2022 ANNUAL SEWAGE REPORT
Version 2

SHELBURNE WASTEWATER TREATMENT PLANT

For the period of
January 1st, 2022 to December 31st, 2022

Prepared for the Corporation of the Town of Shelburne by the Ontario Clean Water Agency

A People Place, A Change of Pace
SHELBURNE
ONTARIO, CANADA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

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1. System Description

The Town of Shelburne is a community of approximately 8,994 people located approximately 100 kilometers northwest of Toronto. The community first obtained a waste disposal system in 1968 with the construction of a 5.5 ha lagoon and associated gravity collection and pumping system. The Town grew consistently over the years and eventually overloaded the lagoon system. In July 1981 construction was completed on a wastewater treatment system located at the present location. This expansion consisted of a new trunk sewer, pumping facilities, secondary and tertiary treatment and modifications to the existing lagoons which now provide storm and effluent holding during excess storm flows and plant upsets and maintenance.

The facility consisted of a wet well, a manual screen, grit channels, an oxidation ditch, one secondary clarifier, four effluent sand filters and a chlorine contact chamber. The oxidation ditch used two brush rotors. The facility operated as an extended aeration plant in this configuration from 1981 until December 1999.

A major expansion (Phase 1) took place at the Shelburne WWTP in 1999, changing the configuration of the plant and the method of treating wastewater. The plant went under construction starting in April 1999 with the start-up of the new process in December of 1999. The Shelburne WWTP is still an extended aeration plant. As an extended aeration plant it is designed to remove suspended solids, $CBOD_5$ and phosphorus from the wastewater. Major improvements were two aeration tanks constructed with fine bubble diffusers. The sludge treatment system consists of a two stage aerobic sludge digestion system with a total storage volume of 580m^3, equipped with coarse bubble aeration system and supernatant decanting. The former oxidation ditch was converted to a sludge storage facility with approximately six months storage.

Sludge loading facilities provide for transfer of digested aerobic sludge to trucks. Digested sludge is land-applied as farm fertilizer.

Works:

Trunk Sanitary Sewers

- 82 m of 750 mm diameter, 594 m of 600 mm diameter and 14.5 m of 300 mm diameter trunk

sanitary sewers complete with emergency overflow to adjacent creek and all necessary manholes, appurtenances and inter-connections to the sanitary collection system, commencing at a point approximately 100 m south and 13 m west of the intersection of Ella Street and Highway Nos. 10 and 89 following an easement 60 m east and then north across Highway Nos. 10 and 89 and then generally along the creek bank to a point approximately 40 m south, 15 m west of the pumping station then due north to the centre of Centennial Street (unopened extension) and then north and west 82 m to the Inlet Works at the sewage treatment plant;

Hauled Sewage Receiving Station

- one (l) hauled sewage transfer tank with a capacity of 24,000 L, located adjacent to the inlet works building;

Inlet Works

- one (l) automatic mechanical bar screen having a Peak Flow Rate of 13,000 m /d, one (l) manually cleaned bar racks for emergency or maintenance bypass and one (1) bypass channel overflow weir; - one (l) 7.50 m x 2.93 m x 5.40 m benched wet well equipped with two (2) submersible pumps, each with VFD and rated at 34.4 to 103.3 Lis at 10.2 to 12.0 m TDH; - one (l) wet weather flow pump rated at 81.0 Vs, 8.53 m TDH, discharging to the wet weather flow holding ponds; - one (l) additional wet weather flow pump rated at 152 Vs, 1 6 m TDH., discharging through the storm forcemain to the wet weather flow holding ponds; - one (I) 2.1 m diameter vortex grit separator having a Peak Flow Rate of 9,504 m /d and a grit classifier; - three (3) 5.7 m x 0.6 x 1.0 m SWD grit channels having a Peak Flow Rate of9,130 m /d for back up to the vortex grit separator;

Wet Weather Flow Holding Ponds

- one (l) 19,900 m Wet Weather Flow Holding Pond A and one (l) 16,800 m Wet Weather Flow Holding Pond B, to be used under emergency situations for temporary storage of wet weather flow to be returned later to the Inlet Works for further treatment;

Aeration Tanks

- two (2) 40 m x 10 m x 4.6 m SWD aeration tanks, each with two longitudinal cells with the inlet pipes to distribute flows into each cell of each tank, equipped with fine bubble diffused aeration system and two (2) centrifugal air blowers (one duty and one standby), rated at 500 Vs and 250 L/S respectively;

Secondary Clarifiers

- one (l) 14.0 m diameter x 2.8 m SWD secondary clarifiers equipped with sludge and scum removal mechanisms and cold weather cover;
- -one (l) 14.0 m diameter x 3.65 m SWD secondary clarifiers equipped with sludge and scum removal mechanisms and cold weather cover;

Clarifier Effluent Pump System

- two (2) 2.9 m x 2.1 m x 2.0 m S WD clarified effluent tanks; - three (3) VFD controlled dry pit filter feed pumps each rated at 17.2 to 51.7 L/S at 9.9 to I I .3 m T.D.H. discharging to either the filters or to the wet weather flow holding ponds;

Filtration

- two (2) cloth-filter treatment units (one standby) each having a Peak Flow Rate of 558 m /h via one (1) 450 mm diameter inlet piping to a splitter box, 250 mm process pipings to the units and overflow over a weir;

Ultraviolet (UV) Disinfection

- a 8.0 m x 0.61 m x I .067 m deep channel equipped with a low pressure mercury vapour ultraviolet irradiation lamp system having a Peak Flow Rate of 8,921 m /d and with a weighted lever gate on the outlet to the Parshall flume to maintain the liquid level in the channel at a depth of 460 mm;

Outfall Sewer

- approximately 60 m of 450 mm x 740 mm effluent outfall pipe discharging from the Parshall flume to a minor tributary of Boyne River;

Activated Sludge Pumping System

- three (3) VFD controlled sludge pumps, each rated at 8.6 to 34.4 Vs at 3.2 to 7.6 m T.D.H., complete with valving and piping to permit withdrawal from either the secondary clarifier sludge sump or the scum hopper and returning to either the aeration tanks or to wasting to the sludge digesters;

Phosphorus Removal

- one (I) 24.1 m capacity chemical storage tank and four (4) chemical metering pumps (two with capacity of 23 Uh to the secondary clarifiers and two with capacity of 108 LAI to the tertiary filters) for phosphorus removal;

Sludge Digestion

- a two stage aerobic sludge digestion system with one (l) 450 m stage I digester and one (l) 170 m stage 2 digester, both equipped with coarse bubble aeration system and supernatant decanting facility;
- two (2) air blowers (one standby shared with the aeration tanks) rated at 1,800m^3/h supplying air to the digesters;
- two (2) replacement digested sludge transfer pumps (one standby) each rated at 20 L/s at 19 m TDH;

Biosolids Storage Tank

- one (1) 4,300 m biosolids storage tank with mixing nozzles and two (2) mixing pumps;

Effluent Flow Measurement

- one (l) 305 mm Parshall flume measuring quantity of effluent discharged from the plant located downstream of the UV disinfection system;

Standby Power

- one (l) 650 kW standby power diesel generator and 9000 L diesel tank with double-walled containment

This facility receives residential, commercial, institutional and industrial wastewater and provides a level of treatment to meet the amended "Environmental Compliance Approval - # 6413-ABLQQS" for discharging into the Beasley Drain a minor tributary of the Boyne River. The Boyne Creek empties into the Nottawasaga River, ultimately meeting Georgian Bay.

