

Brechin/Lagoon City Sewage Treatment Plant

Annual Wastewater Performance Report

Prepared For: The Township of Ramara

Reporting Period of January 1st – December 31st, 2022

Issued: March 29, 2023

Revision: 0

Operating Authority:



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Background:

The Environmental Compliance Approval (ECA) No. 1114-745MQT issued on June 6th, 2007 was revoked and replaced by ECA No. 8497-8D3TU7 issued on June 28th, 2012. Condition 9 (5) in ECA No. 8497-8D3TU7 state the requirements for annual performance reports. The 2022 performance report has been prepared following the conditions of ECA No. 8497-8D3TU7, 9 (5). The Ontario Clean Water Agency was the operating authority during the reporting period January 1st-December 31st, 2022.

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; and*

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)

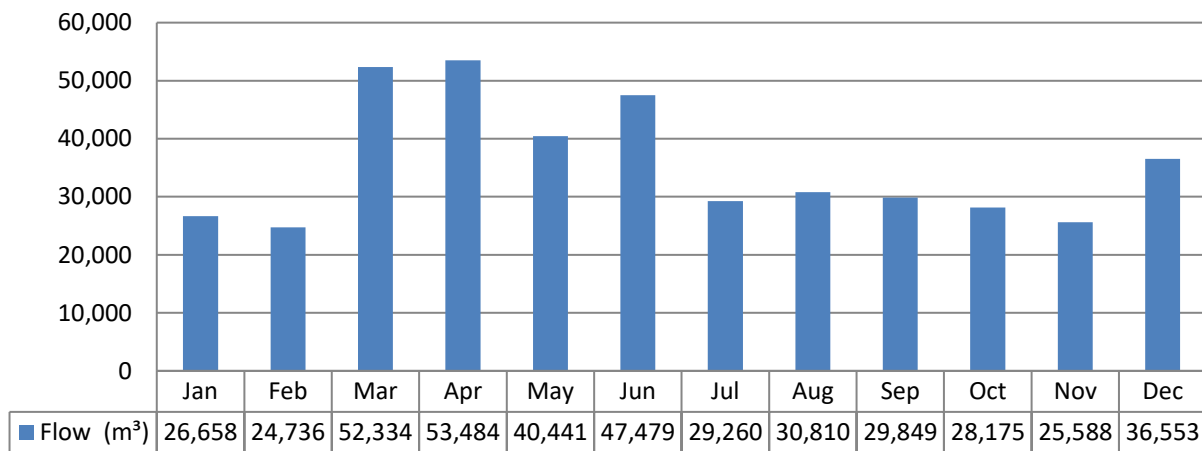
Summary of Influent Flow Data

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 an overview of the success and adequacy of the sewage Works.

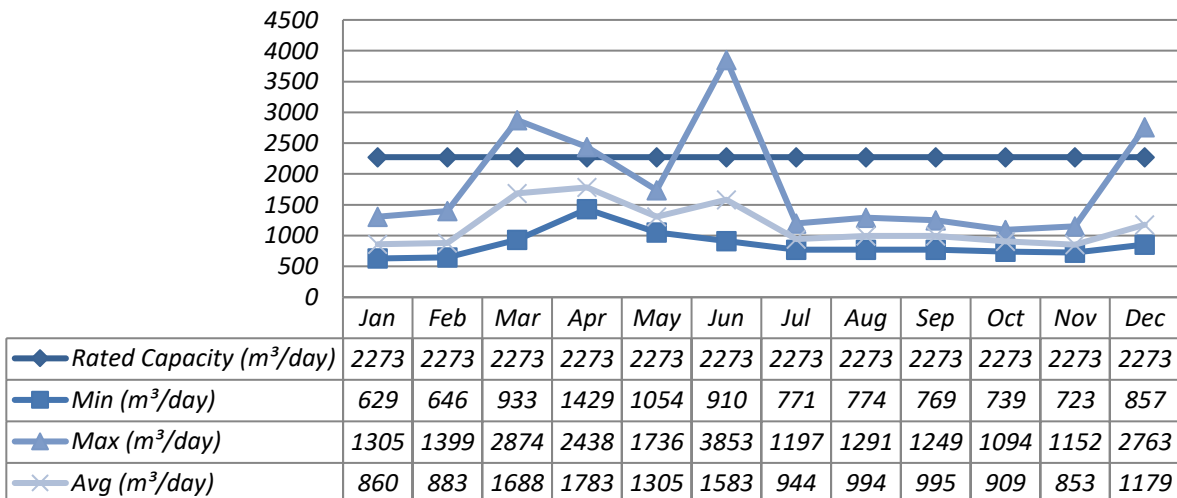
Condition 4(2)(b) of the (ECA) No. 8497-8D3TU7 indicates best efforts are to be made to operate at the rated capacity of the works. The rated capacity for the Brechin/Lagoon City Wastewater Treatment Plant is 2,273 m³/day and the annual average daily influent flow was 1,165.39 m³/day or 51.3 % of the rated capacity.

The total Influent flow in 2022 was 425,366.13 m³

Graph 1: 2022 Influent Flow Monthly Totals



Graph 2: 2022 Influent Daily Minimum, Maximum and Average Flows



Note: The above table shows exceedances in maximum flows during March, June and December. 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 ³ /day)	Maximum Daily Flow (m ³ /day)	Rated Capacity (m ³ /day)	Sewage Generation Rate (L/cap/day)
2012	1158	2405	1138	2915	2273	473
2013	1159	2408	1341	3204	2273	557
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
3 Year Average		2564	1272	3995	2273	496

*The number of connections were recalculated by the Township of Ramara, the number of connections in 2022 reflect the number that will be used going forward.

**Based on estimated service connections in Lagoon City and Brechin: 998 and 152 single family dwellings. The estimated population in Lagoon City: 1,996 (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 2022 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 m³/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 (2020-2023) average sewage generation rate is: 496 L/cap/day. With the current population of 2391 there is a projection of 1,186 m³/day of committed sewage flow. The estimated hydraulic reserve capacity for the Brechin Lagoon City Sewage Works in 2022 is 1087 m³/day.

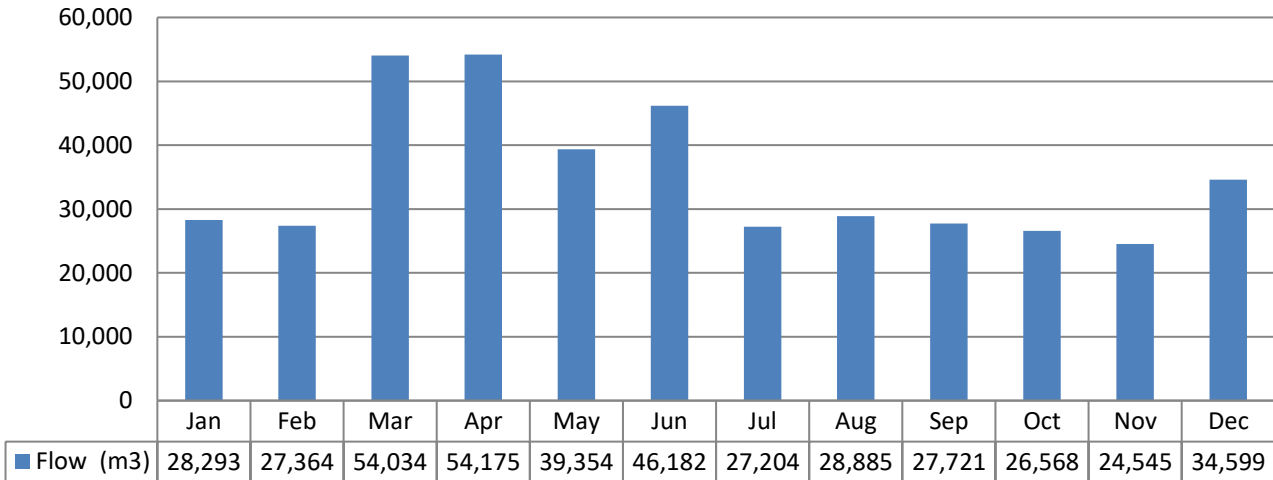
Summary of Effluent Flow Data

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 on overview of the success and adequacy of the sewage Works.

