s) of Sewage, including:*
  - i) *Dates;*
  - ii) *Volumes and durations*
  - iii) *If applicable, loading for total suspended solids, BOD, total phosphorus, and total Kjeldahl nitrogen, and sampling results for E. coli;*
  - iv) *Disinfection, if any; and*
  - v) *Any adverse impact(s) and corrective actions, if applicable.*
- g) *A summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including items, as applicable:*
  - i) *A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.*
  - ii) *Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines.*
  - iii) *An assessment of the effectiveness of each action taken.*
  - iv) *An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.*
  - v) *Public reporting approach including proactive efforts.*

This report will show that the Ontario Clean Water Agency has made every attempt to achieve its goals through its operational performance. This performance was enhanced through the use of an electronic process data collection database, an electronic maintenance and work order database, an electronic operational excellence database, a training program focused on providing the right skills to staff - also captured and tracked by the use of an electronic database and a multi-skilled, flexible workforce.

This report will show that the requirements of the facility ECA including effluent monitoring and reporting requirements were consistently met and that effluent quality was consistently within ECA requirements.

### **ECA No. 8497-8D3TU7 Condition 9(5)(a)**

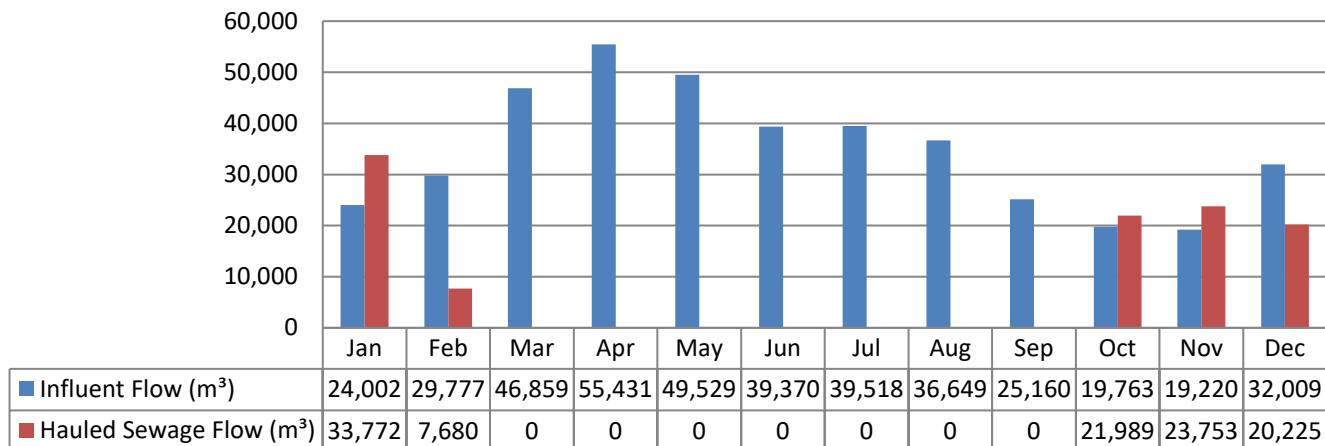
#### **Summary of Influent Flow Data**

Environmental Compliance Approval (ECA) No. 8497-8D3TU7, issued for the Brechin/Lagoon City WWTP Condition 9(5)(a) requires a Summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 5, including on overview of the success and adequacy of the sewage Works.

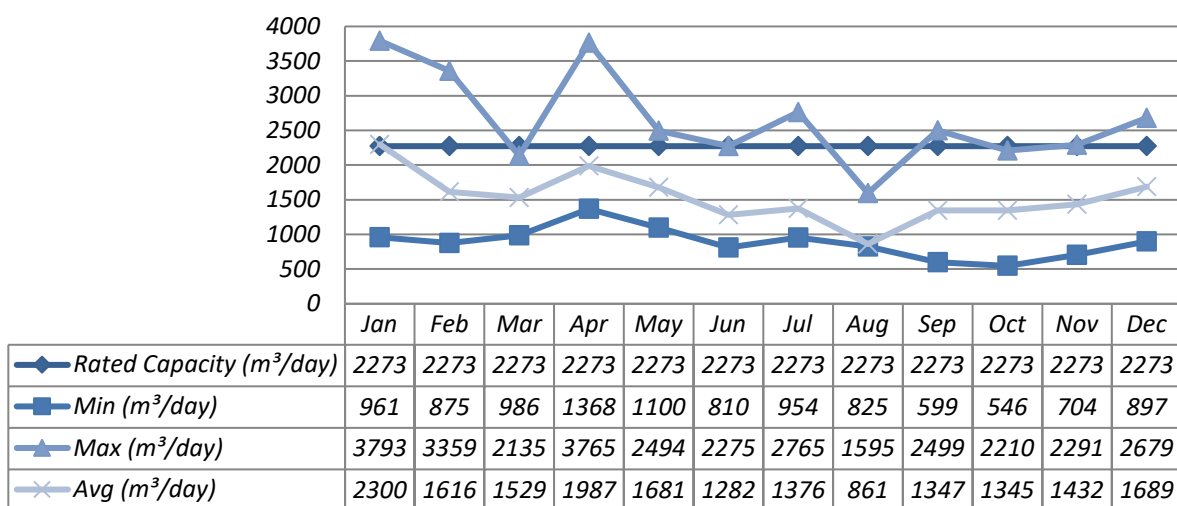
Condition 4(2)(b) of the (ECA) No. 8497-8D3TU7 indicates best efforts are to be made to operate at the rated capacity of the works. The rated capacity for the Brechin/Lagoon City Wastewater Treatment Plant is 2,273 m<sup>3</sup>/day and the annual average daily influent flow was 1,538.04 m<sup>3</sup>/day or 67.67 % of the rated capacity.

The total Influent flow in 2024 was 559,847.19 m<sup>3</sup>

**Graph 1: 2024 Influent Flow Monthly Totals**



**Graph 2: 2024 Influent Daily Minimum, Maximum and Average Flows**



Note: The above table shows exceedances in maximum flows. The spikes in flows were due to weather events/snowmelt in correlation with significant inflow and infiltration during these weather events. However, the average daily flow for the works was below the rated capacity.

## Brechin Lagoon City Sewage Works Historical Flows

**Table 1: Historical Sewage Flows and Generation Rates**

Year	Number of Connections*	Equivalent Population**	Average Daily Flow (m <sup>3</sup> /day)	Maximum Daily Flow (m <sup>3</sup> /day)	Rated Capacity (m <sup>3</sup> /day)	Sewage Generation Rate (L/cap/day)
2014	1159	2414	1641	5094	2273	681
2015	1162	2414	1262	3313	2273	523

2016	1165	2420	1255	4735	2273	517
2017	1170	2431	1566	4213	2273	644
2018	1174	2439	1430	4260	2273	586
2019	1175	2441	1481	3686	2273	607
2020	1179	2650	1393	3462	2273	526
2021	1179	2650	1257	3995	2273	474
2022	1140	2391	1165	3853	2273	487
2023	1142	2395	1351	4687	2273	564
2024	1142	2395	1538	3793	2273	642
3 Year Average		2394	1351	4111	2273	564

\*Based on estimated service connections in Lagoon City and Brechin: 1000 and 152 single family dwellings. The estimated population in Lagoon City: 2,000 (based on a population density of 2.0 persons per dwelling), and the estimated population in Brechin: 395 (based on a population density of 2.6 persons per dwelling).

Assumptions made on location of new developments for 2024 connections for population estimation.

Note: This calculation was completed based on current connections in the system, growth within the collection system has not been considered.

Note: Typically, the system is well under the design capacity, significant inflow and infiltration during wet weather events skew the reserve capacity results.

### **Hydraulic Reserve Capacity**

In accordance with the MECP Procedure D-5-1, the reserve capacity is calculated by the following formula:

Hydraulic Reserve Capacity= Design Flow- Committed Flow

The design flow is equal to the maximum permissible flow approved by the Amended Environmental Compliance Approval. (ECA) No. 8497-8D3TU7 maximum permissible flow is: 2273 m<sup>3</sup>/day. The committed flow is equal to the total expected flow by the existing and proposed connections based on the previous 3-year average daily flow.

The built-out service area of the Brechin/Lagoon City Sewage Works has a total of 1269 units. The three-year (2022-2023) average sewage generation rate is: 564 L/cap/day. With the current population of 2395 there is a projection of 1,351 m<sup>3</sup>/day of committed sewage flow. The estimated hydraulic reserve capacity for the Brechin Lagoon City Sewage Works in 2024 is 922 m<sup>3</sup>/day.