A “Process Flow Schematic” is included in **Appendix D** of this report.

An overview of Shelburne Wastewater Treatment Plant can be found in Table 1:

Table 1. Shelburne Wastewater Treatment Plant Overview

Facility Name	Shelburne Wastewater Treatment Plant
Facility Type	Extended Air STP with Tertiary Treatment
Plant Classification	WWT III
Works Number	110000659
Design Capacity	3,420 m^3/day
Receiving Water	Besley Drain to Boyne Creek to Nottawasaga River
Environmental Compliance Approval	6413-ABLQQS , issued July 19, 2016

2. Monitoring Data and Comparison to Effluent Limits

As per Section 10(6)(a) of ECA 6413-ABLQQS, *a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Effluent Limits of Condition 7, including an overview of the success and adequacy of the Works* is required.

2.1 Sampling Frequency

Hauled sewage, raw sewage, and final effluent are sampled on a regular basis. The sampling types and frequencies are summarized in Tables 2, 3 and Table 4. The sampling frequencies meet the requirements set out in Section 9 of ECA 6413-ABLQQS.

Table 2. Hauled Sewage Monitoring (Hauled Sewage receiving Station) – Sampling Frequencies

Parameter	Sample Type	Frequency
BOD5[2A]	Grab	Monthly
Total Suspended Solids[2A]	Grab	Monthly
Total Phophorus[2A]	Grab	Monthly
Total Kjeldahl Nitrogen[2A]	Grab	Monthly

[2A]Refer to Appendix A for monthly sample results.

Table 3. Raw Sewage Monitoring – Sampling Frequencies

Parameter	Sample Type	Frequency
BOD_5[3A]	Composite	Monthly
Total Suspended Solids[3A]	Composite	Monthly
Total Phosphorous[3A]	Composite	Monthly
Total Kjeldahl Nitrogen[3A]	Composite	Monthly

[3A]Refer to Appendix A for monthly sample results.

Table 4. Effluent Sampling Monitoring – Sampling Frequencies

Parameters	Sample Type	Frequency
$CBOD_5$[4A]	Composite	Weekly
Total Suspended Solids[4A]	Composite	Weekly
Total Phosphorous[4A]	Composite	Weekly
Total Ammonia Nitrogen[4A]	Composite	Weekly
E. Coli[4A]	Grab	Weekly
pH	Grab/Probe	Weekly
Temperature	Grab/Probe	Weekly

[4A]Refer to Appendix A for monthly sample results.

2.2 Effluent Objectives and Effluent Limits

The effluent objectives as per Section 6 of ECA 6413-ABLQQS for the Shelburne Wastewater Treatment Plant are found in Table 5.

Table 5. Effluent Objectives as per Section 6 of ECA 6413-ABLQQS

Effluent Parameter	Concentration Objective (mg/L)
$CBOD_5$	4.0
Total Suspended Solids	4.0
Total Phosphorous	0.12
Total Ammonia Nitrogen June 01 to Sept 30 Oct 01 to May 31	 0.5 2.0
E-coli	150 CFU /100 mL (monthly Geometric Mean Density)
pH	maintained between 6.5 to 8.5, inclusive, at all times

The effluent limits that are to be met as per Section 7 of ECA 6413-ABLQQS for the Shelburne Wastewater Treatment Plant are found in Table 6. Any exceedance with the limits found in Table 6 constitutes a non-compliance with ECA 6413-ABLQQS.

Table 6. Effluent Limits as per Section 7 of ECA 6413-ABLQQS

Effluent Parameter	Average Concentration Limit (mg/L)	Average Waste Loading Limit (kg/day)
$CBOD_5$	5.0	17.1
Total Suspended Solids	5.0	17.1
Total Phosphorous	0.25	0.86
Total Ammonia Nitrogen Jun 01 to Sep 30 Oct 01 to May 31	 0.8 2.4	 2.7 8.2
E-coli	200 CFU /100 mL (monthly Geometric Mean Density)	n/a
pH	maintained between 6.0 to 9.5, inclusive, at all times	

2.3 Comparison of Data to Effluent Objectives and Effluent Limits

Analytical and monitoring data for the Shelburne Wastewater Treatment Facility is stored in OCWAs data management system (WISKI). Annual and monthly averages for flows, $CBOD_5$, BOD_5, Suspended Solids, Total Phosphorous, Nitrogen-series and E.coli can be found in Appendix A. A comparison of analytical data from effluent samples to the effluent objectives and effluent limits shown in the below Tables 7-13:

Table 7. 2022 Monthly Average Concentration and Loading of $CBOD_5$ in Comparison to ECA Objectives and Limits

	$CBOD_5$					
	Monthly Average Concentration (mg/L)	Within Objectives (4.00 mg/L)	Within Limits (5.00 mg/L)	Monthly Average Loading (kg/d)	Within Objectives (kg/d)	Within Limits (17.10 kg/d)
January	3.25	Yes	Yes	7.57	n/a	Yes
February	<3.83	Yes	Yes	<8.90	n/a	Yes
March	3.40	Yes	Yes	9.08	n/a	Yes
April	2.75	Yes	Yes	7.10	n/a	Yes
May	<5.40	***No***	***No[7A]***	<11.18	n/a	Yes
June	<3.50	Yes	Yes	<8.08	n/a	Yes
July	<3.00	Yes	Yes	<6.51	n/a	Yes
August	<4.00	Yes	Yes	<7.42	n/a	Yes
September	4.50	***No***	Yes	8.40	n/a	Yes
October	<3.25	Yes	Yes	<6.16	n/a	Yes
November	<3.00	Yes	Yes	<5.84	n/a	Yes
December	<3.25	Yes	Yes	<6.74	n/a	Yes

[7A]Required notification of non-compliances were made for the limit exceedance in May 2022 and full details are provided in appendix F

Table 8. 2022 Monthly Average Concentration and Loading of TSS in Comparison to ECA Objectives and Limits

	Total Suspended Solids					
	Monthly Average Concentration (mg/L)	Within Objectives (4.00 mg/L)	Within Limits (5.00 mg/L)	Monthly Average Loading (kg/d)	Within Objectives (kg/d)	Within Limits (17.10 kg/d)
January	3.75	Yes	Yes	8.73	n/a	Yes
February	4.33	***No***	Yes	10.06	n/a	Yes
March	3.20	Yes	Yes	8.55	n/a	Yes
April	4.00	Yes	Yes	10.33	n/a	Yes
May	<2.40	Yes	Yes	<4.97	n/a	Yes
June	3.00	Yes	Yes	6.93	n/a	Yes
July	3.75	Yes	Yes	8.14	n/a	Yes
August	3.60	Yes	Yes	6.68	n/a	Yes
September	3.50	Yes	Yes	6.53	n/a	Yes
October	<2.00	Yes	Yes	<3.79	n/a	Yes
November	2.80	Yes	Yes	5.45	n/a	Yes
December	5.50	***No***	***No[8A]***	11.40	n/a	Yes