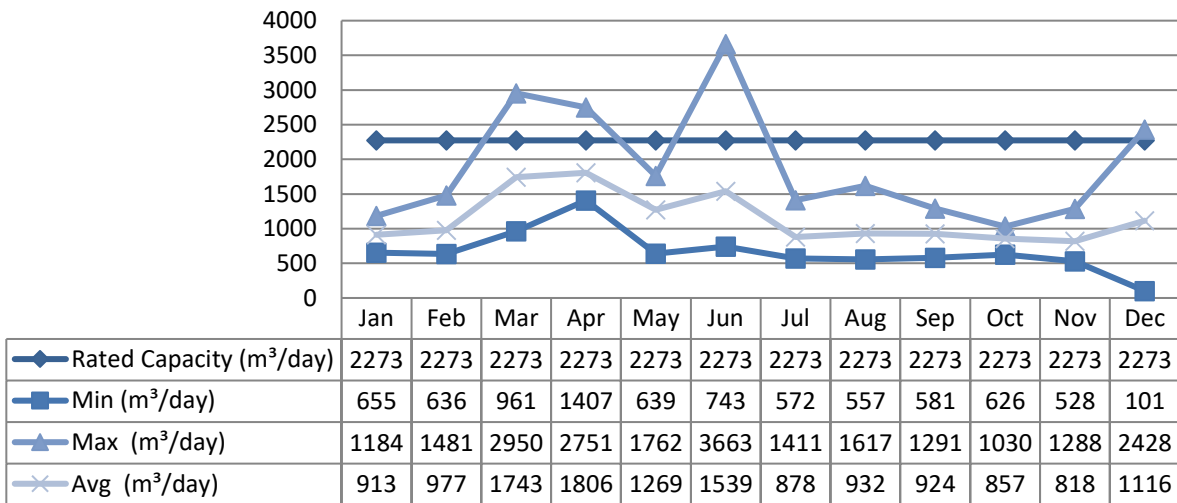
Condition 4(2)(b) of the (ECA) No. 8497-8D3TU7 indicates best efforts are to be made to operate at the rated capacity of the works. The rated capacity for the Brechin/Lagoon City Wastewater Treatment Plant is 2,273 m³/day and the annual average daily effluent flow was 1,147.74m³/day or 50.5 % of the rated capacity

The total effluent flow in 2022 was 418 924 m³

Graph 3: 2022 Effluent Flow Monthly Totals



Graph 4: 2022 Effluent Daily Minimum, Maximum and Average Flows



Note: The above table shows exceedances in maximum flows during March, June and December. 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.

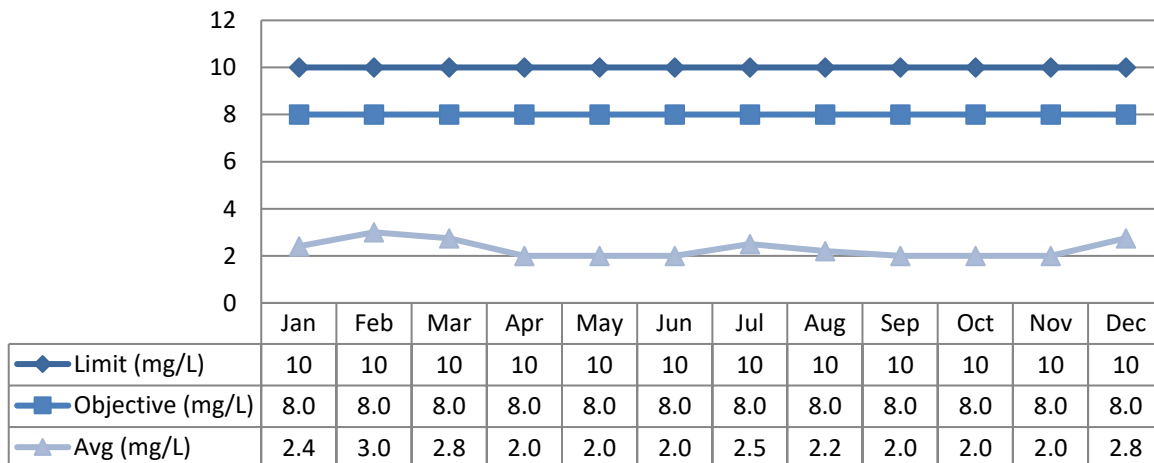
Carbonaceous Biochemical Oxygen Demand (CBOD5)

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 2022 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 2022.

Graph 5: 2022 Monthly CBOD5 Final Effluent Concentration Comparisons



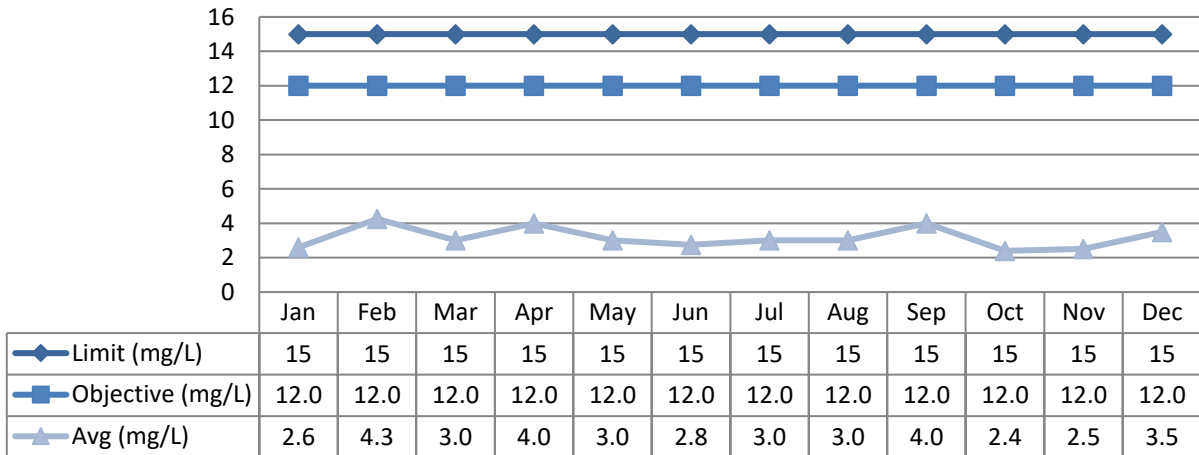
Total Suspended Solids (TSS)

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 2022 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 2022.