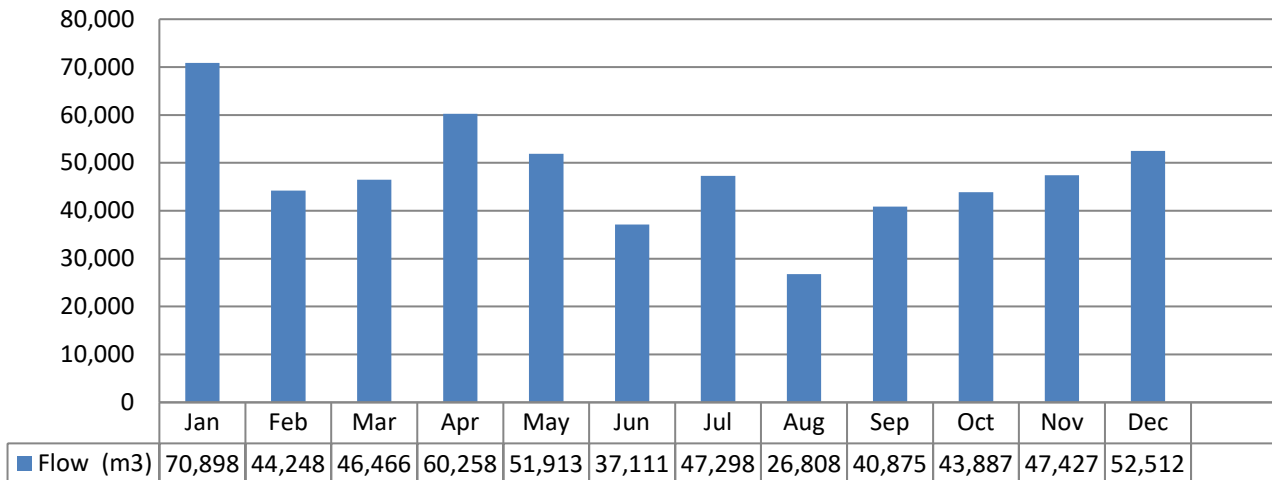
### **Summary of Effluent Flow Data**

Environmental Compliance Approval (ECA) No. 8497-8D3TU7, issued for the Brechin/Lagoon City WWTP Condition 9(5)(a) requires a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 5, including an overview of the success and adequacy of the sewage Works.

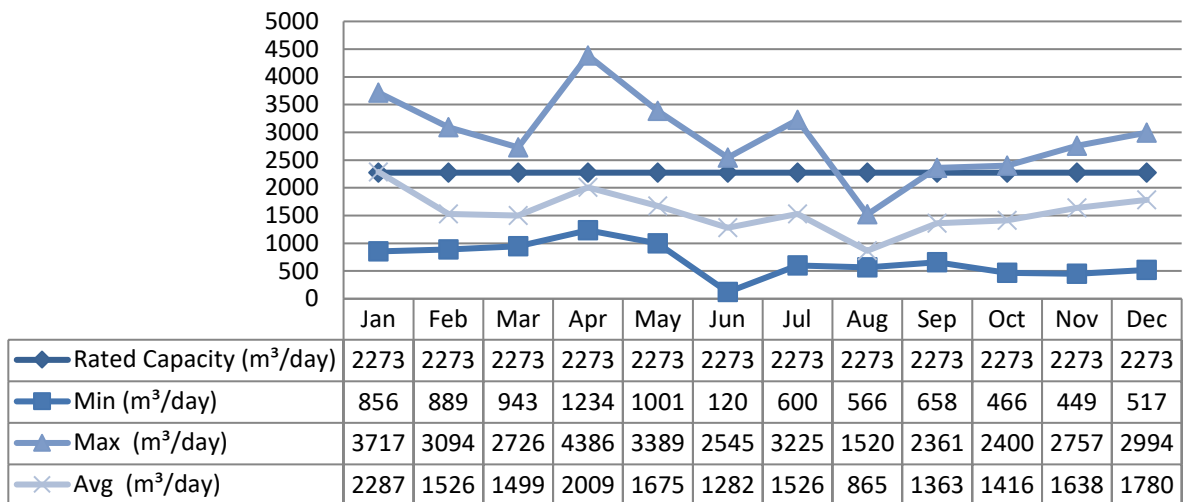
Condition 4(2)(b) of the (ECA) No. 8497-8D3TU7 indicates best efforts are to be made to operate at the rated capacity of the works. The rated capacity for the Brechin/Lagoon City Wastewater Treatment Plant is 2,273 m<sup>3</sup>/day and the annual average daily effluent flow was 1,572.02m<sup>3</sup>/day or 69.2 % of the rated capacity

*The total effluent flow in 2024 was 569 702 m<sup>3</sup>*

**Graph 3: 2024 Effluent Flow Monthly Totals**



**Graph 4: 2024 Effluent Daily Minimum, Maximum and Average Flows**



*Note: The above table shows exceedances in maximum flows. The spikes in flows were due to weather events/snowmelt in correlation with significant inflow and infiltration during these weather events. However, the average daily flow for the works was below the rated capacity.*

### **Summary of Sampling Frequency**

ECA No. 8497-8D3TU7 Condition 7(3) describes the requirement for sample collection at the following locations, frequencies and by means of the specified sample type and analyzed for each parameter listed and all results recorded:

**Table 2: Minimum Raw Sewage Sampling Requirements**

Influent Sampling Point		
Parameters	Sample Type	Frequency
BOD5	8 Hour Daytime Composite	Monthly
Total Suspended Solids	8 Hour Daytime Composite	Monthly
Total Phosphorus	8 Hour Daytime Composite	Monthly
Total Kjeldahl Nitrogen	8 Hour Daytime Composite	Monthly



**Table 3: Minimum Effluent Sampling Requirements**

Final Effluent Sampling Point		
Parameters	Sample Type	Frequency
CBOD5	24-Hour Composite	Weekly
Total Suspended Solids	24-Hour Composite	Weekly
Total Phosphorus	24-Hour Composite	Weekly
Total Ammonia Nitrogen	24-Hour Composite	Weekly
Nitrates	24-Hour Composite	Weekly
pH	Grab/Probe	Weekly
Temperature	Grab/Probe	Weekly
E. coli	Grab	Weekly

### **Final Effluent Parameter Summary**

The following tables provide a summary of the monitoring data for the Brechin/Lagoon City WWTP compared to the effluent limits and objectives outlined in Condition 4 and 5 of ECA No. 8497-8D3TU7.

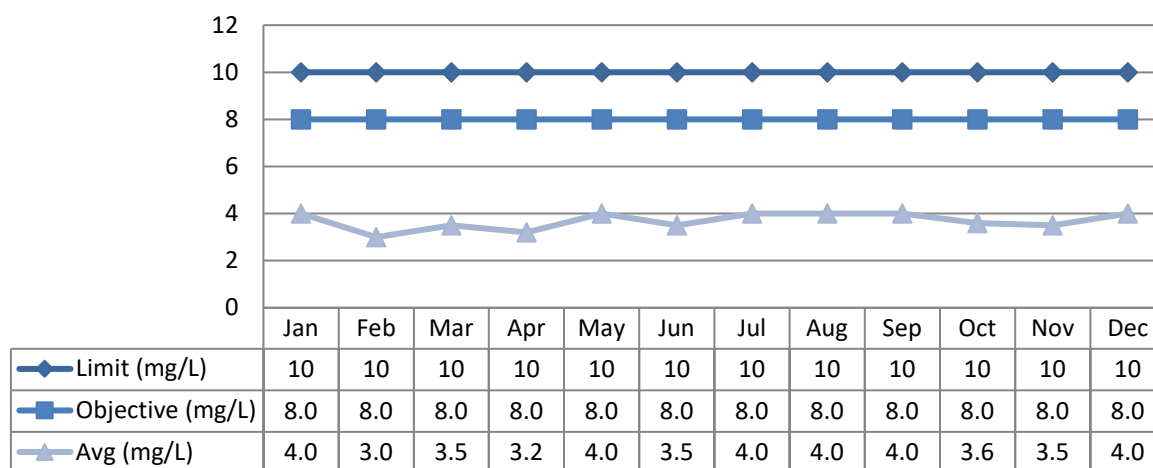
A summary of the Final Effluent and Raw Sewage monitoring data is contained in Appendix I of this report.

### **Carbonaceous Biochemical Oxygen Demand (CBOD5)**

ECA No. 8497-8D3TU7 sets the CBOD5 monthly average concentration limit at 10.00 mg/L and the objective at 8.0 mg/L. The monthly CBOD5 average concentration results throughout 2024 were in compliance with the limits and objectives outlined in ECA No. 8497-8D3TU7.

### **CBOD5 Monthly Average Concentration**

The monthly CBOD5 average concentration limit and monthly concentration objective were met each month in 2024.

**Graph 5: 2024 Monthly CBOD5 Final Effluent Concentration Comparisons**

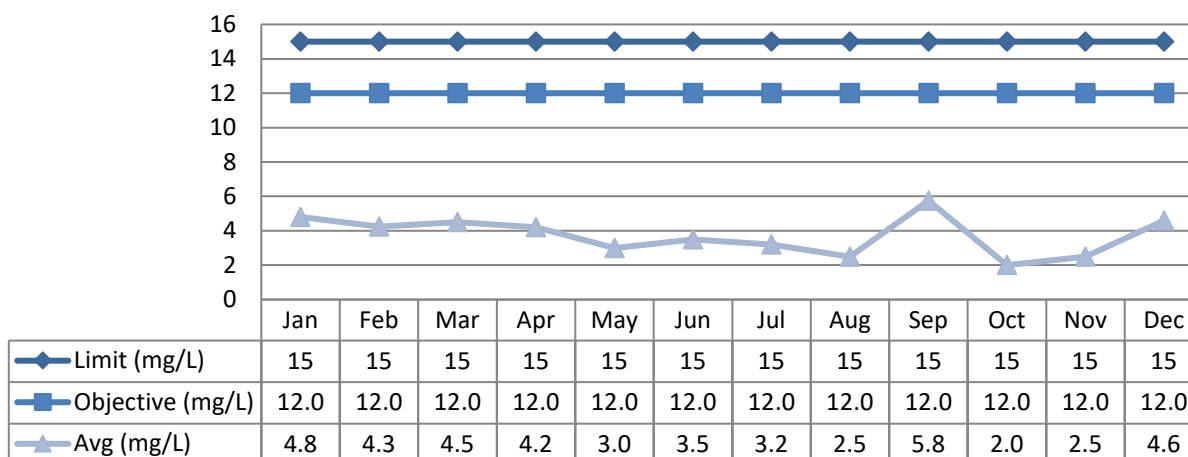
### **Total Suspended Solids (TSS)**

ECA No. 8497-8D3TU7 sets the TSS monthly average concentration limit at 15.0 mg/L and the objective at 12.0 mg/L. The monthly TSS average concentration results throughout 2024 were in compliance with the limits and objectives outlined in ECA No. 8497-8D3TU7.