[8A]Required notification of non-compliances were made for the limit exceedance in December 2022 and full details are provided in appendix F

Table 9. 2022 Monthly Average Concentration and Loading of Total Phosphorus in Comparison to ECA Objectives and Limits

	Total Phosphorus					
	Monthly Average Concentration (mg/L)	Within Objectives (0.12 mg/L)	Within Limits (0.25 mg/L)	Monthly Average Loading (kg/d)	Within Objectives (kg/d)	Within Limits (0.86 kg/d)
January	0.08	Yes	Yes	0.18	n/a	Yes
February	0.10	Yes	Yes	0.23	n/a	Yes
March	0.10	Yes	Yes	0.25	n/a	Yes
April	0.11	Yes	Yes	0.29	n/a	Yes
May	0.05	Yes	Yes	0.10	n/a	Yes
June	0.09	Yes	Yes	0.21	n/a	Yes
July	0.10	Yes	Yes	0.21	n/a	Yes
August	0.09	Yes	Yes	0.17	n/a	Yes
September	0.17	***No***	Yes	0.31	n/a	Yes
October	0.13	***No***	Yes	0.25	n/a	Yes
November	0.09	Yes	Yes	0.17	n/a	Yes
December	0.08	Yes	Yes	0.17	n/a	Yes

Table 10. 2022 Monthly Average Concentration and Loading of Total Ammonia Nitrogen in Comparison to ECA Objectives and Limits

	Total Ammonia Nitrogen (Ammonia Nitrogen + Ammonium Nitrogen)									
	Monthly Average Concentration (mg/L)	Within Objectives (Jun 01-Sept 30 0.50 mg/L)	Within Objectives (Oct 01-May 31 2.00 mg/L)	Within Limits (Jun 01-Sept 30 0.80 mg/L)	Within Limits (Oct 01-May 31 2.4 mg/L)	Monthly Average Loading (kg/d)	Within Objectives (Dec 01-Apr 30 kg/d)	Within Objectives (May 01-Nov 30 kg/d)	Within Limits (June 01-Sept 30 2.70 kg/d)	Within Limits (Oct 01-May 31 8.20 kg/d)
January	<0.10	n/a	Yes	n/a	Yes	<0.23	n/a	n/a	n/a	Yes
February	<0.10	n/a	Yes	n/a	Yes	<0.23	n/a	n/a	n/a	Yes
March	<0.10	n/a	Yes	n/a	Yes	<0.27	n/a	n/a	n/a	Yes
April	<0.10	n/a	Yes	n/a	Yes	<0.26	n/a	n/a	n/a	Yes
May	<0. 10	n/a	Yes	n/a	Yes	<0.21	n/a	n/a	n/a	Yes
June	<0.18	Yes	n/a	Yes	n/a	<0.40	n/a	n/a	Yes	n/a
July	<0.10	Yes	n/a	Yes	n/a	<0.22	n/a	n/a	Yes	n/a
August	<0.10	Yes	n/a	Yes	n/a	<0.19	n/a	n/a	Yes	n/a
September	<0.10	Yes	n/a	Yes	n/a	<0.19	n/a	n/a	Yes	n/a
October	<0.10	n/a	Yes	n/a	Yes	<0.19	n/a	n/a	n/a	Yes
November	<0.10	n/a	Yes	n/a	Yes	<0.20	n/a	n/a	n/a	Yes
December	<0.13	n/a	Yes	n/a	Yes	<0.26	n/a	n/a	n/a	Yes

Table 11. 2022 Monthly Average Concentration of E.Coli in Comparison to ECA Objectives and Limits

	E.coli		
	Monthly Geometric Mean Density (CFU/100mL)	Within Objectives (150 CFU/100mL)	Within Limits (200 CFU/100mL)
January	2.38	Yes	Yes
February	1.68	Yes	Yes
March	2.00	Yes	Yes
April	1.68	Yes	Yes
May	2.00	Yes	Yes
June	2.00	Yes	Yes
July	2.00	Yes	Yes
August	1.74	Yes	Yes
September	2.00	Yes	Yes
October	1.68	Yes	Yes
November	2.00	Yes	Yes
December	2.00	Yes	Yes

Table 12. 2022 Monthly Minimum and Maximum pH in Comparison to ECA Objectives and Limits

	pH			
	pH Monthly Minimum	pH Monthly Maximum	Within Objectives (6.5-8.5)	Within Limits (6.0-9.5)
January	7.6	7.7	Yes	Yes
February	7.6	7.6	Yes	Yes
March	7.5	7.7	Yes	Yes
April	7.6	7.8	Yes	Yes
May	7.6	7.7	Yes	Yes
June	7.7	7.7	Yes	Yes
July	7.3	7.8	Yes	Yes
August	7.7	7.8	Yes	Yes
September	7.3	7.7	Yes	Yes
October	7.5	7.7	Yes	Yes
November	7.4	7.6	Yes	Yes
December	7.4	8.0	Yes	Yes

Table 13. 2022 Monthly Minimum and Maximum Temperature

	Temperature	
	Monthly Minimum (°C)	Monthly Maximum (°C)
January	11.2	14.2
February	12.6	14.2
March	12.5	14.9
April	12.9	15.5
May	15.1	19.1
June	18.4	20.1
July	20.8	21.7
August	21.7	23.0
September	19.0	22.9
October	17.2	19.3
November	14.8	17.8
December	12.7	15.5

Table 14. Effluent Monitoring Parameter Summary as required by ECA 6413-ABLQQS for Shelburne Treatment Plant, 2022

Parameters	**Average** (mg/L)	**Minimum** (mg/L)	**Maximum** (mg/L)	**Average Annual Loading** (kg/d)
$CBOD_5$	3.63	2.75	5.40	7.75
Total Suspended Solids	3.48	<2.00	5.50	7.63
Total Phosphorus	0.10	0.05	0.17	0.21
Total Ammonia Nitrogen	<0.11	<0.10	<0.18	<0.24
E.Coli (cfu/100ml)	-	1.68	2.38	n/a
pH	7.6	7.3	8.0	n/a
Temperature	16.9	11.2	21.7	n/a

2.4 Additional Monitoring Parameters

The following parameters in Table 15 do not have limits or objectives but are monitored on a regular basis (see Section 2.1 for sampling frequency) as required by ECA 6413-ABLQQS. Table 15 summarizes the monitoring data for the reporting period.

Raw sewage quality in 2022 overall in all parameters were lower than compared to raw sewage quality in 2021. BOD_5 annual average was 478.54 mg/L in 2021 and was lower this year at 455.58 mg/L. TSS annual average was 1349.08 mg/L in 2021 and was significantly lower this year at 645.00 mg/L. TP annual average was 9.24 mg/L in 2021 and lower this year at 6.63 mg/L. TKN annual average was 56.28 mg/L in 2021 and was lower this year at 45.11 mg/L.