Graph 6: 2022 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 2022 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 2022.

Graph 7: 2022 Monthly Total Phosphorus Final Effluent Concentration Limit Comparisons

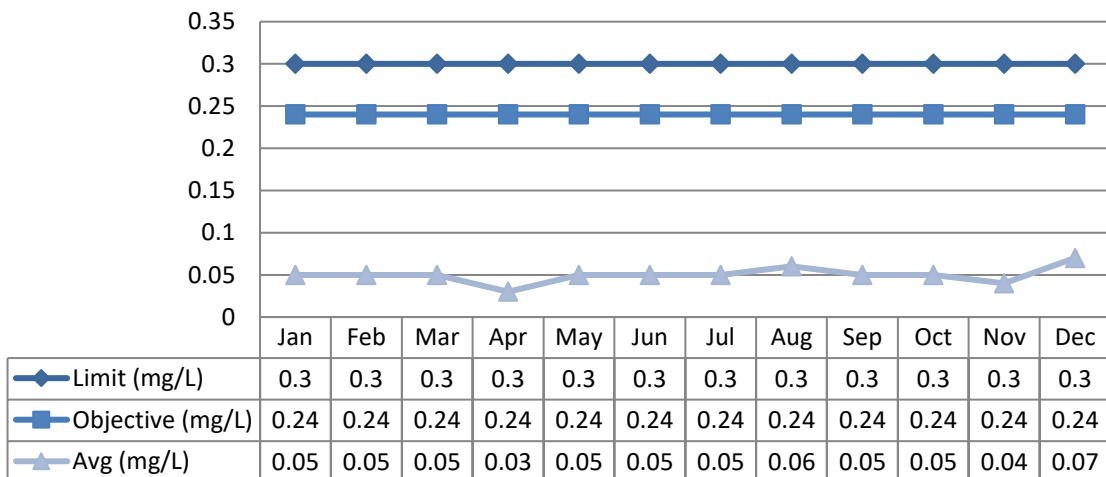


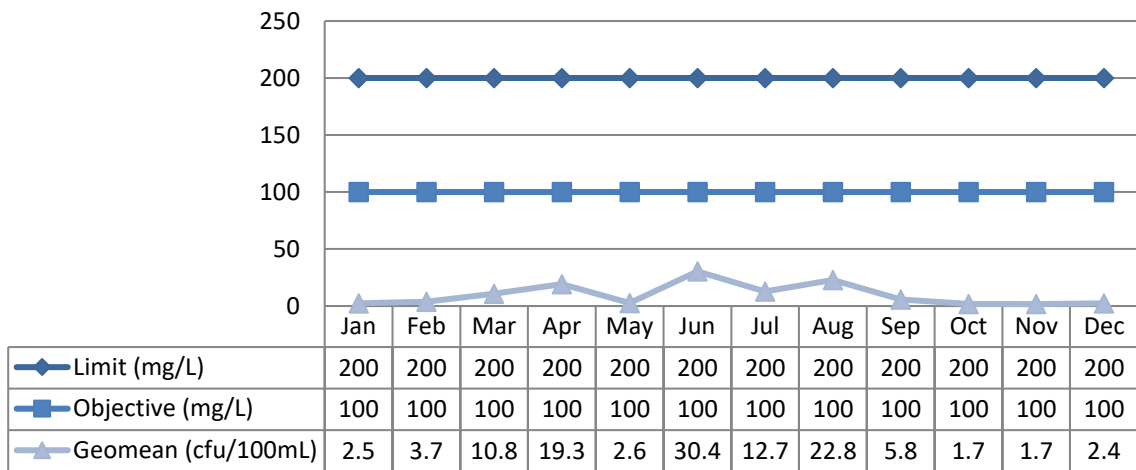
Table 4: 2022 Annual Average Concentration and Loading

Parameters	2022 Annual Average Concentration (mg/L)	Lake Simcoe Annual Average Concentration Limit /Objective	2022 Annual Average Loading (Kg/year)	Annual Loading Limit (Kg/year)	Lake Simcoe Annual Concentration Limit/Objective (mg/L)	Compliant (Y/N)
Total Phosphorus	0.05	0.15	20.59	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 2022. The monthly geomean objective was met every month in 2022.

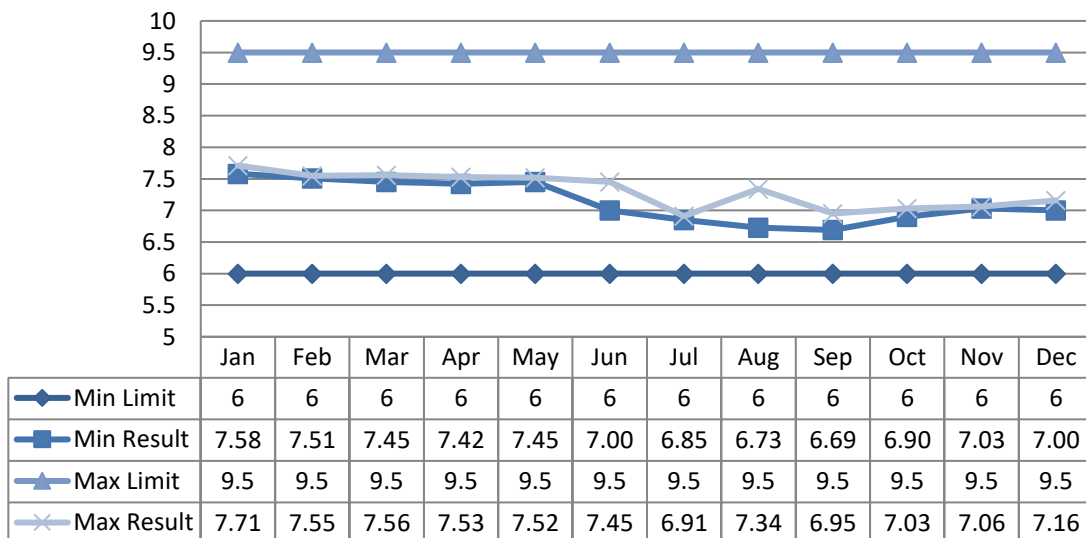
Graph 9: 2022 Monthly E. Coli Final Effluent Geometric Mean Comparisons