### Total Suspended Solids Monthly Average Concentration

The monthly TSS monthly average concentration limit and monthly concentration objective were met each month in 2024.

**Graph 6: 2024 Monthly TSS Final Effluent Concentration Comparisons**



### Total Phosphorus (TP)

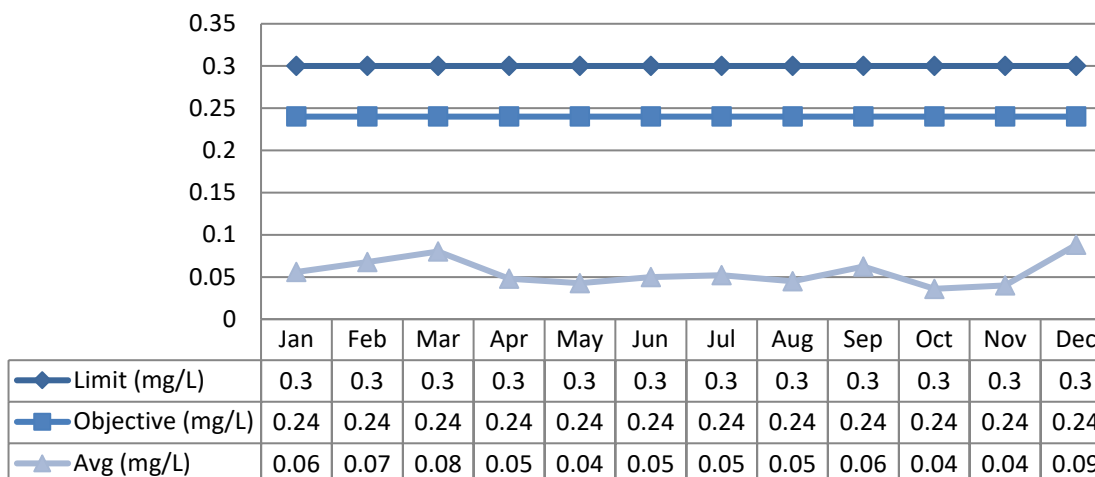
ECA No. 8497-8D3TU7 sets the TP monthly concentration limit at 0.30 mg/L, the objective at 0.24mg/L and the annual average waste loading at 249 kg/year. The monthly TP average concentration results and annual average waste loading results throughout 2024 were in compliance with the limits and objectives outlined in ECA No. 8497-8D3TU7.

Condition 5(2) of ECA No. 8497-8D3TU7 lists the Lake Simcoe Phosphorus Reduction Strategy effluent limits. These limits are set at an annual average concentration of 0.15 mg/L and annual average loading of 124 kg/Year.

### Total Phosphorus Monthly Average Concentration

The monthly TP average concentration limit and monthly concentration objective were met each month in 2024.

**Graph 7: 2024 Monthly Total Phosphorus Final Effluent Concentration Limit Comparisons**



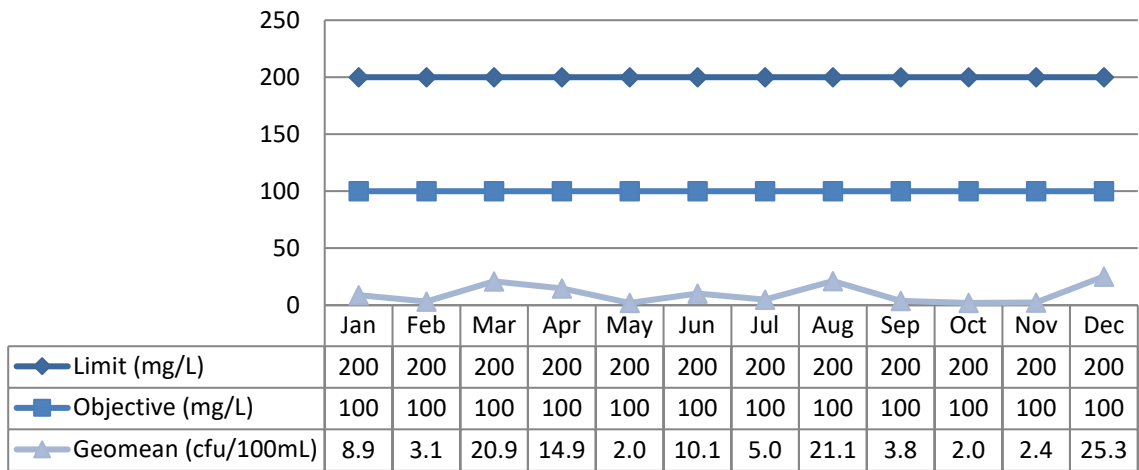
**Table 4: 2024 Annual Average Concentration and Loading**

Parameters	2024 Annual Average Concentration (mg/L)	Lake Simcoe Annual Average Concentration Limit /Objective	2024 Annual Average Loading (Kg/year)	Annual Loading Limit (Kg/year)	Lake Simcoe Annual Concentration Limit/Objective (mg/L)	Compliant (Y/N)
Total Phosphorus	0.06	0.15	51.24	249	124	Yes

### E. Coli

ECA No. 8497-8D3TU7 sets the monthly geometric mean density of E. Coli at 200 cfu/100mL and an objective of 100 cfu/100ml. The monthly geomean limit was met each month in 2024.

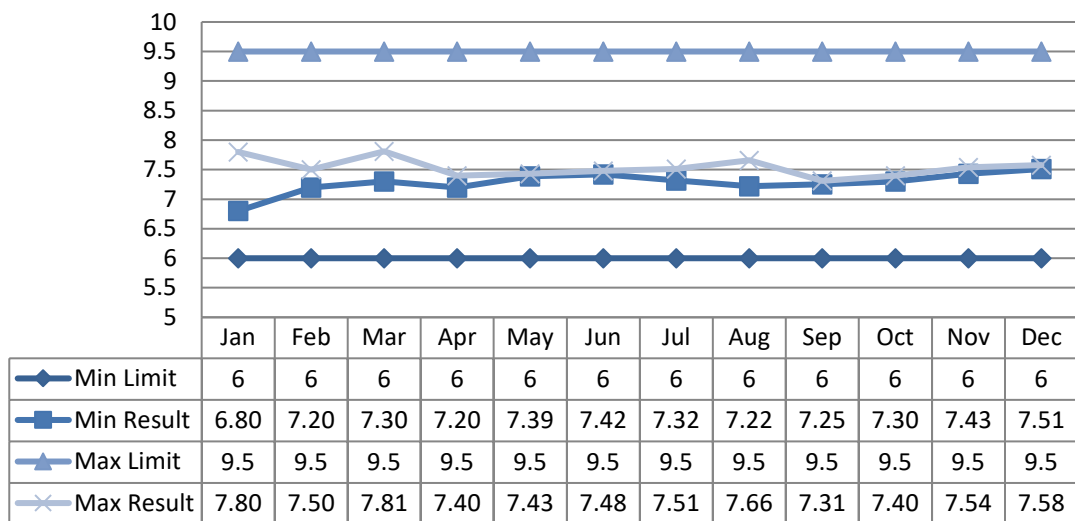
**Graph 9: 2024 Monthly E. Coli Final Effluent Geometric Mean Comparisons**



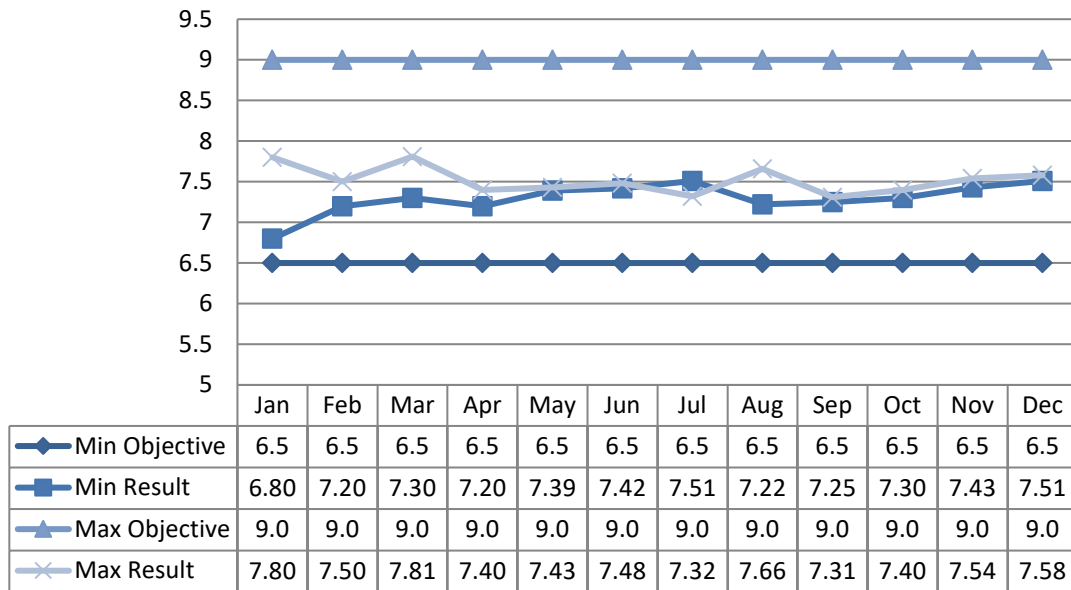
### pH

ECA No. 8497-8D3TU7 has a pH compliance limit within the range of 6.0 to 9.5 and an objective within the range of 6.8 - 7.8, inclusive, at all times. The pH of the final effluent ranged from 6.69 - 7.71 throughout 2024 which is within the ECA compliance limit at all times.