Table 15. Raw Sewage Monitoring Parameters as required by ECA 6413-ABLQQS for Shelburne Wastewater Treatment Plant, 2022

Parameter	**Average** (mg/L)	**Minimum** (mg/L)	**Maximum** (mg/L)
BOD_5[15A]	455.58	262.00	703.00
Total Suspended Solids[15A]	645.00	194.00	1300.00
Total Phosphorous[15A]	6.63	3.59	11.60

Total Kjeldahl Nitrogen[15A]	45.11	26.60	59.00

[15A]Refer to Appendix A for monthly sample results.

The following parameters in Table 16 do not have limits or objectives but are monitored as needed when septage is received at the facility. Table 16 summarizes the monitoring data for the reporting period.

Table 16. Hauled Sewage Monitoring

Parameter	**Average** (mg/L)	**Minimum** (mg/L)	**Maximum** (mg/L)
BOD_5	5467.86	1660.00	8200.00
Total Suspended Solids	17575.71	8360.00	28200.00
Total Phosphorous	122.41	35.70	200.00
Total Kjeldahl Nitrogen	759.50	305.00	1110.00

2.5 Overview of Success and Adequacy of the Works;

The annual average effluent $CBOD_5$ concentration was 3.63 mg/L with a removal efficiency of >98.34%. The annual average effluent TSS concentration was 3.48 mg/L with a removal efficiency of >98.07%. The annual average effluent Total Phosphorus concentration was 0.10 mg/L with a removal efficiency of >97.33%.

The bacteriological quality of the effluent complied with the certificate of approval requirement of <200 Colony Forming Units (CFU) per 100 mL sample. The maximum geometric mean density for 2022 was 2.38 CFU per 100 mL, indicating adequate effluent disinfection for the majority of the year.

The total raw sewage volume of wastewater treated in 2022 was 957,440.20 m^3. The annual average daily flow of raw sewage was 2,623.12 m^3/day was 76.70 % of the design flow (3,420 m^3/day). The maximum peak flow of 3,830.40 m^3/day occurred in February due to higher precipitation and snow melt. This represents a peak flow of 1.1 times the rated capacity. The wastewater treatment plant operated within the rated capacity 99.18% of the time (362 out of 365 days of the year). The average daily flow is approaching 80% of the rated capacity and the Town of Shelburne is well aware of this. With future upgrades proposed for the Works this will increase design capacity to accommodate the growth of the Town.

3. Operating Problems and Corrective Actions

As per Section 10(6)(b) of ECA 6413-ABLQQS, *a description of any operating problems encountered and corrective actions taken* is required.

During the reporting period there were two (2) operating problems/situations encountered and corrective actions taken at the Shelburne Wastewater Plant during 2022 that affected the quality of the effluent leaving the plant. One situation occurred in May 2022 where the CBOD5 monthly average concentration limit was exceeded due to the North Clarifier being taken out of service on April 28, 2022 for repairs of the return activated sludge pumps 1 and 3 while the plant may have taken a shock load of BOD from possible industrial section of town. It was observed in the lab analysis between weekly samples of CBOD5 from May 3, 2022 to May 10, 2022. The North Clarifier was returned to service June 6, 2022. Another situation occurred December 2022 where the Total Suspended Solids monthly average concentration limit was exceeded due to high concentration of solids entering the plant after hours, the observation of black raw sewage coming into the plant, snow storm causing equipment failures and electrical cable issues to the equipment. During this situation corrective actions were taken throughout the month to remediate by cleaning UV channel, auto sampler/discharge lines, increase aeration and contractor/electrician onsite to solve electrical issues. The ECA limit exceedance written/email

notification which include full details of these occurrences are included in Appendix F. All major repairs/maintenance can be found in Section 4 of this report.

4. Major Maintenance Activities

As per Section 10(6)(c) of ECA 6413-ABLQQS, *a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanisms or thing forming part of the works* is required.

Plant maintenance, including non-scheduled maintenance is monitored using Maximo Work Management System. All routine and preventative maintenance was conducted as scheduled in 2022.

For 2022, major maintenance activities that occurred include:

- Septage tank clean out
- Sludge transfer pump repair
- North Clarifier visual inspection while out of service
- Sump pump replacement
- Yard hydrant repair
- Return activated sludge pump #1 repairs
- Return activated sludge pump #3 repairs
- Clarifier sweeper arm repair
- Mechanical bar screen repair
- Blower air filter replacements
- Grit vortex system cleanout
- Annual Backflow Prevention inspection
- UV Lamp and Sleeve replacements
- Annual Gas Sensor calibrations
- Annual Flow Meter calibrations
- Headworks Wet Well cleanout

5. Effluent Quality Assurance and Control

As per Section 10(6)(d) of ECA 6413-ABLQQS, *a summary of any effluent quality assurance or control measures undertaken in the reporting period* is required:

Quality assurance and control measures undertaken during the reporting period include adherence to provincial regulations, use of accredited laboratories, operation of the system by licensed Operators, scheduled sampling and analysis, in-house laboratory analysis, and calibration and preventative maintenance of equipment. The sections below provide further details of these measures.

5.1 Adherence to Provincial Regulations

The Ontario Clean Water Agency operates the WWTP in accordance with provincial regulations and the Environmental Compliance Approval.

5.2 Use of Accredited Laboratories

Analytical tests to monitor the effluent quality are conducted by a laboratory audited by the Canadian Association for Laboratory Accreditation Inc. (CALA) and accredited by the Standards Council of Canada (SCC). Accreditation ensures that the laboratory has acceptable laboratory protocols and test methods in place. It also requires the laboratory to provide evidence and assurances of the proficiency of the analysts performing the test methods. During the reporting period, all chemical sample analyses were conducted by SGS (Lakefield) Canada Inc.

5.3 Operation by Licensed Operators

The WWTP was operated and maintained by licensed Operators. The mandatory licensing program for operators of sewage treatment facilities in Ontario is regulated under the Ontario Water Resources Act (OWRA) Regulation 435/93 and Ontario Regulation 129/04. A Licensed individual has successfully passed the licensing exam and meets the education and experience requirements set out in the regulation.

5.4 Sampling and Analysis

The Ontario Clean Water Agency followed a sampling and analysis schedule that meets the requirements of the ECA.

5.5 In-house Analysis

In-house analysis were conducted by Licensed Operators for monitoring purposes using standard methods. The data generated from these tests is used to determine the treatment efficiency while effectively maintaining process control. All in-house monitoring equipment is calibrated based on the manufacturer's recommendations. Using their expertise, Operators of the facility make best efforts to stay within the ECA Effluent Objectives and Limits.

6. Calibration and Maintenance Procedures

As per Section 10(6)(e) of ECA 6413-ABLQQS, *a summary of the calibration and maintenance carried out on all effluent monitoring equipment* is required.

All in-house monitoring equipment is calibrated/verified as per manufacturer's recommendations. Monitoring and metering equipment is also calibrated by a third party on an annual basis. Preventative maintenance is scheduled for all equipment at the sewage treatment plant and pumping stations at regular frequency (frequency depends on the equipment and type of maintenance). Maintenance activities are scheduled within the work management system Maximo, upon completion, Operators set the work order to complete. On a monthly basis, preventative work orders are reviewed for completion.