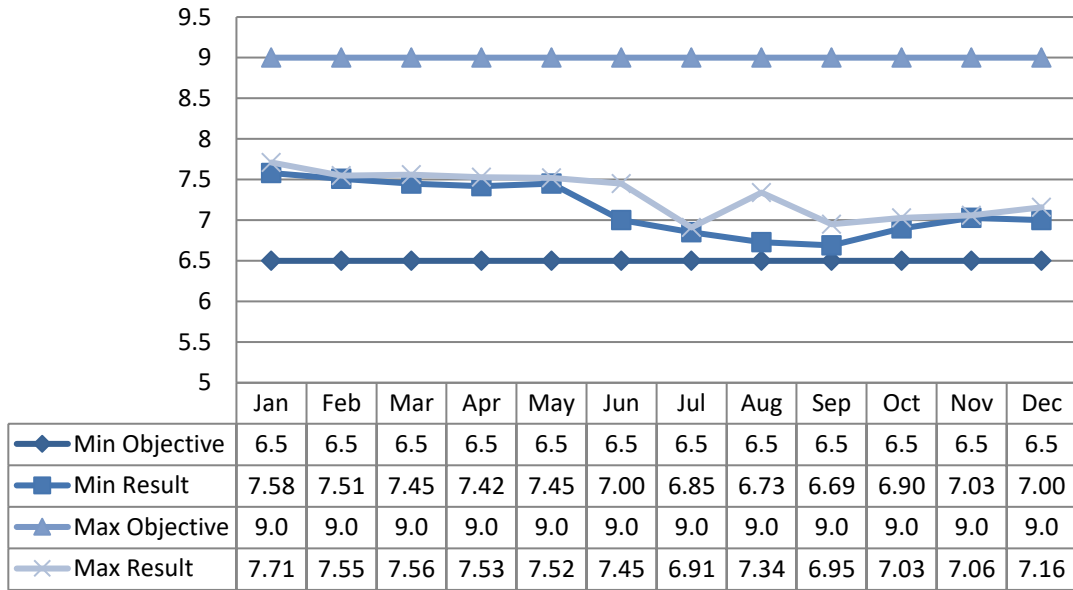
pH

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 6.5-9.0, inclusive, at all times. The pH of the final effluent ranged from 6.69-7.71 throughout 2022 which is within the ECA compliance limit at all times.

Graph 10: 2022 Monthly pH Final Effluent Concentration Limit Comparisons



Graph 11: 2022 Monthly pH Final Effluent Concentration Objectives Comparisons



Summary of Septage Received

The Brechin/Lagoon City Wastewater Treatment Plant accepts septage from licensed haulers. See Table 4 for summary of volumes received in 2022.

Table 5: Monthly Septage Volumes

Month	Volume (m ³)
January	16.28
February	17.79
March	25.55
April	27.25
May	56.02
June	52.99
July	30.28
August	15.14
September	26.49
October	7.57
November	0.00
December	28.20
Total	303.59

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 6: Brechin Lagoon City WWTP Operational Challenges

Month	Challenges	Corrective Actions
January	Pumping Station #2 pump blockage.	Contractor contacted, pump pulled, blockage removed.
	Aerator blockage.	Contractor contacted for repair. Blockage cleared aerator went back online.
	Main plant out of propane for heat.	Electric heaters turned on.
	Pumping Station #8 frequent high wet well level alarms.	Both pumps tested, miltronics issue.
February	Ice buildup by sensors in basin.	Remove ice from under sensor.
	Pumping Station #8 frequent high wet well level alarms.	Contractor contacted to repair and test.
	Drive Cable for Clarifier #3 failed.	Contractor contacted to repair.
March	High basin level alarm due to high flows.	Plant monitored, screw speed increased, siphons unblocked.
	High basin level due to high flows.	Plant monitored, screw speed increased, siphons unblocked.
April	Power outage, Pumping Station #3 unable to pump down with portable generator.	Monitoring, confirm operation upon power restoring. Contractor contacted to investigate transfer switch.
	Pumping Station #7 high level alarm, miltronics failed.	Monitored, pumping station manually pumped down, miltronics damaged from power spike, contractor contacted to repair/investigate.
	High basin level due to heavy rain event.	Plant monitored, screw speed increased, siphons unblocked.
	Pumping Station #2 pump blockage.	Contractor contacted, remove pump and clear debris.
	High basin level.	Plant monitored, screw speed increased.
May	Clarifier fault.	Unhooked issue, tighten cable, run clarifier on hand/monitor.
	Clarifier fault.	Started another clarifier, contractor contacted to repair.
June	New aerator hooked up.	Contractor contacted to install new aerator.
	Alum tank level sensor failure.	Level sensor repaired.
	One UV Bank not operating.	Contractor contacted to repair outlet.
July	Siphon failures.	Turn on in hand/ back into auto, power blips caused the issue.
	Screw pump failure.	Increased speed, pump came on. Re-primed siphons, monitor.
August	Pumping Station #4, Pump #1 failure.	Electrician contacted to reset/test pump #1.
September	Pumping Station #7- Miltronics Failure.	Contractor contacted to replace miltronics.
	Clarifier #2 Water Curtain failure.	Contractor onsite to replace water curtain.
	Aerator failure.	Contractors replaced aerator.

	Aerator failure.	Aerators sent to contractor for repair.
October	Brechin/Lagoon City WWTP-communication failure.	Phone company contacted, facility monitored, Pumping Stations checked. Phone line repair, alarm testing completed.
December	High flows due to wet weather, Basin level float failure.	Plant monitored, siphons cleared, increase pump speed.
	Faulty solenoid on clarifier #3 pneumatic valve.	Electrician contacted to place the fault solenoid.
	High flows due to wet weather/snow melt.	Plant monitored, siphons cleared, increase pump speed.

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 2022 consisted of the following:

- New miltronics installed for basin level monitoring
- New UV bank installed to replace old unit
- 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 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
 - Full replacement of all UV bulbs and sleeves occurred Jan 10, 2022
- Pump Stations Cleaned
- Repair and replace aerator
- Respond to emergency alarms
- Wasted sludge as required to maintain appropriate MLSS concentration

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. 8497-8D3TU7Condition 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 June 09, 2022 for equipment located at the Brechin/ Lagoon City Wastewater Treatment Plant. Please see Appendix II: Calibration Report.

Table 7: Brechin/Lagoon City WWTP – Summary of Influent and Final Effluent Monitoring Equipment – 2022	
Collection Monitoring Equipment	Date of Completion
Pump Station #4 Flow Meter	June 09, 2022
Pump Station #8 Flow Meter	June 09, 2022
Influent Monitoring Equipment	Date of Completion
Influent Flow Meter	June 09, 2022
Final Effluent Monitoring Equipment	Date of completion
Final Effluent Flow Meter	June 09, 2022
*Online pH meter	June 09, 2022

*It was not clearly identified that the online pH meter did not pass annual calibrations, consequently parts have been ordered along with the local MECP Inspector being notified upon discovery.

ECA No. 8497-8D3TU7 Condition 9(4)(f) – Description of Efforts Made

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 8: 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 pumping volume based on tank levels to reduce solids carryover to the secondary clarifiers.
8. Increase dissolved oxygen (DO) set point to aerations tanks to help with filamentous control.
9. 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 2022.