**Graph 10: 2024 Monthly pH Final Effluent Concentration Limit Comparisons**



**Graph 11: 2024 Monthly pH Final Effluent Concentration Objectives Comparisons**



### **Summary of Septage Received**

The Brechin/Lagoon City Wastewater Treatment Plant accepts septage from licensed haulers. A total of 242,100 m3 of septage was received in 2024.

### **ECA No. 8497-8D3TU7 Condition 9(5)(b) – Description of Operating Problems**

ECA #8497-8D3TU7\_Condition 9(5)(b) states that the annual performance report shall contain "*a description of any operating problems encountered and corrective actions taken.*"

The following details describe all operating problems encountered during the reporting period and the corrective actions taken:

**Table 5: Brechin Lagoon City WWTP Operational Challenges**

Month	Challenges	Corrective Actions
January	Elevated flows	Operational adjustments to accommodate flow
	Ice on aerators	Remove ice
February	Basin level trending lost	Repaired electrical connection
	Power failure at PS4	Monitor backup power
March	Elevated flows	Adjust flows
	Drainage plug failed in grit chamber	Repaired
April	Power failure	Monitor backup power
	Plugged pump at PS2	Cleared debris from pump
May	Clarifier 3 drive failure	Repaired drive
July	Multiple power failures/blips	Reset faulted equipment
	PS4 transfer switch failure	Replaced switch
August	Leak in septage receiving tank	Repaired leak
December	Frozen screw in plant one	Thawed with heat and removed ice
	Elevated flows	Adjust flows

### **ECA No. 8497-8D3TU7 Condition 9(5)(c) – Summary of Maintenance**

ECA No. 8497-8D3TU7 Condition 11(4)(e) states that the annual performance report shall contain *summary of all maintenance carried out on any major structure, equipment, apparatus or mechanism forming part of the Works.*

Routine maintenance and operation of the Brechin/Lagoon City Wastewater Treatment Plant and Sewage Pumping Stations in 2024 consisted of the following:

- Adjusted chemical dosages
- Adjusted the speed of the screw conveyor to match incoming flows
- Attended to Hydro failures
- Blew out and restarted return activated sludge siphons
- Changed the oil and filters in the digester blowers
- Cleaned secondary clarifiers
- Collected samples as per the ECA
- Conducted settleability tests of the MLSS
- Decanted the digesters to aeration basin
- De-iced mechanical aerators
- Exercised generators
- Flushed chemical pumps and lines
- Greased bearings of screw conveyor
- Observed speciation of microorganisms in MLSS with a microscope
- Mixed polymer solutions
- Performed routine maintenance and repair of pumps
- Pulled and cleaned or replaced UV bulbs
- Pump Stations Cleaned
- Respond to emergency alarms
- Wasted sludge as required to maintain appropriate MLSS concentration
- Repaired backflow preventers at pump stations
- Installed VFD on screw pump
- Replace UV bulbs
- PS4 refurbishment
- Cleaned clarifier 3

### **ECA No. 8497-8D3TU7Condition 9(4)(d) – Summary of Effluent Quality Assurance or Control Measures Undertaken**

ECA No. 8497-8D3TU7Condition 9(4)(d) states that the annual performance report shall contain *"a summary of effluent quality assurance or control measures undertaken in the reporting period."*

Effluent control measures include in-house sampling and testing for operational parameters such as suspended solids, soluble phosphorus, and dissolved oxygen. In-house testing provides real time results which are then evaluated to determine if process changes are necessary to enhance operational performance. All in-house sampling and analysis are performed by certified operations staff utilizing approved methods and protocols for sampling, analysis and recording as specified in the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", the Ministry's

publication, "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the publication, "Standard Methods for the Examination of Water and Wastewater".

All final effluent samples collected during the reporting period to meet ECA sampling requirements were submitted to SGS Lakefield Research Ltd. laboratory for analysis, with the exception of pH, temperature and unionized ammonia. SGS Lakefield Research has been deemed accredited by the Canadian Association for Laboratory Accreditation (CALA), meeting strict provincial guidelines including an extensive quality assurance/quality control program. By choosing this laboratory, the Ontario Clean Water Agency is ensuring appropriate control measures are undertaken during sample analysis. The pH and temperature parameters were analyzed in the field at the time of sample collection by certified operators, to ensure accuracy and precision of the results obtained. The unionized ammonia was calculated using the total ammonia nitrogen concentration, pH and temperature as required by the facility Environmental Compliance Approval.

Effluent quality assurance is maintained in several ways. Laboratory samples are sent to an accredited laboratory (SGS Canada Inc. - Lakefield) for analysis of all effluent parameters. Sampling calendars issued to the operator which denote frequency of sampling. Calendars are used as a tracking mechanism throughout the month to ensure all required samples are collected. These calendars are submitted to the Process Compliance Technician at the end of each month for review. Raw and effluent samples are collected as per the Amended Environmental Compliance Approval and the results are reviewed on a regular basis to ensure compliance with the site's objectives and limits.

Work orders illustrating all scheduled and preventative maintenance to be completed are issued to the operator and/or mechanic. OCWA conducts internal audits of the facility and develops Action Plans to ensure deficiencies are identified.

#### **ECA No. 8497-8D3TU7 Condition 9(4)(e) – Summary of Calibration and Maintenance**

ECA No. 8497-8D3TU7 Condition 9(4)(e) states that the annual performance report shall contain *"a summary of the calibration and maintenance carried out on all effluent monitoring equipment."*

Calibrations on effluent monitoring equipment were performed by Flowmetrix Technical Services Inc. on May 14, 2024 for equipment located at the Brechin/ Lagoon City Wastewater Treatment Plant. Please see Appendix II: Calibration Reports.

<b>Table 6: Brechin/Lagoon City WWTP – Summary of Equipment Calibrations – 2024</b>	
Collection Monitoring Equipment	Date of Completion
Pump Station #4 Flow Meter	May 14, 2024
Pump Station #8 Flow Meter	May 14, 2024
Influent Monitoring Equipment	Date of Completion
Influent Flow Meter	May 14, 2024
Final Effluent Monitoring Equipment	Date of completion
Final Effluent Flow Meter	May 14, 2024
Online pH meter	May 14, 2024

## **ECA No. 8497-8D3TU7 Condition 9(4)(f) – Description of Efforts Made and Results Achieved to Meet Effluent Objectives**

OCWA uses a number of best efforts to achieve the Effluent Objectives. Effluent quality assurance and control measures include in-house sampling and testing for operational parameters such as suspended solids, phosphorus, dissolved oxygen, etc. In-house testing provides real time results which are then used to enhance process and operational performance. OCWA also collects raw sewage and effluent samples as per the ECA and reviews these results on a regular basis to ensure compliance with the ECA objectives and limits.

OCWA uses a computerized maintenance management system which generates work orders to ensure maintenance of equipment is proactively performed. In addition, OCWA provides regular status reports to the Owner which includes operational data, equipment inventory, financial statements, maintenance activities and capital improvement recommendations.

OCWA has developed comprehensive manuals detailing operations, maintenance, instrumentation and emergency procedures. To ensure facilities are operated in compliance with applicable legal requirements, facility staff have access to a network of operational compliance and support experts at the cluster, region and corporate level.

**Table 7: Efforts Made to Meet the Effluent Objectives of Condition 9**

1. Sampling effluent as per the ECA.
2. Visual Inspection of the effluent while performing rounds.
3. Annual calibration of the pH meter.
4. Annual calibration of the flow meters.
5. Performing preventative maintenance activities in accordance with work order schedules.
6. Monitoring treatment processes through regular in-house checks and review of lab results.
7. Sludge monitoring of primary clarifiers & adjustments to syphon rates based on tank levels to reduce solids carryover.
8. Visual review of microbiological activity of activated sludge to ensure appropriate F/M ratio and control filamentous.

The Brechin/Lagoon City WWTP was able to consistently meet the Effluent Objectives throughout 2024.

## **Carbonaceous Biochemical Oxygen Demand (CBOD5)**

ECA No. 8497-8D3TU7 sets the CBOD5 monthly average concentration objective at 8.0 mg/L.

**Table 8: Monthly CBOD5 Final Effluent Concentration Objective Comparisons**

Monthly Average	Average Concentration (mg/L)	Concentration Objective Target (mg/L)	Objective Achieved
January	4.0	8.0	Yes
February	3.0	8.0	Yes
March	3.5	8.0	Yes
April	3.2	8.0	Yes
May	4.0	8.0	Yes
June	3.5	8.0	Yes
July	4.0	8.0	Yes
August	4.0	8.0	Yes
September	4.0	8.0	Yes
October	3.6	8.0	Yes

<b>November</b>	3.5	8.0	Yes
<b>December</b>	4.0	8.0	Yes

### **Total Suspended Solids (TSS)**

ECA No. 8497-8D3TU7 sets the TSS monthly average concentration objective at 12.0 mg/L.