Indus Controls was contracted to calibrate flow measuring equipment on August 23, 2022. Copies of these calibration reports can be found in **Appendix C** of this report.

7. Efforts and Results Achieved in Meeting Effluent Objectives

As per Section 10(6)(f) of ECA 6413-ABLQQS, *a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6* is required.

Condition 6 is imposed "to establish non-enforceable effluent quality objectives which the Owner is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliances limits of Condition 7 are exceeded."

OCWA as the Operating Authority (on behalf of the Owner) has made best efforts to stay within the Effluent Objectives in the ECA. These efforts are supported through:

- Continuous monitoring equipment
- Regular plant inspections/checks
- In-house sampling and testing
- Laboratory (3rd party) analysis of influent and effluent samples
- Data review
- Process optimization and adjustments (as required)
- Scheduled/preventative maintenance
- Repairs as necessary

A summary of the effluent quality in comparison to the effluent objectives can be found in Tables 7-13 of section 2.3 of this report. These results show that sewage treatment operations for 2022 provided effluent quality that was within all effluent objectives outlined in the ECA and minimized environmental impairment with the exception of $CBOD_5$ (February and September 2022), Total Suspended Solids (February and December 2022) and Total Phosphorous (September and October 2022). Higher Mixed Liquor Suspended Solids concentrations in aeration basin and temperature fluctuations could account for some effluent objective exceedances. Minor operational changes were implemented to provide higher effluent quality in order to achieve the effluent objectives outlined in the ECA.

8. Sludge Generation

As per Section 10(6)(g) of ECA 6413-ABLQQS, *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* is required.

Digested sludge produced at the Shelburne WWTP is land-applied in accordance with the Nutrient Management Act 2002 and Ontario Regulation 267/03.

Grab samples of digested (aerobic) sludge are collected and tested as per these requirements. In 2022, sludge sample analysis was carried out by SGS Lakefield Research Limited. Sludge analysis showed that the sludge met the quality criteria specified in the Ontario Guidelines for the Utilization of Biosolids and Other Wastes on Agricultural Land (Guidelines). A summary of sludge sample results is provided in **Appendix B** of this report, along with septage data for the reporting period.

Saugeen Agri. Service was contracted to haul and spread sludge from the Shelburne Wastewater plant in 2022. (Certificate of Approval - Waste Management System #9566-6HYKC3)

The Town of Shelburne has an arrangement/agreement for the hauling, acceptance and processing of liquid biosolids material from the Shelburne Wastewater Treatment Plant with Lystek International Corp. Volumes of biosolids hauled from the Shelburne Wastewater Treatment Plant to Lystek are noted in below table 17.

The following certified sites were utilized in 2022:

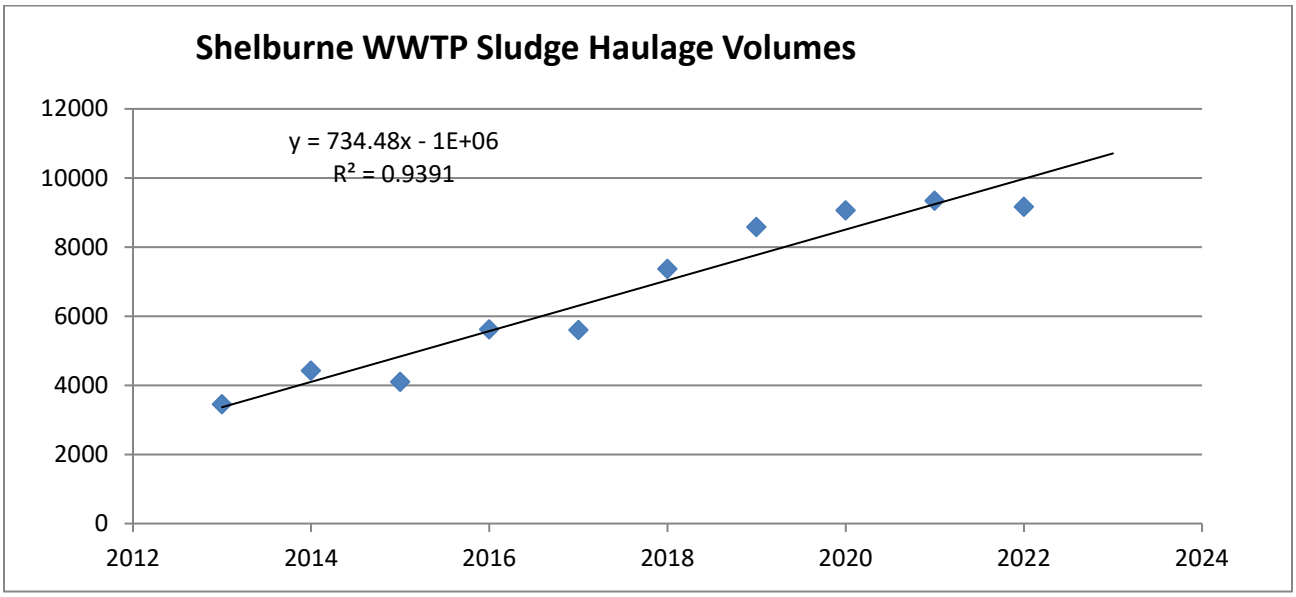
Table 17. Volume of Sludge Generated from Shelburne Wastewater Treatment Plant in 2022

Site	Site Location	Volume of Biosolids (m^3)	Hauler
NASM Submission ID: 24387	Harvey Martin Field	2691.00	Saugeen Agri.
NASM Submission ID: 25079	Leroy May	2934.00	Saugeen Agri.
NASM Submission ID: 25247	Gary Horst	3538.00	Saugeen Agri.
Lystek International Corp.	Dundalk, On	1090.00	Saugeen Agri.

A total volume of 9,163 m^3 of sludge was applied to the above fields from the Shelburne WWTP in 2022.

Based on the design flow, average wastewater quantity and a linear regression with an R^2 value of 93.91%, the anticipated volume of sludge generated for 2023 will be approximately 10,200 m^3.

Figure 1. Shelburne Wastewater Treatment Plant Haulage Volumes (2013 to 2021)



9. Complaints

As per Section 10(6)(h) of ECA 6413-ABLQQS, *a summary of any complaints received during the reporting period and any steps taken to address the complaints* is required.

A standard operating procedure (SOP) is in place for addressing complaints received from the community. All complaints are addressed and documented in the facility logbook. Community complaint information is entered in OCWA's electronic database system "WMS Maximo". This system contains all the required information and history of all complaints.

There were no complaint registered in 2022 for the reporting period.

10. By-pass, Spill or Abnormal Discharge Events

As per Section 10(6)(i) of ECA 6413-ABLQQS, *a summary of all By-pass, spill or abnormal discharge events (additionally events outside of Normal Operating Conditions) is* required.