Carbonaceous Biochemical Oxygen Demand (CBOD5)

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

Table 9: Monthly CBOD5 Final Effluent Concentration Objective Comparisons

Monthly Average	Average Concentration (mg/L)	Concentration Objective Target (mg/L)	Objective Achieved
January	2.4	8.0	Yes
February	3.0	8.0	Yes
March	2.8	8.0	Yes
April	2.0	8.0	Yes
May	2.0	8.0	Yes
June	2.0	8.0	Yes
July	2.5	8.0	Yes
August	2.2	8.0	Yes
September	2.0	8.0	Yes
October	2.0	8.0	Yes
November	2.0	8.0	Yes
December	2.8	8.0	Yes

Total Suspended Solids (TSS)

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

Table 10: Monthly TSS Final Effluent Concentration Objective Comparisons

Month	Average Concentration (mg/L)	Concentration Objective Target (mg/L)	Objective Achieved
January	2.6	12.0	Yes
February	4.3	12.0	Yes
March	3.0	12.0	Yes
April	4.0	12.0	Yes
May	3.0	12.0	Yes
June	2.8	12.0	Yes
July	3.0	12.0	Yes
August	3.0	12.0	Yes
September	4.0	12.0	Yes
October	2.4	12.0	Yes
November	2.5	12.0	Yes
December	3.5	12.0	Yes

Total Phosphorus (TP)

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

Table 11: Monthly TP Final Effluent Concentration Objective Comparisons

Month	Average Concentration (mg/L)	Concentration Objective Target (mg/L)	Objective Achieved
January	0.05	0.24	Yes
February	0.05	0.24	Yes
March	0.05	0.24	Yes
April	0.03	0.24	Yes
May	0.05	0.24	Yes
June	0.05	0.24	Yes
July	0.05	0.24	Yes
August	0.06	0.24	Yes
September	0.05	0.24	Yes
October	0.05	0.24	Yes
November	0.04	0.24	Yes
December	0.07	0.24	Yes

E.Coli

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

Table 12: Monthly E. Coli Final Effluent Concentration Objective Comparisons

Month	Geometric Mean (cfu/100mL)	Concentration Objective Target (cfu/100mL)	Objective Achieved
January	2.5	100	Yes
February	3.7	100	Yes
March	10.8	100	Yes
April	19.3	100	Yes
May	2.6	100	Yes
June	30.4	100	Yes
July	12.7	100	Yes
August	22.8	100	Yes
September	5.8	100	Yes
October	1.7	100	Yes
November	1.7	100	Yes
December	2.4	100	Yes

pH

The pH of the effluent ranged from 6.69– 7.71 throughout 2022 which is within the ECA design objectives of 6.50 to 9.00, inclusive, at all times.

Table 13: Monthly pH Final Effluent Concentration Objective Comparisons

Month	Minimum	Maximum
January	7.58	7.71
February	7.51	7.55
March	7.45	7.56
April	7.42	7.53
May	7.45	7.52
June	7.00	7.45
July	6.85	6.91
August	6.73	7.34
September	6.69	6.95
October	6.90	7.03
November	7.03	7.06
December	7.00	7.16

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 14: Weekly Final Effluent pH, Temperature and Calculated Un-ionized Ammonia

Date	Total Ammonia Nitrogen: NH ₃ + NH ₄ ⁺ as N [mg/L]	Field pH	Field temp 'C	Un-ionized Ammonia
01/04/2022	1.6	7.63	5.4	0.0088
01/12/2022	4.0	7.71	6.0	0.0276
01/19/2022	5.9	7.58	3.0	0.0237
01/24/2022	6.9	7.67	2.3	0.0322
01/31/2022	7.6	7.64	3.0	0.0350
02/09/2022	5.8	7.51	4.5	0.0224
02/14/2022	4.6	7.52	2.6	0.0156
02/22/2022	4.5	7.51	5.1	0.0183
02/28/2022	4.0	7.55	3.5	0.0156
03/09/2022	2.6	7.45	6.2	0.0100
03/14/2022	3.0	7.52	5.1	0.0125
03/21/2022	1.9	7.53	7.2	0.0096
03/28/2022	2.5	7.56	4.9	0.0112
04/06/2022	1.5	7.48	8.2	0.0073
04/11/2022	1.4	7.53	7.6	0.0073
04/19/2022	2.7	7.42	8.0	0.0112
04/24/2022	2.1	7.42	10.9	0.0110
05/04/2022	0.5	7.45	10.6	0.0027
05/09/2022	0.4	7.49	11.6	0.0026
05/16/2022	0.2	7.46	16.5	0.0018

05/24/2022	0.1	7.52	13.3	0.0008
05/30/2022	0.1	7.52	13.3	0.0008
06/06/2022	0.1	7.45	15.8	0.0008
06/13/2022	0.1	7.15	16.0	0.0004
06/20/2022	0.1	7.13	16.1	0.0004
06/27/2022	0.1	7.00	19.2	0.0004
07/06/2022	0.1	6.85	18.2	0.0002
07/11/2022	0.1	6.91	19.6	0.0003
07/18/2022	0.1	6.87	21.0	0.0003
07/25/2022	0.1	6.86	21.4	0.0003
08/02/2022	1.3	7.34	21.7	0.0127
08/08/2022	0.4	6.73	23.6	0.0011
08/16/2022	4.1	6.74	20.1	0.0090
08/22/2022	0.4	6.74	21.7	0.0010
08/29/2022	0.1	6.81	20.9	0.0003
09/07/2022	0.1	6.85	19.9	0.0003
09/12/2022	0.1	6.83	20.7	0.0003
09/19/2022	2.3	6.69	19.6	0.0043
09/27/2022	0.1	6.95	16.8	0.0003
10/04/2022	0.1	7.03	14.4	0.0003
10/11/2022	0.2	6.90	13.4	0.0004
10/17/2022	0.1	6.92	13.4	0.0002
10/24/2022	0.1	6.97	14.3	0.0002
10/31/2022	0.1	7.01	12.7	0.0002
11/07/2022	0.1	7.03	14.8	0.0003
11/14/2022	0.1	7.06	10.9	0.0002
11/21/2022	0.6	7.05	6.2	0.0009
11/28/2022	0.1	7.05	10.1	0.0002
12/07/2022	0.1	7.16	9.9	0.0003
12/12/2022	0.1	7.12	7.7	0.0002
12/20/2022	0.1	7.10	6.5	0.0002
12/28/2022	0.5	7.00	5.1	0.0006

Temperature

The final effluent temperature ranged from 2.3°C to 23.6°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 15: Monthly Influent Sample Result Concentration Averages

Month	Biochemical Oxygen Demand - BOD5 (mg/L)	Total Suspended Solids – TSS (mg/L)	Total Kjeldahl Nitrogen – TKN (mg/L)	Total Phosphorus – TP (mg/L)
January	82.0	117.0	20.4	2.04
February	115.0	100.0	21.3	2.29
March	60.0	40.0	10.1	0.80
April	44.0	203.0	10.1	0.79
May	118.0	76.0	12.1	1.08
June	89.0	45.0	20.8	1.80
July	146.0	200.0	28.0	3.05
August	60.0	55.0	15.6	1.52
September	40.0	34.0	10.2	1.02
October	83.0	140.0	18.5	2.07
November	53.0	359.0	12.3	1.47
December	94.0	89.0	18.7	1.83

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

The total volume of sludge generated in 2022 was 1305 m³ which was slightly higher than the amount of sludge generated in 2021. Wessuc Inc. has been contracted to haul, land apply the Biosolids on their approved sites. Monthly sludge sampled 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 16: Monthly Sludge Generation Volumes

Month	Volume (m ³)
January	0
February	0
March	0
April	0
May	585
June	0
July	0
August	0
September	0
October	720
November	0
December	0
Total	1305

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

ECA #8497-8D3TU7 (5)(h) states that the annual performance report shall contain: “a summary of any complaints received and any steps taken to address the complaints.” Refer to Table 17 below for summary.