**Table 9: Monthly TSS Final Effluent Concentration Objective Comparisons**

<b>Month</b>	<b>Average Concentration (mg/L)</b>	<b>Concentration Objective Target (mg/L)</b>	<b>Objective Achieved</b>
<b>January</b>	4.8	12.0	Yes
<b>February</b>	4.25	12.0	Yes
<b>March</b>	4.5	12.0	Yes
<b>April</b>	4.2	12.0	Yes
<b>May</b>	3.0	12.0	Yes
<b>June</b>	3.5	12.0	Yes
<b>July</b>	3.2	12.0	Yes
<b>August</b>	2.5	12.0	Yes
<b>September</b>	5.75	12.0	Yes
<b>October</b>	2.0	12.0	Yes
<b>November</b>	2.5	12.0	Yes
<b>December</b>	4.6	12.0	Yes

### **Total Phosphorus (TP)**

ECA No. 8497-8D3TU7 sets the TP monthly average concentration objective at 0.24 mg/L.

**Table 10: Monthly TP Final Effluent Concentration Objective Comparisons**

<b>Month</b>	<b>Average Concentration (mg/L)</b>	<b>Concentration Objective Target (mg/L)</b>	<b>Objective Achieved</b>
<b>January</b>	0.06	0.24	Yes
<b>February</b>	0.07	0.24	Yes
<b>March</b>	0.08	0.24	Yes
<b>April</b>	0.05	0.24	Yes
<b>May</b>	0.04	0.24	Yes
<b>June</b>	0.05	0.24	Yes
<b>July</b>	0.05	0.24	Yes
<b>August</b>	0.05	0.24	Yes
<b>September</b>	0.06	0.24	Yes
<b>October</b>	0.04	0.24	Yes
<b>November</b>	0.04	0.24	Yes
<b>December</b>	0.09	0.24	Yes



### E.Coli

ECA No. 8497-8D3TU7 sets the monthly E. Coli geometric mean objective at 100 cfu/100mL.

**Table 11: Monthly E. Coli Final Effluent Concentration Objective Comparisons**

Month	Geometric Mean (cfu/100mL)	Concentration Objective Target (cfu/100mL)	Objective Achieved
January	8.85	100	Yes
February	3.13	100	Yes
March	20.85	100	Yes
April	14.90	100	Yes
May	2	100	Yes
June	10.14	100	Yes
July	4.98	100	Yes
August	21.13	100	Yes
September	3.80	100	Yes
October	2	100	Yes
November	2.38	100	Yes
December	25.26	100	Yes

### pH

The pH of the effluent ranged from 6.80 – 7.81 throughout 2024 which is within the ECA design objectives of 6.50 to 9.00, inclusive, at all times.

**Table 12: Monthly pH Final Effluent Concentration Objective Comparisons**

Month	Minimum	Maximum
January	6.8	7.8
February	7.2	7.5
March	7.3	7.81
April	7.2	7.4
May	7.39	7.43
June	7.42	7.48
July	7.32	7.51
August	7.22	7.66
September	7.25	7.31
October	7.3	7.4
November	7.43	7.54
December	7.51	7.58

### Unionized Ammonia

The concentration of un-ionized ammonia is calculated using the total ammonia nitrogen, along with field pH and temperature using the methodology stipulated in “Ontario’s Provincial Water Quality Objectives” dated July 1994, as amended. The following are the results for the calculated unionized ammonia.

**Table 13: Weekly Final Effluent pH, Temperature and Calculated Un-ionized Ammonia**

Date	Total Ammonia Nitrogen: NH <sub>3</sub> + NH <sub>4</sub> <sup>+</sup> as N [mg/L]	Field pH	Field temp 'C	Un-ionized Ammonia
03/01/2024	0.1	7.8	4.7	0.0008
08/01/2025	0.1	7.8	3.1	0.0007
15/01/2024	0.1	7.6	0.9	0.0004
22/01/2024	0.5	6.8	0.8	0.0003
29/01/2024	0.1	7.4	4.3	0.0003
06/02/2024	0.1	7.2	3.8	0.0002
13/02/2024	0.1	7.5	4.3	0.0004
20/02/2024	0.3	7.5	2	0.0009
27/02/2024	0.1	7.5	3.1	0.0003
05/03/2024	0.1	7.3	5	0.0002
11/03/2024	0.1	7.5	3.2	0.0003
18/03/2024	0.1	7.81	4.9	0.0008
25/03/2024	0.1	7.3	4.1	0.0002
03/04/2024	0.1	7.3	6.5	0.0003
08/04/2024	0.1	7.2	7	0.0002
15/04/2024	0.1	7.3	6.8	0.0003
22/04/2024	0.1	7.4	6.7	0.0004
29/04/2024	0.1	7.4	8.8	0.0004
06/05/2024	0.1	7.4	9.6	0.0005
13/05/2024	0.2	7.4	10.8	0.0010
22/02/2024	0.1	7.39	13.8	0.0006
27/05/2024	0.1	7.43	13.5	0.0007
03/06/2024	0.1	7.48	12.6	0.0007
10/06/2024	0.1	7.46	12.7	0.0007
18/06/2024	0.1	7.42	16.8	0.0008
24/06/2024	0.1	7.46	14.6	0.0008
02/07/2024	0.1	7.37	14.9	0.0006
08/07/2024	0.1	7.32	18	0.0007
16/07/2024	0.1	7.51	17.3	0.0010
22/07/2024	0.1	7.49	16.9	0.0010
29/07/2024	0.1	7.42	17.7	0.0009
06/08/2024	0.1	7.63	18.4	0.0015
12/08/2024	0.1	7.35	16.3	0.0007
19/08/2024	0.1	7.66	17.6	0.0015
26/08/2024	0.1	7.22	17.2	0.0005
04/09/2024	0.1	7.25	15.9	0.0005
09/09/2024	0.1	7.31	14.6	0.0005
16/09/2024	0.1	7.3	17.3	0.0006

23/09/2024	0.1	7.29	17.9	0.0007
02/10/2024	0.1	7.3	15.8	0.0006
07/10/2024	0.1	7.33	12.8	0.0005
15/10/2024	0.1	7.33	10.8	0.0004
22/10/2024	0.1	7.34	12.4	0.0005
28/10/2024	0.1	7.4	9.1	0.0004
04/11/2024	0.1	7.46	8.9	0.0005
12/11/2024	0.1	7.43	8.1	0.0004
18/11/2024	0.1	7.51	6.9	0.0005
26/11/2024	0.1	7.54	6.5	0.0005
02/12/2024	0.2	7.54	3.4	0.0008
09/12/2024	0.5	7.51	4.4	0.0019
16/12/2024	0.8	7.52	4.45	0.0032
23/12/2024	0.8	7.58	2.4	0.0031
30/12/2024	0.1	7.51	6.8	0.0005

### **Temperature**

The final effluent temperature ranged from 0.8°C to 18.4°C.

### **Additional Parameters**

The parameters listed below are collected as per ECA or regulatory requirements or for process optimization.

### **Influent Samples**

Influent sampling is completed in order to make the necessary process adjustments to stay within the Final Effluent Objectives and limits set in the ECA.

**Table 14: Monthly Influent Sample Result Concentration Averages**

<b>Month</b>	<b>Biochemical Oxygen Demand - BOD5 (mg/L)</b>	<b>Total Suspended Solids – TSS (mg/L)</b>	<b>Total Kjeldahl Nitrogen – TKN (mg/L)</b>	<b>Total Phosphorus – TP (mg/L)</b>
<b>January</b>	38.0	62.0	5.2	1.06
<b>February</b>	35.0	41.0	12.2	1.27
<b>March</b>	54.0	87.0	14.4	0.94
<b>April</b>	24.0	49.0	5.6	0.56
<b>May</b>	72.0	79.0	11.8	0.95
<b>June</b>	63.0	77.0	16.0	1.28
<b>July</b>	109.0	113.0	16.4	1.87
<b>August</b>	135.0	146.0	12.8	1.35
<b>September</b>	74.0	60.0	19.10	1.71
<b>October</b>	96.0	206.0	16.0	1.57
<b>November</b>	59.0	102.0	21.2	1.91
<b>December</b>	69.0	67.0	17.9	1.58

#### **ECA No. 8497-8D3TU7 Condition 9(5)(g) – Summary of Biosolids**

The total volume of sludge generated in 2024 was 841 m<sup>3</sup> which was slightly lower than the amount of sludge generated in 2023. Wessuc Inc. has been contracted to haul, land apply the Biosolids on their approved sites. Monthly sludge samples are collected & tested for metals listed in the Ontario Guidelines for Sewage Biosolids Utilization on Agricultural Lands. There is enough storage to store sludge at the Brechin/ Lagoon City WWTP for the rest of the year.

**Table 15: Monthly Sludge Generation Volumes**

<b>Month</b>	<b>Volume (m<sup>3</sup>)</b>
<b>January</b>	0
<b>February</b>	0
<b>March</b>	0
<b>April</b>	0
<b>May</b>	0
<b>June</b>	540
<b>July</b>	0
<b>August</b>	301
<b>September</b>	0
<b>October</b>	0
<b>November</b>	0
<b>December</b>	0
<b>Total</b>	841

The anticipated volume of biosolids for the next reporting period is not expected to be significantly different from this reporting period. There are no expected changes in the current sludge handling methods that are currently utilized. Refer to Appendix III: Biosolids Summary

#### **ECA #8497-8D3TU7 Condition 9(5)(h) – Community Complaints**

During the 2024 reporting period there was no community complaints received.