There were no by-passes, spills, abnormal discharge events or over flows. However, there were situations outside of Normal Operating Conditions that occurred during this reporting period with regard to the Shelburne Wastewater Treatment Plant. One situation occurred in May 2022 where the CBOD5 monthly average concentration limit was exceeded due to the North Clarifier being taken out of service on April 28, 2022 for repairs of the return activated sludge pumps 1 and 3 while the plant may have taken a shock load of BOD from possible industrial section of town. It was observed in the lab analysis between weekly samples of CBOD5 from May 3, 2022 to May 10, 2022. The North Clarifier was returned to service June 6, 2022. Another situation occurred December 2022 where the Total Suspended Solids monthly average concentration limit was exceeded due to high concentration of solids entering the plant

after hours, the observation of black raw sewage coming into the plant, snow storm causing equipment failures and electrical cable issues to equipment. During this situation corrective actions were taken throughout the month to remediate by cleaning UV channel, auto sampler/discharge lines, increase aeration and contractor/electrician onsite to solve electrical issues. The ECA limit exceedance written/email notification which include full details of these occurrences are included in Appendix F

ECA 6413-ABLQQS requires that Quarterly bypass/overflow reports are to be submitted to the Water Supervisor. All 2022 quarterly reports were submitted to the Water Supervisor by the deadlines specified in the ECA.

11. Notice of Modifications

As per Section 10(6)(j) of ECA 6413-ABLQQS, *a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule B, Section 1, with a status report on the implementation of each modification* is required.

There was one (1) modification at the Shelburne Wastewater Treatment Plant during the reporting period. Please see Appendix E for the completed Notice of Modification to the Sewage Works.

The Notice of Modification was signed March 29, 2022

Description of the Modifications as part of the Limited Operational Flexibility;

AQUABACxt is a highly effective, US EPA-registered biological larvicide. It contains a species of bacteria called bacillus thuringiensis, an approved pesticide for controlling red worms and midge flies in wastewater treatment plants. On a weekly basis from spring to fall operations will dose the incoming raw sewage and aeration tank to eliminate midge flies at the plant during the summer months.

The addition of AQUABACxt was started April 11, 2022 and was greatly beneficial, there was a major reduction of midge flies in the clarifiers and filter/UV rooms when this product was used compared to previous years when no product was used. This product will continue to be used on a weekly basis from spring to fall.

12. Summary of Completed Modifications

As per Section 10(6)(k) of ECA 6413-ABLQQS, *a report summarizing all modifications completed as a result of Schedule B, Section 3* is required.

Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment are included in Section 4 of this report.

13. Additional Information

As per Section 10(6)(l) of ECA 6413-ABLQQS, *any other information the Water Supervisor requires from time to time* is required.

There were no requests from the Water Supervisor for any other information during the reporting period.

2022 Annual Performance Report
Shelburne Wastewater Treatment Plant
Amended Environmental Compliance Approval No. 6413-ABLQQS

Appendix A

Performance Assessment Report

2022

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Performance Assessment Report

From 1/1/2022 to 12/31/2022

5773 SHELBURNE WASTEWATER TREATMENT FACILITY 110000659

	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-->	<-Criteria->
Flows																
Raw Flow: Total - Raw Sewage m³/d	85,300.60	76,627.30	95,175.70	90,656.90	77,851.90	86,788.30	77,938.50	70,091.80	69,555.90	74,333.70	74,313.70	78,805.90	957,440.20			0.00
Raw Flow: Avg - Raw Sewage m³/d	2,751.63	2,736.69	3,070.18	3,021.90	2,511.35	2,892.94	2,514.15	2,261.03	2,318.53	2,397.86	2,477.12	2,542.13		2,623.12		3,420.00
Raw Flow: Max - Raw Sewage m³/d	3,220.80	3,830.40	3,361.90	3,260.80	2,751.90	3,068.10	2,974.10	2,409.70	2,433.30	2,556.10	2,676.80	2,897.00			3,830.40	0.00
Raw Flow: Count - Raw Sewage 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			0.00
Eff. Flow: Total - Final Effluent m³/d	72,174.60	65,012.60	82,796.80	77,456.80	64,172.10	69,281.40	67,290.60	57,491.60	55,973.90	58,755.90	58,357.80	64,249.00	793,013.10			0.00
Eff. Flow: Avg - Final Effluent m³/d	2,328.21	2,321.88	2,670.86	2,581.89	2,070.07	2,309.38	2,170.66	1,854.57	1,865.80	1,895.35	1,945.26	2,072.55		2,172.64		
Eff. Flow: Max - Final Effluent m³/d	2,832.70	3,449.00	2,990.20	2,848.80	2,306.60	2,597.90	2,620.80	2,118.80	2,002.70	2,146.40	2,234.80	2,367.30			3,449.00	0.00
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			0.00
Carbonaceous Biochemical Oxygen Demand: CBOD																
Raw: Avg cBOD5 - Raw Sewage mg/L	312.00	546.00	377.00	341.00	797.00	357.00	181.00	575.00	541.00	369.00	392.00	331.00		426.58	797.00	0.00
Raw: # of samples of cBOD5 - Raw Sewage	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 cBOD5 - Final Effluent mg/L	3.25	< 3.83	3.40	2.75	< 5.40	< 3.50	< 3.00	< 4.00	4.50	< 3.25	< 3.00	< 3.25		3.63	5.40	5.00
Eff: # of samples of cBOD5 - Final Effluent	4.00	6.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	54.00			0.00
Loading: cBOD5 - Final Effluent kg/d	7.567	< 8.901	9.081	7.100	< 11.178	< 8.083	< 6.512	< 7.418	8.396	< 6.160	< 5.836	< 6.736		7.75	11.18	0.000
Percent Removal: cBOD5 - Final Effluent %	98.96	99.30	99.10	99.19	99.32	99.02	98.34	99.30	99.17	99.12	99.23	99.02			99.32	0.00
Biochemical Oxygen Demand: BOD5																
Raw: Avg BOD5 - Raw Sewage mg/L	417.00	640.00	315.00	313.00	638.00	310.00	262.00	703.00	525.00	359.00	666.00	319.00		455.58	703.00	0.00
Raw: # of samples of BOD5 - Raw Sewage	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 BOD5 - Final Effluent mg/L	3.00	3.00	3.00	4.00	4.00	4.00	3.00	4.00	5.00	5.00	4.00	< 2.00		3.67		
Loading: BOD5 - Final Effluent kg/d	6.985	6.966	8.013	10.328	8.280	9.238	6.512	7.418	9.329	9.477	7.781	< 4.145		7.87	10.33	0.000
Percent Removal: BOD5 - Final Effluent %	99.28	99.53	99.05	98.72	99.37	98.71	98.85	99.43	99.05	98.61	99.40	99.37			99.53	0.00
Total Suspended Solids: TSS																
Raw: Avg TSS - Raw Sewage mg/L	542.00	661.00	483.00	350.00	915.00	408.00	194.00	1,160.00	719.00	669.00	1,330.00	309.00		645.00	1,330.00	0.00
Raw: # of samples of TSS - Raw Sewage	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	3.75	4.33	3.20	4.00	< 2.40	3.00	3.75	3.60	3.50	< 2.00	2.80	5.50		3.48	5.50	5.00
Eff: # of samples of TSS - Final Effluent	4.00	6.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	54.00			0.00
Loading: TSS - Final Effluent kg/d	8.731	10.061	8.547	10.328	< 4.968	6.928	8.140	6.676	6.530	< 3.791	5.447	11.399		7.63	11.40	0.000
Percent Removal: TSS - Final Effluent %	99.31	99.34	99.34	98.86	99.74	99.26	98.07	99.69	99.51	99.70	99.79	98.22			99.79	0.00
Total Phosphorus: TP																