During the 2022 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 2022 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.

Appendix I

Performance Assessment Report

1617 LAGOON CITY WASTEWATER TREATMENT PLANT 120002255

	1 / 2022	2 / 2022	3 / 2022	4 / 2022	5 / 2022	6 / 2022	7 / 2022	8 / 2022	9 / 2022	10 / 2022	11 / 2022	12 / 2022	<--Total-->	<--Avg-->	<--Max-->
Flows															
Raw Flow: Total - Raw m³/d	26,658.40	24,735.60	52,333.60	53,484.20	40,441.20	47,478.80	29,259.80	30,810.00	29,849.30	28,174.70	25,587.80	36,552.73	425,366.13		
Raw Flow: Avg - Raw m³/d	859.95	883.41	1,688.18	1,782.81	1,304.55	1,582.63	943.86	993.87	994.98	908.86	852.93	1,179.12		1,165.39	
Raw Flow: Max - Raw m³/d	1,305.20	1,399.20	2,873.60	2,438.00	1,735.60	3,853.10	1,197.20	1,291.30	1,248.50	1,093.70	1,152.30	2,762.90			3,853.10
Raw Flow: Count - Raw m³/d	31.00	28.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00			365.00
Eff. Flow: Total - Final Effluent m³/d	28,293.00	27,364.00	54,034.00	54,175.00	39,354.16	46,181.76	27,204.41	28,884.63	27,721.21	26,567.78	24,545.18	34,599.15	418,924.28		
Eff. Flow: Avg - Final Effluent m³/d	912.68	977.29	1,743.03	1,805.83	1,269.49	1,539.39	877.56	931.76	924.04	857.03	818.17	1,116.10		1,147.74	
Eff. Flow: Max - Final Effluent m³/d	1,184.00	1,481.00	2,950.00	2,751.00	1,762.00	3,863.44	1,411.04	1,616.52	1,290.80	1,030.18	1,287.72	2,428.40			3,863.44
Eff Flow: Count - Final Effluent m³/d	31.00	28.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00			365.00
Carbonaceous Biochemical Oxygen Demand: CBOD															
Eff: Avg cBOD5 - Final Effluent mg/L	< 2.40	< 3.00	< 2.75	< 2.00	< 2.00	< 2.00	< 2.50	< 2.20	< 2.00	< 2.00	< 2.00	< 2.75	< 2.29	< 3.00	
Eff: # of samples of cBOD5 - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		
Loading: cBOD5 - Final Effluent kg/d	< 2.190	< 2.932	< 4.793	< 3.612	< 2.539	< 3.079	< 2.194	< 2.050	< 1.848	< 1.714	< 1.636	< 3.069	< 2.64	< 4.79	
Biochemical Oxygen Demand: BOD5															
Raw: Avg BOD5 - Raw mg/L	82.00	115.00	60.00	44.00	118.00	89.00	146.00	60.00	40.00	83.00	53.00	94.00	82.00	146.00	
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	1.00	12.00		
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			
Total Suspended Solids: TSS															
Raw: Avg TSS - Raw mg/L	117.00	100.00	40.00	203.00	76.00	45.00	200.00	55.00	34.00	140.00	359.00	89.00	121.50	359.00	
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		
Eff: Avg TSS - Final Effluent mg/L	2.60	4.25	3.00	4.00	3.00	2.75	3.00	< 3.00	< 4.00	< 2.40	< 2.50	< 3.50	< 3.13	< 4.25	
Eff: # of samples of TSS - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		
Loading: TSS - Final Effluent kg/d	2.373	4.153	5.229	7.223	3.808	4.233	2.633	< 2.795	< 3.696	< 2.057	< 2.045	< 3.906	< 3.68	< 7.22	
Total Phosphorus: TP															
Raw: Avg TP - Raw mg/L	2.04	2.29	0.80	0.79	1.08	1.80	3.05	1.52	1.02	2.07	1.47	1.83	1.65	3.05	
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		
Eff: Avg TP - Final Effluent mg/L	0.05	< 0.05	< 0.05	< 0.03	< 0.05	< 0.05	< 0.05	< 0.06	< 0.05	< 0.05	< 0.04	< 0.07	< 0.05	< 0.07	
Eff: # of samples of TP - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		
Loading: TP - Final Effluent kg/d	1.415	1.368	2.702	1.625	1.968	2.309	1.360	1.733	1.386	1.328	0.982	2.421	20.598		
Nitrogen Series															
Raw: Avg TKN - Raw mg/L	20.40	21.30	10.10	10.10	12.10	20.80	28.00	15.60	10.20	18.50	12.30	18.70	16.51	28.00	
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		
Eff: Avg TAN - Final Effluent mg/L	5.20	4.73	2.50	1.93	< 0.26	< 0.10	< 0.10	< 1.26	< 0.65	< 0.12	< 0.23	< 0.20	< 1.46	< 5.20	
Eff: # of samples of TAN - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		
Loading: TAN - Final Effluent kg/d	4.746	4.618	4.358	3.476	< 0.330	< 0.154	< 0.088	< 1.174	< 0.601	< 0.103	< 0.184	< 0.223	< 1.67	< 4.75	
Eff: Avg NO3-N - Final Effluent mg/L	8.53	9.26	5.48	6.55	12.87	13.79	21.50	19.60	17.98	17.14	16.10	11.63	13.37	21.50	
Eff: # of samples of NO3-N - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		
Eff: Avg NO2-N - Final Effluent mg/L	0.67	0.58	0.09	0.28	0.56	< 0.15	0.29	< 1.17	< 0.45	0.89	0.25	0.15	0.46	1.17	
Eff: # of samples of NO2-N - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		
Disinfection															
Eff: GMD E. Coli - Final Effluent cfu/100mL	2.49	3.72	10.77	19.25	2.64	30.40	12.68	22.76	5.83	1.74	1.68	2.38			
Eff: # of samples of E. Coli - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	52.00		

*Loading: TP-Final Effluent is a total annual loading calculated by adding the total monthly load discharged each month for each calendar year as defined in ECA No. 8497-8D3TU7.

Appendix II

Calibration Reports

ABB Ability

Verification for measurement devices



Verification Report for: WaterMaster

Measurement made easy

Measurement & Analytics
Service

Installation Details

Meter Owner	Ramara
Machine Name	Lagoon City PS
Medium	

Operator Details

Date and Time	09-06-2022 14:00:33
Operator's Name	Admin
Operator's Signature	

Customer Details

Site Address	
Telephone	
Email	

Sensor Information

Sensor Serial No.	5022909
Sensor SAP/ERP No.	3K220000196136
Sensor Type	WM Full Bore
Sensor Size	DN 200
Q3	1000.000 m ³ /hr
Calibration Accuracy	OIML Class 2
Sensor Calibration Factors	113.841 %, -0.550 mm/s
Date of Manufacture	07:50:17 05/12/2013
Sensor User Span/Zero	-100.000 %; 0.000 mm/s
User Flow Cutoff/Hysteresis	0.000 %; 20.000 %
Coil Current	180.000 mA
Coil Inductance	99.734 mH
Coil / Loop Resistance	32.337 Ohm