#### **ECA #8497-8D3TU7 Condition 9(5)(i) – Summary of all Bypass, Spill or Abnormal Discharge Events**

During the 2024 reporting period there was no Bypasses, spills and abnormal discharge events.

#### **ECA #8497-8D3TU7 Condition 9(5)(j) – Status Update of the Initial Effluent Characterization as per Condition 8 subsection (1) until it has been completed and the required report has been submitted.**

The initial effluent characterization was submitted as per Condition 8 Section (1). No updates occurred during the reporting period.

#### **ECA #8497-8D3TU7 Condition 9(5)(k)- any other information the *District Manager* requires from time to time.**

The District Manager has not requested any additional information be included in this report.

#### **ECA #147-W601 Condition 4.6.9 – Summary of Efforts Made to Reduce Overflows, Spills and Bypasses.**

*a) A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.*

- Efforts to identify and eliminate inflow and infiltration (I&I) sources through CCTV inspections in 2024. The findings of the inspections were to inform budget recommendations to make necessary repairs in 2025 to deficiencies identified.
- An annual \$50,000 budget is allocated to an I&I reduction program.

*b) Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines.*

The Ramara Sanitary Sewage Collection system does not contain combined sewers and therefore is not required to complete a Pollution Prevention and Control Plan (PPCP).

*c) An assessment of the effectiveness of each action taken.*

Nothing to report at this time.

*d) An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.*

Not applicable.

*e) Public reporting approach including proactive efforts.*

The Township of Ramara utilizes their website and social media platforms to post Media Releases. Residents have the ability to subscribe to receive Media Releases from the Township of Ramara to an email address. The Township of Ramara also distributes a quarterly publication as well as randomized campaigns that bring awareness to the Sewer Use Bylaw and other information related to municipal sewer use such as sump pump connections.

*f) A summary of Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.*

No alterations were made to the Authorized System within the reporting period.

# Appendix I

---

Performance Assessment Report

**1617 LAGOON CITY WASTEWATER TREATMENT PLANT 120002255**

	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-->
<b>Flows</b>																
Raw Flow: Total - Raw m³/d	71,293.00	46,854.00	47,409.80	59,616.60	52,109.61	37,171.39	41,269.10	26,685.31	40,396.87	41,706.44	42,973.20	52,361.87	559,847.19			0.00
Raw Flow: Avg - Raw m³/d	2,299.77	1,615.66	1,529.35	1,987.22	1,680.96	1,281.77	1,375.64	860.82	1,346.56	1,345.37	1,432.44	1,689.09		1,538.04		
Raw Flow: Max - Raw m³/d	3,792.80	3,358.50	2,134.60	3,765.00	2,493.72	2,274.57	2,764.51	1,595.40	2,499.20	2,209.70	2,290.60	2,679.30			3,792.80	0.00
Raw Flow: Count - Raw m³/d	31.00	29.00	31.00	30.00	31.00	29.00	30.00	31.00	30.00	31.00	30.00	31.00	364.00			0.00
Eff. Flow: Total - Final Effluent m³/d	70,897.83	44,248.07	46,465.89	60,258.35	51,913.39	37,111.47	47,298.23	26,808.16	40,874.94	43,886.54	47,426.73	52,512.38	569,701.98			0.00
Eff. Flow: Avg - Final Effluent m³/d	2,287.03	1,525.80	1,498.90	2,008.61	1,674.63	1,237.05	1,525.75	864.78	1,362.50	1,415.69	1,580.89	1,693.95		1,556.56		2,273.00
Eff. Flow: Max - Final Effluent m³/d	3,717.03	3,094.03	2,726.00	4,386.00	3,388.50	2,544.85	3,224.69	1,520.19	2,360.94	2,400.00	2,757.46	2,994.49			4,386.00	0.00
Eff Flow: Count - Final Effluent 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
<b>Carbonaceous Biochemical Oxygen Demand: CBOD</b>																
Eff: Avg cBOD5 - Final Effluent mg/L	< 4.00	< 3.00	< 3.50	< 3.20	< 4.00	< 3.50	< 4.00	< 4.00	< 4.00	< 3.60	< 3.50	< 4.00		< 3.70	< 10.00	
Eff: # of samples of cBOD5 - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			0.00
Loading: cBOD5 - Final Effluent kg/d	< 9.148	< 4.577	< 5.246	< 6.428	< 6.699	< 4.330	< 6.103	< 3.459	< 5.450	< 5.097	< 5.533	< 6.776		< 5.76	< 9.15	
<b>Biochemical Oxygen Demand: BOD5</b>																
Raw: Avg BOD5 - Raw mg/L	38.00	35.00	54.00	24.00	72.00	63.00	109.00	134.00	74.00	96.00	59.00	69.00		68.92	134.00	0.00
Raw: # of samples of BOD5 - Raw	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Percent Removal: BOD5 - Raw %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00
<b>Total Suspended Solids: TSS</b>																
Raw: Avg TSS - Raw mg/L	62.00	41.00	87.00	49.00	79.00	77.00	113.00	146.00	60.00	206.00	102.00	67.00		90.75	206.00	0.00
Raw: # of samples of TSS - Raw	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Eff: Avg TSS - Final Effluent mg/L	< 9.60	8.50	9.00	8.40	6.00	7.00	6.40	< 5.00	< 11.50	< 4.00	< 5.00	< 9.20	< 7.47	< 11.50	15.00	
Eff: # of samples of TSS - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00		53.00				0.00
Loading: TSS - Final Effluent kg/d	< 10.978	6.485	6.745	8.436	5.024	4.330	4.862	< 2.162	< 7.834	< 2.831	< 3.952	< 7.792		< 11.63	< 10.98	
Percent Removal: TSS - Raw %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00
<b>Total Phosphorus: TP</b>																
Raw: Avg TP - Raw mg/L	1.06	1.27	0.94	0.56	0.95	1.28	1.87	1.35	1.71	1.67	1.91	1.58		1.35	1.91	0.00
Raw: # of samples of TP - Raw	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Eff: Avg TP - Final Effluent mg/L	0.06	0.07	0.08	< 0.05	0.04	0.05	0.05	0.05	0.06	< 0.04	< 0.04	0.09		0.06	0.09	0.30
Eff: # of samples of TP - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	5.00	53.00				0.00
Loading: TP - Final Effluent kg/d	0.128	0.103	0.120	< 0.096	0.071	0.062	0.079	0.039	0.088	< 0.051	< 0.063	0.149		0.09	0.15	249.000
Percent Removal: TP - Raw %	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00
<b>Nitrogen Series</b>																
Raw: Avg TKN - Raw mg/L	5.20	12.20	14.40	5.60	11.80	16.00	16.40	12.80	19.10	16.00	21.20	17.90		14.06	21.20	0.00
Raw: # of samples of TKN - Raw	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Eff: Avg TAN - Final Effluent mg/L	< 0.18	< 0.15	< 0.10	< 0.10	< 0.13	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.48	< 0.15	< 0.48		
Eff: # of samples of TAN - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			0.00
Loading: TAN - Final Effluent kg/d	< 0.412	< 0.229	< 0.150	< 0.201	< 0.209	< 0.124	< 0.153	< 0.086	< 0.136	< 0.142	< 0.158	< 0.813	< 0.23	< 0.81		
Eff: Avg NO3-N - Final Effluent mg/L	8.66	10.02	8.66	8.21	10.96	13.98	15.26	20.30	17.18	14.86	11.85	8.79		12.39	20.30	0.00
Eff: # of samples of NO3-N - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	5.00	53.00				0.00
Eff: Avg NO2-N - Final Effluent mg/L	< 0.09	< 0.04	< 0.04	< 0.06	0.36	< 0.03	< 0.09	< 0.05	< 0.03	< 0.03	< 0.03	1.26	< 0.17	< 1.26		0.00
Eff: # of samples of NO2-N - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			0.00
<b>Disinfection</b>																
Eff: GMD E. Coli - Final Effluent cfu/100mL	9.07	3.13	20.84	14.90	2.00	13.34	4.98	9.86	3.80	2.00	2.38	25.26				
Eff: # of samples of E. Coli - Final Effluent	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	53.00			0.00

# Appendix II

---

Calibration Reports





AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL		EQUIPMENT DETAIL	
CUSTOMER	OCWA – Kawartha Lakes Hub	[MUT] MANUFACTURER	Rosemount
CONTACT	Nick Leroux	MODEL	8712
	Senior Operations Manager	CONVERTER SERIAL NUMBER	08060245142
	123 East St S		
	Bobcaygeon ON, K0M 1A0	PLANT ID	Lagoon City STP
	P: 705-623-7278	METER ID	Final Effluent Flow
	E: nleroux@ocwa.com	FIT ID	NA
		CLIENT TAG	0000336599
		OTHER	NA
		GPS COORDINATES	N 44°33.467 W 079°12.436
VER. BY - FM Daniel Kettlewell		VERIFICATION DATE	May 14th 2024
Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC- QMS document at the time this test was conducted.		CAL. FREQUENCY	Annual
		CAL. DUE DATE	May 2025

PROGRAMMING PARAMETERS		FORWARD TOTALIZER INFORMATION	
DIAMETER (DN)	mm 300	AS FOUND	469250 M3
F.S. FLOW - MAG	LPS 859.000	AS LEFT	469377 M3
F.S. RANGE - O/P	LPS 600.000	DIFFERENCE	127 M3
TUBE CAL. FACTOR	1108905010807005	TEST CRITERIA	
		AS FOUND CERTIFICATION TEST	Yes
		FORWARD FLOW DIRECTION	Yes
		ALLOWABLE [%] ERROR	5
		COMPONENTS TESTED	
		CONVERTER DISPLAY	yes
		mA OUTPUT	yes
		TOTALIZER	yes
		ACCURACY BASED ON [% o.r.]	yes
		ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.	
VERIFICATOR CAL. FACTOR	1000015010000000		
[16-digits]			

FLOW TUBE SIMULATION				QUALITY MANAGEMENT STANDARDS INFO.			
		0		3	10	30	ft/s
DISPLAY		0.00		3.00	10.00	30.00	ft/s
MUT Reading		0.00		3.00	10.00	30.00	ft/s
MUT % Error		n/a		0.00	0.00	0.00	%
mA OUTPUT		4.000		5.600	9.333	20.000	mA
MUT Reading		4 mA 3.999		5.601	9.342	20.024	mA
MUT % Error		20 mA -0.02		0.02	0.09	0.12	%
TOTALIZER						30.00	ft/s
TEST Accumulation						4600.00	ft
TIME						153.16	seconds
CALC. Velocity						30.03	ft/s
% Error						0.11	%
				[QMS] INFORMATION	IDENT.	ID #	
				[REFERENCE] FTS	ROS	1	
				PROCESS METER	PM	0	
				ANALOG METER	AM	n/a	
				STOP WATCH	SW	Yes	

\*All values are for "As Found" values.