Raw: Avg TP - Raw Sewage mg/L	5.46	8.05	4.33	4.86	9.49	4.68	3.59	7.57	7.26	5.39	11.60	7.25		6.63	11.60	0.00
Raw: # of samples of TP - Raw Sewage	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	0.08	0.10	0.10	0.11	0.05	0.09	0.10	0.09	0.17	0.13	0.09	0.08		0.10	0.17	0.25
Eff: # of samples of TP - Final Effluent	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	6.00	4.00	53.00			0.00
Loading: TP - Final Effluent kg/d	0.175	0.232	0.254	0.289	0.099	0.206	0.208	0.170	0.311	0.246	0.169	0.170		0.21	0.31	0.000
Percent Removal: TP - Final Effluent %	98.63	98.76	97.80	97.70	99.50	98.09	97.33	98.79	97.71	97.59	99.25	98.87			99.50	0.00

Nitrogen Series

Raw: Avg TKN - Raw Sewage mg/L	44.10	59.00	37.00	26.60	42.50	44.20	31.20	56.30	58.00	47.00	58.60	36.80		45.11	59.00	0.00
Raw: # of samples of TKN - Raw Sewage	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	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.18	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.13		< 0.11	< 0.18	2.40
Eff: # of samples of TAN - Final Effluent	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	52.00			0.00
Loading: TAN - Final Effluent kg/d	< 0.233	< 0.232	< 0.267	< 0.258	< 0.207	< 0.404	< 0.217	< 0.185	< 0.187	< 0.190	< 0.195	< 0.259		< 0.24	< 0.40	0.000
Eff: Avg NO3-N - Final Effluent mg/L	25.25	26.75	20.12	22.03	27.10	29.63	27.25	26.70	29.63	30.58	27.66	25.20		26.49	30.58	0.00
Eff: # of samples of NO3-N - Final Effluent	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	52.00			0.00
Eff: Avg NO2-N - Final Effluent mg/L	0.12	0.11	0.08	0.12	0.18	0.17	0.16	0.11	0.12	< 0.10	< 0.09	0.39		0.14	0.39	0.00
Eff: # of samples of NO2-N - Final Effluent	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	52.00			0.00

Disinfection

Eff: GMD E. Coli - Final Effluent cfu/100mL	2.38	1.68	2.00	1.68	2.00	2.00	2.00	1.74	2.00	1.68	2.00	2.00				200.00
Eff: # of samples of E. Coli - Final Effluent	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	5.00	4.00	52.00			0.00

2022 Annual Performance Report
Shelburne Wastewater Treatment Plant
Amended Environmental Compliance Approval No. 6413-ABLQQS

Appendix B

Sludge Haulage Summary, Sludge Quality, and Septage Receiving

2022

Shelburne WWTP - Daily Haulage Summary			
Date	**Site**	**NASM #**	**Sludge Hauled (m^3)**
May			
13-May-22	Harvey Martin	24387	799.00
17-May-22	Harvey Martin	24387	306.00
18-May-22	Harvey Martin	24387	815.00
20-May-22	Harvey Martin	24387	771.00
June			
20-Jun-22	Leroy May	25079	1138.00
21-Jun-22	Leroy May	25079	953.00
22-Jun-22	Leroy May	25079	843.00
November			
14-Nov-22	Gary Horst	25247	594.00
15-Nov-22	Gary Horst	25247	739.00
16-Nov-22	Gary Horst	25247	893.00
17-Nov-22	Gary Horst	25247	954.00
18-Nov-22	Gary Horst	25247	358.00
		Total	**9163.00**

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Solids and Nutrients

Facility: SHELBURNE WASTEWATER TREATMENT FACILITY
Works: 5773
Period: 01/01/2022 to 12/01/2022
Facility Works Number: *1.10000659E8*
Facility Name: *SHELBURNE WASTEWATER TREATMENT FACILITY*
Facility Owner: *Corporation/Company: The Corporation of the Town of Shelburne*
Facility Classification: *Class 3 Wastewater Treatment*
Receiver: *Besley Drain to Boyne Creek*
Service Population: *8994.0*
Total Design Capacity: *3420.0 m3/day*
Period Being Reported: 01/01/2022 12/01/2022

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

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	**SHELBURNE WASTEWATER TREATMENT FACILITY**									
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		21,000.000		440.000	135.000	0.300	1.600	1,010.000	67.650	72.000
Feb		20,300.000		120.000	133.000	0.300	1.500	857.000	66.650	460.000
Mar		18,200.000		330.000	133.000	0.300	2.200	1,010.000	66.650	62.000
Apr		11,100.000		220.000	150.000	0.300	2.000	645.000	75.150	63.000
May	2,691.000	22,400.000		500.000	204.000	0.300	1.100	1,150.000	102.150	73.000
Jun	2,934.000	21,100.000		410.000	206.000	0.300	0.200	1,080.000	103.150	66.000
Jul		17,400.000		400.000	35.900	0.300	0.300	670.000	18.100	74.000
Aug		21,900.000		320.000	55.900	0.300	1.200	905.000	28.100	62.000
Sep		28,000.000		580.000	290.000	0.300	0.500	1,270.000	145.150	74.000
Oct		26,900.000		550.000	295.000	0.300	0.600	1,330.000	147.650	70.000
Nov	3,538.000	25,000.000		450.000	336.000	0.300	2.200	1,220.000	168.150	62.000
Dec		32,400.000		570.000	159.000	0.300	2.400	1,780.000	79.650	100.000
Average	3,054.333	22,141.667		407.500	177.733	0.300	1.317	1,077.250	89.017	103.167
Total	9,163.000	265,700.000	0.000	4,890.000	2,132.800	3.600	15.800	12,927.000	1,068.200	1,238.000

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: AEROBIC
Metals and Criteria

Facility: SHELBURNE WASTEWATER TREATMENT FACILITY
Works: 5773
Period: 01/01/2022 to 12/01/2022

Note: all parameters in this report will be 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)
Site	**SHELBURNE WASTEWATER TREATMENT FACILITY**										
Station	**Bslq Station only**										
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	0.300	0.014	0.060	0.690	6.700	0.008	0.220	0.380	0.400	0.100	8.000
Feb	0.100	0.005	0.010	0.060	0.200	0.001	0.050	0.050	0.100	0.100	1.000
Mar	0.200	0.008	0.040	0.410	4.700	0.006	0.160	0.230	0.300	0.100	5.000
Apr	0.200	0.005	0.030	0.260	3.300	0.004	0.100	0.160	0.200	0.100	3.000
May	0.300	0.010	0.050	0.550	6.600	0.011	0.210	0.310	0.400	0.100	7.000
Jun	0.200	0.009	0.050	0.550	6.300	0.007	0.190	0.290	0.300	0.100	6.000
Jul	0.200	0.012	0.070	0.810	6.200	0.008	0.230	0.370	0.400	0.100	8.000
Aug	0.200	0.011	0.070	0.820	5.600	0.007	0.110	0.400	0.500	0.100	9.000
Sep	0.300	0.018	0.100	1.200	8.600	0.016	0.290	0.570	0.600	0.100	12.000
Oct	0.300	0.018	0.110	1.200	8.500	0.014	0.280	0.580	0.600	0.100	13.000
Nov	0.300	0.013	0.080	0.920	7.100	0.010	0.230	0.460	0.500	0.100	10.000
Dec	0.400	0.017	0.080	0.860	9.000	0.021	0.330	0.470	0.600	0.100	9.000
Average	0.250	0.012	0.063	0.694	6.067	0.009	0.200	0.356	0.408	0.100	7.583
Max. Permissible Metal Concentrations (mg/kg of	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)	11.291	0.527	2.823	31.351	273.993	0.425	9.033	16.071	18.442	4.516	342.492