Summary Verification of the Sensor

Summary of Results

Coil Group	PASS
Electrode Group	PASS
Sensor Group	PASS
Transmitter Signal	PASS
Transmitter Driver	PASS
Configuration	PASS

Sensor Data

Coil Inductance Shift	-0.393 %
Cable Length	0 m
Electrode Backoff Voltage	0.389 V
Electrode Differential Voltage	-0.065 V

Pipe Status **Full Pipe**

Transmitter Information

Transmitter Serial No	9023016
Transmitter SAP/ERP No.	3K220000382532
Application Version	V01.06.00 03/03/15
MSP Version	01.00.00
Date of Manufacture	12:54:55 17/10/2016
Tx Gain Adjustment	0.047 %
OIML Accuracy Alarms	OFF
Mains Freq	50.000 Hz
Qmax	1000.000 m ³ /hr
Pulses/Unit	50.000
FS Freq	5000.000 Hz
Pulses Limit Freq	100.000 Hz
Meter Mode	Forward Only

Summary Verification of the Transmitter

Output Group

Current Output 31/32 **PASS**

Applied	Measured	Result
4 mA	4.000 mA	PASS
12 mA	11.971 mA	PASS
20 mA	19.981 mA	PASS

Pulse Output 41/42 **NOT EXECUTED**

Applied	Measured	Result
5250 Hz		
2625 Hz		

Pulse Output 51/52 **NOT EXECUTED**

Applied	Measured	Result
5250 Hz		
2625 Hz		

Totalizer Information

	Start	End	Difference
Forward	2372168.088 m ³	2372172.089 m ³	4.000 m ³
Reverse	416.848 m ³	416.848 m ³	0.000 m ³
Net	2455412.693 m ³	2455416.574 m ³	3.881 m ³



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	PLANT ID Brechin Community Park
P: 705-623-7278	METER ID Pump Station #08
E: nleroux@ocwa.com	FIT ID N/A
	CLIENT TAG N/A
	OTHER N/A
	GPS COORDINATES N 44°32.760 W 079°10.769
VER. BY - FM Travis Krayetski	VERIFICATION DATE June 9th 2022
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	CAL. FREQUENCY Annual
	CAL. DUE DATE June 2023

PROGRAMMING PARAMETERS	FORWARD TOTALIZER INFORMATION
DIAMETER (DN) mm 150	AS FOUND 643052.1 M3
F.S. FLOW - MAG LPS 160.1	AS LEFT 643055.8 M3
F.S. RANGE - O/P LPS 60.000	DIFFERENCE 3.7 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
	ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.
Zero Offset Flow LPS 0.0000	

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]		0.004	7.9	16.7	31.6	LPS
MUT [Difference]		0.004	-0.095	0.688	-0.425	LPS
MUT [% Error]		n/a	-1.19	4.30	-1.33	%
mA OUTPUT		4.000	6.135	8.270	12.540	mA
MUT [Reading]	min. 4.000 mA	4.000	6.145	8.353	12.461	mA
MUT [Difference]	max. 20.000 mA	0.000	0.010	0.083	-0.079	mA
MUT [% Error]		0.00	0.16	1.00	-0.63	%
TOTALIZER - REF. FLOW RATE					32.025	LPS
TOTALIZER [MUT]					2	M3
TEST TIME					63.10	SECONDS
CALC. TOTALIZER					2.021	M3
ERROR					-1.04	%

COMMENTS	QUALITY MANAGEMENT STANDARDS INFO.	RESULTS		
	[QMS] INFORMATION IDENT. ID #	TEST	AVG % o.r.	PASS FAIL
	[REFERENCE] FTS KRO 1	DISPLAY	0.59	PASS
	PROCESS METER PM AZ	mA OUTPUT	0.13	PASS
	ANALOG METER AM N/A	TOTALIZER	-1.04	PASS
	STOP WATCH SW YES			

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 Senior Operations Manager 123 East St S Bobcaygeon ON, K0M 1A0 P: 705-623-7278 E: nleroux@ocwa.com	MODEL	OCF-IV
		CONVERTER SERIAL NUMBER	17849
		PLANT ID	Lagoon City
		METER ID	Influent Flow
		FIT ID	NA
		CLIENT TAG	NA
		OTHER	NA
		GPS COORDINATES	N 44°33.467 W 079°12.436
VER. BY - FM	Travis Krayetski	VERIFICATION DATE	June 9th 2022
Quality Management Standards Information - Reference equipment and instrumentation used to conduct this verification test is found in our AC-		CAL. FREQUENCY	Annual
		CAL. DUE DATE	June 2023

PROGRAMMING PARAMETERS				TOTALIZER	
NOTCH ANGLE (φ)	inches	45		AS FOUND	119096 M3
EMPTY DISTANCE, TX to notch	m	0.662		AS LEFT	119096 M3
TRANSDUCER (TX), to sump flc	m	0.78		DIFFERENCE	0 M3
SUMP LEVEL, zero flow	m	0.118			
				TEST CRITERIA	
MAX. HEAD	m	0.300		AS FOUND CERTIFICATION TEST	Yes
BLANKING DISTANCE	m	0.362		ALLOWABLE [%] ERROR	15
DEAD ZONE	m	0.000			
MAX. FLOW	M3/H	101.4		COMPONENTS TESTED	
F.S. RANGE - O/P	M3/H	101.4		CONVERTER DISPLAY	yes
				mA OUTPUT	yes
				TOTALIZER	no
				ACCURACY BASED ON [% o.r.]	yes
				ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.	

Ultrasonic Sensor is not installed high enough, to ensure full scale flow conditions

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]		0.0	3.1	17.8	49.0	100.5	M3/H
MUT [Difference]		0.0	0.0	-0.2	-0.4	-0.9	M3/H
MUT [% Error]		0.0	-0.9	-0.9	-0.9	-0.9	%
mA OUTPUT		4.000	4.500	6.828	11.794	20.000	mA
MUT [Reading]	min. 4.000 mA	4.000	4.500	6.832	11.806	20.023	mA
MUT [Difference]	max. 20.000 mA	0.000	0.000	0.004	0.012	0.023	mA
MUT [% Error]		0.00	0.00	0.05	0.10	0.11	%
TOTALIZER - REF. FLOW RATE							
TOTALIZER [MUT]							
TEST TIME							
CALC. TOTALIZER							
ERROR							

COMMENTS	QUALITY MANAGEMENT STANDARDS INFO.			RESULTS		
	[QMS] INFORMATION	IDENT.	ID #	TEST	AVG % o.r.	PASS FAIL
	[REFERENCE] LEVEL	Sim. BOARD	n/a			
-Results based on Internal Simulation not actual flow.	PROCESS METER	PM	2	DISPLAY	-0.87	PASS
-Head Level was verified with a 1 point live flowrate.	STOP WATCH	SW	n/a	mA OUTPUT	0.05	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.