COMMENTS	RESULTS		
	TEST	AVG % o.r.	PASS FAIL
Totalizer reset after verification.	DISPLAY	0.00	PASS
	mA OUTPUT	0.08	PASS
	TOTALIZER	0.11	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

### AS FOUND CERTIFICATION

**PASS**

CLIENT DETAIL		EQUIPMENT DETAIL	
CUSTOMER	OCWA – Kawartha Lakes Hub	[MUT] MANUFACTURER	Greyline
CONTACT	Nick Leroux	MODEL	OCF-IV
	Senior Operations Manager	CONVERTER SERIAL NUMBER	17849
	123 East St S		
	Bobcaygeon ON, K0M 1A0	PLANT ID	Lagoon City
	P: 705-623-7278	METER ID	Influent Flow
	E: nleroux@ocwa.com	FIT ID	NA
		CLIENT TAG	0000334212
		OTHER	NA
		GPS COORDINATES	N 44°33.467 W 079°12.436
VER. BY - FM Daniel Kettlewell		VERIFICATION DATE	May 14th 2024
Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-QMS document at the time this test was conducted.		CAL. FREQUENCY	Annual
		CAL. DUE DATE	May 2025

PROGRAMMING PARAMETERS				TOTALIZER	
NOTCH ANGLE (φ)	inches	45		AS FOUND	164312 M3
EMPTY DISTANCE, TX to notch	m	0.662		AS LEFT	164312 M3
TRANSDUCER (TX), to sump flc	m	0.78		DIFFERENCE	0 M3
SUMP LEVEL, zero flow	m	0.118		<b>TEST CRITERIA</b>	
				AS FOUND CERTIFICATION TEST	Yes
MAX. HEAD	m	0.300		ALLOWABLE [%] ERROR	15
BLANKING DISTANCE	m	0.362		<b>COMPONENTS TESTED</b>	
DEAD ZONE	m	0.000		CONVERTER DISPLAY	yes
MAX. FLOW	M3/H	101.4		mA OUTPUT	yes
F.S. RANGE - O/P	M3/H	101.4		TOTALIZER	no
				ACCURACY BASED ON [% o.r.]	yes
Ultrasonic Sensor is not installed high enough, to ensure full scale flow conditions				ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.	

AS FOUND TEST RESULTS							
		0.0	3.1	17.7	48.7	100.0	% F.S. Range
		0.000	0.075	0.150	0.225	0.300	m
REF. FLOW RATE		0.0	3.2	17.9	49.4	101.4	M3/H
MUT [Reading]		0.3	3.2	17.9	49.1	100.2	M3/H
MUT [Difference]		0.3	0.0	0.0	-0.3	-1.2	M3/H
MUT [% Error]		0.0	1.0	-0.1	-0.6	-1.2	%
mA OUTPUT		4.000	4.500	6.828	11.794	20.000	mA
MUT [Reading]	min. 4.000 mA	4.017	4.503	6.841	11.825	20.031	mA
MUT [Difference]	max. 20.000 mA	0.017	0.003	0.013	0.031	0.031	mA
MUT [% Error]		0.43	0.07	0.18	0.26	0.15	%
TOTALIZER - REF. FLOW RATE							
TOTALIZER [MUT]							
TEST TIME							
CALC. TOTALIZER							
ERROR							

COMMENTS			QUALITY MANAGEMENT STANDARDS INFO.			RESULTS		
-Results based on Internal Simulation not actual flow.			[QMS] INFORMATION	IDENT.	ID #	TEST	AVG % o.r.	PASS FAIL
			[REFERENCE] LEVEL	Sim. BOARD	n/a			
			PROCESS METER	PM	0	DISPLAY	-0.24	PASS
			STOP WATCH	SW	n/a	mA OUTPUT	0.22	PASS
						TOTALIZER	N/A	N/A

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

## VeriMaster - Flow Meter Verification Report

Customer Information		Meter Information	
Customer	OCWA Ramara	Meter Owner	PS4 0000336647
Verification Download	May-14-24	Meter Type	WaterMaster
		Sensor Size	DN200
		Pipe Status	Fluid Present
		Sensor Type	Fullbore
		Sensor Serial No	3K220000196136
		Transmitter Serial No	3K220000382532
		Tag	FIT-SPS#4
		Location	?

### Overall Status: Pass

The flowmeter has passed its internal continuous verification and automatic self calibration. It is working within +/- 1% of its original factory calibration

Summary of Results		Verification History	
Coil Group	Passed	OIML Accuracy Alarms	0
Electrode Group	Passed	Totaliser Information	
Sensor Group	Passed		
Transmitter Signal	Passed		
Transmitter Driver	Passed		
Output Group	Passed	Forward	3174226.77 m3
Configuration	Passed	Reverse	416.85 m3
		Net	3257471.25 m3
Sensor Information		Sensor Data	
Q3	1000.00 m3/h	Coil Current	179.9 mA
Calibration Accuracy	OIML Class 2	Coil Inductance	99.6 mH
Sensor Calibration Factors	113.8%; -0.55 mm/s; 11	Coil Inductance Shift	-0.5%
Date of Manufacture	2016 Oct 17	Coil / Loop Resistance	32.1 ohm
Run Hours	3141days 7hrs 45mins	Transmitter Data	
Transmitter Information		Tx Gain - Adjustment	0.0%
		VeriMaster Information	
		Version	01.00.03
		Limit Version	01.00.01
Current Output		Pulse Output	
		Output 1: 100.0Hz	Not tested
		Output 1: 50.0Hz	Not tested
		Output 2: 100.0Hz	Not tested
4mA Value	Pass : 3.992 mA ; 0.20%	Output 2: 50.0Hz	Not tested
12mA Value	Pass : 11.974 mA ; 0.22%		
20mA Value	Pass : 19.985 mA ; 0.08%		

Installation Comments / Equipment used:	Configuration Settings
DMM-0 used for mA output check	Mains Frequency 50 Hz
	Qmax 1000.00 m3/h
	Pulses/Unit 50.000000
	Pulses Limit Frequency 100.0 Hz
	Sensor User Span/Zero -100.0%; 0.00 mm/s
	User Flow Cutoff/Hysteresis 0.00%; 20%
	Meter Mode Forward Flow

Date May-14-24

Operator Signature

Print

#### ABB Instrumentation World Flow Technology

ABB Limited  
Oldends Lane, Stonehouse  
Gloucestershire, GL10 3TA UK  
Tel: +44(0) 1453 826661  
Fax: +44(0) 1453 821121  
instrumentation@gb.abb.com

ABB Automation Inc.  
125 East County Line Road  
Warminster, PA 18974 USA  
Tel: +1 215 674 6000  
Fax: +1 215 674 6394  
instrumentation@gb.abb.com

ABB Australia Pty Ltd.  
Bapaune Rd  
Moorebank, NSW 2170  
Tel: +61-2-982 1-0111  
Fax: +61-2-9821-0950

ABB Automation GmbH  
Dransfelder Str.2  
37079 Gottingen, GERMANY  
Tel: +49 (0) 551 905212  
Fax: +1 (215) 674 6394



AS FOUND CERTIFICATION

FORWARD FLOW DIRECTION

PASS

CLIENT DETAIL			EQUIPMENT DETAIL		
CUSTOMER	OCWA – Kawartha Lakes Hub		[MUT] MANUFACTURER	Krohne	
CONTACT	Nick Leroux		MODEL	IFC 300	
	Senior Operations Manager		SERIAL NUMBER	A08 03059	
	123 East St S		FUSE	Lighting Panel #14	
	Bobcaygeon ON, K0M 1A0				
	P: 705-623-7278		PLANT ID	Brechin Community Park	
	E: nleroux@ocwa.com		METER ID	Pump Station #08	
			FIT ID	N/A	
			CLIENT TAG	N/A	
			OTHER	N/A	
VER. BY - FM	Daniel Kettlewell		GPS COORDINATES	N 44°32.760 W 079°10.769	
Quality Management Standards Information -			VERIFICATION DATE	May 14th 2024	
Reference equipment and instrumentation used to			CAL. FREQUENCY	Annual	
conduct this verification test is found in our AC-			CAL. DUE DATE	May 2025	
QMS document at the time this test was					
conducted.					

PROGRAMMING PARAMETERS			FORWARD TOTALIZER INFORMATION		
DIAMETER (DN)	mm	150	AS FOUND	0	M3
F.S. FLOW - MAG	LPS	160.1	AS LEFT	0	M3
F.S. RANGE - O/P	LPS	60.000	DIFFERENCE	0	M3
CAL. k-FACTOR	GK	2.97280	TEST CRITERIA		
			AS FOUND CERTIFICATION TEST	Yes	
			FORWARD FLOW DIRECTION	Yes	
			ALLOWABLE [%] ERROR	15	
			COMPONENTS TESTED		
			CONVERTER DISPLAY	yes	
			mA OUTPUT	yes	
			TOTALIZER	Yes	
			ACCURACY BASED ON [% o.r.]	yes	
Zero Offset Flow	LPS	0.0000	ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.		

FLOW TUBE SIMULATION							
		0.0		0.5	1.0	2.0	m/s
		0.0		5.0	10.0	20.0	% F.S. Flow
		0.0		13.3	26.7	53.4	% F.S. Range
REF. FLOW RATE		0.000		8.01	16.01	32.02	LPS
MUT [Reading]		0.000		8.0	16.0	32.1	LPS
MUT [Difference]		0.000		-0.006	-0.012	0.075	LPS
MUT [% Error]		n/a		-0.08	-0.08	0.24	%
mA OUTPUT		4.000		6.135	8.270	12.540	mA
MUT [Reading]		3.999		6.139	8.278	12.548	mA
MUT [Difference]		-0.001		0.004	0.008	0.008	mA
MUT [% Error]		-0.02		0.07	0.10	0.06	%
TOTALIZER - REF. FLOW RATE						32.025	LPS
TOTALIZER [MUT]						3	M3
TEST TIME						93.61	SECONDS
CALC. TOTALIZER						2.998	M3
ERROR						0.07	%

COMMENTS			RESULTS		
			QUALITY MANAGEMENT STANDARDS INFO.		
			[QMS] INFORMATION	IDENT.	ID #
			[REFERENCE] FTS	KRO	1
			PROCESS METER	PM	0
			ANALOG METER	AM	N/A
			STOP WATCH	SW	YES
			TEST	AVG	PASS
			DISPLAY	% o.r.	FAIL
			mA OUTPUT	0.03	PASS
			TOTALIZER	0.05	PASS
				0.07	PASS

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.



[MUT] AS FOUND

[MUT] AS LEFT

**FAIL**  
**PASS**

CUSTOMER OCWA – Kawartha Lakes Hub  
CONTACT Nick Leroux  
Senior Operations Manager  
123 East St S  
Bobcaygeon ON, K0M 1A0  
P: 705-623-7278  
E: nleroux@ocwa.com

[MUT] MANUFACTURER ABB  
MODEL AX460/600010/STD  
SERIAL NUMBER 3K22000652669  
CLIENT TAG 0000336600  
LOCATION Lagon City STP  
OTHER Final Effluent Flow  
GPS COORDINATES N 44°33.467 W 079°12.436

VER. BY Daniel Kettlewell

TOLERANCE [pH] 0.1

Quality Management Standards Information -  
Standards, reference equipment, and  
instrumentation used to conduct this test outlining  
the lot#, and expiry date is found in our current  
QMS document.

VERIFICATION DATE May 14th 2024  
CAL. FREQUENCY Annual  
CAL. DUE DATE May 2025

**pH VERIFICATION**  
**NIST TRACEABLE (BUFFERS)**

**BEFORE CALIBRATION**

REFERENCE BUFFER			[MUT] READINGS			
pH BUFFER	TEMP. ° C	pH CORRECTED	pH	TEMP. ° C	pH - ERROR DIFF.	PASS FAIL
4.01	19.0	4.00	4.88	19.0	0.88	FAIL
7.01	19.1	7.03	7.45	19.1	0.42	FAIL
RESULT						FAIL

**AFTER CALIBRATION**

REFERENCE BUFFER			[MUT] READINGS			
pH BUFFER	TEMP. ° C	pH CORRECTED	pH	TEMP. ° C	pH - ERROR DIFF.	PASS FAIL
4.01	19.0	4.00	4.00	19.0	0.00	PASS
7.01	19.1	7.03	7.01	19.1	-0.02	PASS
RESULT						PASS

**COMMENTS**

Slope: 81.0%

**[QMS] INFORMATION**

**ITEM**

**ID #**

**[REFERENCE]**

4.01 BUFFER	pHBUFF4	1
7.01 BUFFER	pHBUFF7	1
TEMPERATURE REF.	DDTEMP	1

NIST Traceable Buffers were used to confirm the overall accuracy of this instrument. "AS FOUND" readings and "AS FOUND" readings are reported within this report. A temperature device was used to measure and record the buffer temperature to correct for pH values due to the effects related to buffer temperature.

# Appendix III

---

Biosolids Summary



Solids & Nutrients	Metals & Criteria	Last 4 Samples
Facility Works Number:	120002255	Receiver: Wetland area draining to Lake
Facility Owner:	Municipality: The Township of Ramara	Service Population: 2420
Facility Classification:	Class 2 Wastewater Treatment	Total Design Capacity:

Note: all parameters in this report are derived from the Bslq Station

Month	Hauled Vol. (m³)	Total Solids (mg/L)	Volatile Solids (mg/L)	Total Phosphorus (mg/L)	Total Ammonia Nitrogen (mg/L)	Nitrate as N (mg/L)	Nitrite as N (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Parameter Short Name	HauledVol	TS	VS	TP	NH3p_NH4p_N	NO3-N	NO2-N	TKN	Calculation in Report	K
T/S	IH Month.Total	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	- no T/S	Lab Published Month Mean
Jan		29,700.00	15,700.00	730.00	18.70	3.00	3.00	553.00	10.85	61.00
Feb		29,300.00	16,200.00	540.00	14.30	3.00	3.00	731.00	8.65	55.00
Mar		20,300.00	11,200.00	460.00	5.20	3.00	3.00	752.00	4.10	50.00
Apr		24,600.00	12,800.00	490.00	5.50	3.00	3.00	732.00	4.25	48.00
May		31,500.00	16,500.00	470.00	22.90	3.00	3.00	600.00	12.95	48.00
Jun	540.00	34,800.00	18,300.00	790.00	54.80	3.00	3.00	520.00	28.90	67.00
Jul		22,600.00	13,000.00	470.00	10.00	3.00	3.00	624.00	6.50	41.00
Aug	301.00	20,300.00	10,300.00	480.00	4.10	3.00	3.00	332.00	3.55	40.00
Sep		24,800.00	12,100.00	620.00	3.40	10.00	3.00	596.00	6.70	50.00
Oct		24,000.00	12,700.00	510.00	3.60	21.00	3.00	600.00	12.30	41.00
Nov		21,800.00	10,800.00	410.00	7.00	3.00	3.00	603.00	5.00	36.00
Dec		21,900.00	11,700.00	431.00	1.80	3.00	3.00	638.00	2.40	42.00
Average	420.50	25,466.67	13,441.67	533.42	12.61	5.08	3.00	606.75	8.85	48.25
Total	841.00	305,600.00	161,300.00	6,401.00	151.30	61.00	36.00	7,281.00	106.15	579.00

Solids & Nutrients		Metals & Criteria		Last 4 Samples							
Note: all parameters in this report are derived from the Bslq Station											
Month	Arsenic (mg/L)	Cadmium (mg/L)	Cobalt (mg/L)	Chromium (mg/L)	Copper (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Lead (mg/L)	Selenium (mg/L)	Zinc (mg/L)
Parameter Short Name	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	Zn
T/S	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean	Lab Published Month Mean
Jan	0.30	0.02	0.05	0.60	5.30	0.01	0.07	0.35	0.30	0.10	14.00
Feb	0.20	0.01	0.04	0.45	4.10	0.01	0.06	0.28	0.20	0.10	11.00
Mar	0.20	0.01	0.03	0.40	3.50	0.01	0.05	0.22	0.20	0.10	9.00
Apr	0.10	0.01	0.04	0.43	3.60	0.01	0.05	0.25	0.20	0.10	9.00
May	0.20	0.01	0.03	0.38	3.60	0.01	0.05	0.24	0.20	0.10	9.00
Jun	0.30	0.02	0.05	0.62	5.70	0.01	0.08	0.38	0.30	0.10	15.00
Jul	0.20	0.02	0.04	0.37	3.50	0.01	0.05	0.25	0.20	0.10	9.00
Aug	0.20	0.01	0.04	0.39	3.50	0.01	0.05	0.25	0.20	0.10	9.00
Sep	0.20	0.02	0.04	0.46	4.80	0.01	0.06	0.32	0.20	0.10	12.00
Oct	0.20	0.01	0.04	0.38	3.60	0.01	0.05	0.24	0.20	0.10	10.00
Nov	0.10	0.01	0.04	0.35	3.20	0.01	0.05	0.20	0.20	0.10	8.00
Dec	0.10	0.01	0.04	0.31	2.70	0.01	0.05	0.17	0.20	0.10	7.00
Average	0.19	0.01	0.04	0.43	3.93	0.01	0.06	0.26	0.22	0.10	10.17
Min. Acceptable Ammonia + Nitrate Nitrogen to Metal Ratio	100.00	500.00	50.00	6.00	10.00	1,500.00	180.00	40.00	15.00	500.00	4.00
Ammonia + Nitrate Nitrogen to Metal Ratio in Sludge	46.49	644.10	222.75	20.80	2.27	1,243.26	159.58	33.94	41.12	89.10	0.88