AS FOUND CERTIFICATION
FORWARD FLOW DIRECTION
PASS

CLIENT DETAIL

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

EQUIPMENT DETAIL

[MUT] MANUFACTURER Rosemount
MODEL 8712
CONVERTER SERIAL NUMBER 08060245142

PLANT ID Lagoon City STP
METER ID Final Effluent Flow
FIT ID NA
CLIENT TAG NA
OTHER NA
GPS COORDINATES N 44°33.467 W 079°12.436

VERIFICATION DATE June 9th 2022
CAL. FREQUENCY Annual
CAL. DUE DATE June 2023

VER. BY - FM Travis Krayetski

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

PROGRAMMING PARAMETERS

DIAMETER (DN) mm 300
F.S. FLOW - MAG LPS 859.000
F.S. RANGE - O/P LPS 600.000
TUBE CAL. FACTOR 1108905010807005

FORWARD TOTALIZER INFORMATION

AS FOUND 1371409 M3
AS LEFT 1371521 M3
DIFFERENCE 112 M3

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

	0
DISPLAY	0.00
MUT Reading	0.00
MUT % Error	n/a
mA OUTPUT	4.000
MUT Reading 4 mA	4.000
MUT % Error 20 mA	0.00
TOTALIZER	
TEST Accumulation	
TIME	
CALC. Velocity	
% Error	

3	10	30	ft/s
3.00	10.00	30.00	ft/s
3.00	10.00	30.00	ft/s
0.00	0.00	0.00	%
5.600	9.333	20.000	mA
5.602	9.344	20.028	mA
0.04	0.11	0.14	%
		30.00	ft/s
		2100.00	ft
		69.91	seconds
		30.04	ft/s
		0.13	%

QUALITY MANAGEMENT STANDARDS INFO.

[QMS] INFORMATION	IDENT.	ID #
[REFERENCE] FTS	ROS	1
PROCESS METER	PM	12
ANALOG METER	AM	n/a
STOP WATCH	SW	Yes

*All values are for "As Found" values.

COMMENTS

RESULTS

TEST	AVG % o.r.	PASS FAIL
DISPLAY	0.00	PASS
mA OUTPUT	0.10	PASS
TOTALIZER	0.13	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 **FAIL**
[MUT] AS LEFT **FAIL**

CUSTOMER CONTACT OCWA – Kawartha Lakes Hub
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[MUT] MANUFACTURER ABB
MODEL AX460/600010/STD
SERIAL NUMBER 3K22000652669
CLIENT TAG n/a
LOCATION Lagoon City STP
OTHER Final Effluent Flow
GPS COORDINATES N 44°33.467 W 079°12.436

VER. BY Travis Krayetski

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

VERIFICATION DATE June 9th 2022
CAL. FREQUENCY Annual
CAL. DUE DATE June 2023

**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	16.2	4.00	4.88	16.2	0.88	FAIL
7.01	16.2	7.04	7.57	16.2	0.53	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	16.2	4.00	4.44	16.2	0.44	FAIL
7.01	16.2	7.04	7.34	16.2	0.30	FAIL
RESULT						FAIL

COMMENTS

Slope response extremely slow for Buffer 4 and 7
The electrode pair is becoming fatigued
Probe replacement is required

[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

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digester Type: AEROBIC

Solids and Nutrients

Facility: LAGOON CITY WASTEWATER TREATMENT PLANT
 Period: 01/01/2022 to 12/01/2022
 Facility Owner: Municipality: The Township of Ramara
 Facility Classification: Class 2 Wastewater Treatment

Month	Total Sludge Hauled (m3)	Avg. Total Solids (mg/L)	Avg. Volatile Solids (mg/L)	Avg. Total Phosphorus (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Site	LAGOON CITY WASTEWATER TREATMENT PLANT									
Station	Bslq Station only									
Parameter Short Name	HauledVol	TS	VS	TP	NH3p_NH4p_N	NO3-N	NO2-N	TKN	calculation in report - no T/S	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		Lab Published Month Mean
Jan		28,200.000	15,200.000	720.000	5.200	0.400	0.700	788.000	2.800	63.000
Feb		26,600.000	14,300.000	740.000	7.900	1.000	0.600	802.000	4.450	63.000
Mar		30,400.000	16,400.000	700.000	2.800	1.300	0.600	1,040.000	2.050	67.000
Apr		33,100.000	17,600.000	694.000	8.000	0.900	5.800	1,090.000	4.450	68.000
May	585.000	34,400.000	18,400.000	800.000	10.800	5.800	0.400	816.000	8.300	74.000
Jun		23,200.000	12,300.000	470.000	16.600	0.300	0.300	589.000	8.450	45.000
Jul		35,000.000	18,600.000	840.000	31.700	0.300	0.200	992.000	16.000	70.000
Aug		28,700.000	13,300.000	400.000	12.200	1.400	1.400	681.000	6.800	40.000
Sep		31,500.000	16,600.000	790.000	37.800	0.500	0.600	948.000	19.150	61.000
Oct	720.000	32,200.000	17,700.000	790.000	52.300	1.100	3.100	854.000	26.700	56.000
Nov		27,800.000	15,500.000	570.000	2.800	0.400	0.700	734.000	1.600	47.000
Dec		24,000.000	13,400.000	590.000	23.500	0.300	0.700	632.000	11.900	55.000

Average	652.500	29,591.667	15,775.000	675.333	17.633	1.142	1.258	830.500	9.388	59.083
Total	1,305.000	355,100.000	189,300.000	8,104.000	211.600	13.700	15.100	9,966.000	112.650	709.000

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digester Type: AEROBIC

Metals and Criteria

Facility: LAGOON CITY WASTEWATER TREATMENT PLANT
Period: 01/01/2022 to 12/01/2022

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)
Site	LAGOON CITY WASTEWATER TREATMENT PLANT										
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	0.200	0.022	0.040	0.450	5.300	0.009	0.070	0.420	0.200	0.100	16.000
Feb	0.200	0.019	0.030	0.390	4.300	0.008	0.050	0.270	0.200	0.100	13.000
Mar	0.200	0.024	0.040	0.480	5.300	0.012	0.060	0.330	0.200	0.100	16.000
Apr	0.200	0.024	0.040	0.440	5.000	0.010	0.050	0.330	0.200	0.100	14.000
May	0.200	0.021	0.040	0.500	5.400	0.012	0.060	0.360	0.200	0.100	16.000
Jun	0.100	0.012	0.020	0.310	3.800	0.006	0.050	0.240	0.100	0.100	10.000
Jul	0.200	0.022	0.050	0.530	6.100	0.011	0.080	0.380	0.200	0.100	17.000
Aug	0.100	0.010	0.020	0.250	2.900	0.007	0.050	0.200	0.100	0.100	9.000
Sep	0.200	0.021	0.050	0.520	6.100	0.012	0.070	0.380	0.300	0.100	17.000
Oct	0.200	0.020	0.040	0.500	6.200	0.011	0.080	0.410	0.300	0.100	17.000
Nov	0.200	0.020	0.030	0.300	5.100	0.009	0.050	0.270	0.300	0.100	13.000
Dec	0.100	0.010	0.030	0.320	4.600	0.005	0.110	0.250	0.200	0.100	13.000

Average	0.175	0.019	0.036	0.416	5.008	0.009	0.065	0.320	0.208	0.100	14.250
Max. Permissible Metal Concentrations (mg/kg of Solids)	170.000	34.000	340.000	2,800.000	1,700.000	11.000	94.000	420.000	1,100.000	34.000	4,200.000
Metal Concentrations in Sludge (mg/kg)	5.914	0.634	1.211	14.052	169.248	0.315	2.197	10.814	7.040	3.379	481.554