Ontario Clean Water Agency
Time Series Info Report

Report extracted 03/17/2023 14:24

From: **01/01/2022 to 31/12/2022**

Facility Org Number: 5773
Facility Works Number: 110000659
Facility Name: SHELBURNE WASTEWATER TREATMENT FACILITY
Facility Owner: Corporation/Company: The Corporation of the Town of Shelburne
Facility Classification: Class 3 Wastewater Treatment
Receiver: Besley Drain to Boyne Creek
Service Population: 8994.0
Total Design Capacity: 3420.0 m3/day

	01/2022	02/2022	03/2022	04/2022	05/2022	06/2022	07/2022	08/2022	09/2022	10/2022	11/2022	12/2022	Total	Avg	Max	Min
Septage / Biochemical Oxygen Demand: BOD5 - mg/L																
Count Lab	1	0	2	1	2	0	2	2	0	1	1	2	14			
Max Lab	7000		6610	5470	5890		7620	6200		1760	1660	8200			8200	
Mean Lab	7000		5975	5470	5470		6475	5150		1760	1660	7260		5467.857		
Min Lab	7000		5340	5470	5050		5330	4100		1760	1660	6320				1660
Septage / Carbonaceous Biochemical Oxygen Demand: CBOD5 - mg/L																
Count Lab	1	0	2	1	2	0	2	2	0	1	1	2	14			
Max Lab	5660		5110	5900	4570		7150	6250		1410	1460	6350			7150	
Mean Lab	5660		4835	5900	4515		5910	5485		1410	1460	6115		4867.857		
Min Lab	5660		4560	5900	4460		4670	4720		1410	1460	5880				1410
Septage / Septage Received - m³																
Count IH	1	0	2	1	2	0	2	2	0	1	1	2	14			
Total IH	4.546		9.092	4.546	10.001		10.91	10.91		4.546	13.64	9.092	77.283			
Max IH	4.546		4.546	4.546	5.455		5.455	5.455		4.546	13.64	4.546			13.64	
Mean IH	4.546		4.546	4.546	5.001		5.455	5.455		4.546	13.64	4.546		5.52		
Min IH	4.546		4.546	4.546	4.546		5.455	5.455		4.546	13.64	4.546				4.546
Septage / Total Kjeldahl Nitrogen: TKN - mg/L																
Count Lab	1	0	2	1	2	0	2	2	0	1	1	2	14			
Max Lab	840		821	589	1110		1020	956		788	305	580			1110	
Mean Lab	840		645.5	589	898		1020	955		788	305	537		759.5		
Min Lab	840		470	589	686		1020	954		788	305	494				305
Septage / Total Phosphorus: TP - mg/L																
Count Lab	1	0	2	1	2	0	2	2	0	1	1	2	14			
Max Lab	88.6		139	76.8	188		200	147		140	120	88.6			200	
Mean Lab	88.6		110	76.8	111.85		197.5	143.5		140	120	81.3		122.407		
Min Lab	88.6		81	76.8	35.7		195	140		140	120	74				35.7
Septage / Total Suspended Solids: TSS - mg/L																
Count Lab	1	0	2	1	2	0	2	2	0	1	1	2	14			
Max Lab	8360		15500	10700	23300		28200	19700		17600	12100	26200			28200	
Mean Lab	8360		13250	10700	20400		26500	18700		17600	12100	19800		17575.71		
Min Lab	8360		11000	10700	17500		24800	17700		17600	12100	13400				8360

2022 Annual Performance Report
Shelburne Wastewater Treatment Plant
Amended Environmental Compliance Approval No. 6413-ABLQQS

Appendix C

Calibration Reports

2022

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT
PRESSURE MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Magnehelic	Date:	August 23, 2022
Model:	2000 Series	Report No:	CO1360-2208-52
Order No:	NA	Job No:	CO1360-2208
Serial No:	NA		
Tag:	NA	**Details**	
Job Location:	To digester	Unit:	psi
Asset ID	0000062546	Range:	0-15
		Current Output:	NA
		4 mA Set Point	0
		20 mA Set Point	15

Inst. Reading	AS FOUND	AS LEFT
Pressure(psi)	8.7	0

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Input (%)	Calculated Pressure (psi)	Calculated Flow(l/sec)	Measure Pressure (psi)	Display flow(l/sec)	Deviation (psi)
0.00	0.00	0.00	0.02	0.00	0.02
100.00	15.00	1,000.00	14.92	1000.00	-0.08

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 2
Device Description:	Digital Pressure Gauge	N/A	N/A
Manufacturer:	Martel Electronics	N/A	N/A
Model No:	BG-PI-PRO-500G	N/A	N/A

Overall Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification. Limited verification

Service Technician :	Tushar Patel	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT
PRESSURE MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Magnehelic	Date:	August 23, 2022
Model:	2000 Series	Report No:	CO1360-2208-53
Order No:	NA	Job No:	CO1360-2208
Serial No:	NA		
Tag:	NA	**Details**	
Job Location:	Aeration flow	Unit:	psi
Asset ID	0000062544	Range:	0-15
		Current Output:	NA
		4 mA Set Point	0
		20 mA Set Point	15

Inst. Reading	AS FOUND	AS LEFT
Pressure(psi)	9.6	9.69

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Input (%)	Calculated Pressure (psi)	Calculated Flow(l/sec)	Measure Pressure (psi)	Display flow(l/sec)	Deviation (psi)
0.00	0.00	0.00	0.10	0.00	0.10
100.00	15.00	1,000.00	14.88	1000.00	-0.12

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 2
Device Description:	Digital Pressure Gauge	N/A	N/A
Manufacturer:	Martel Electronics	N/A	N/A
Model No:	BG-PI-PRO-500G	N/A	N/A

Overall Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification. Limited verification

Service Technician :	Tushar Patel	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **KHRONE**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Khrone	Date:	August 23, 2022
Model:	IFC 010D	Report No:	CO1360-2208-54
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	A9915693		
Tag:	FIT01	**Flow Details**	
Job Location:	WAS Flow	Unit:	l/sec
Asset ID:	0000062478	Flow Range:	0-27.8
		Current Output:	4-20 mA
Sensor Details		4 mA Set Point	0
Line size:	3"	20 mA Set Point	27.8
GKL:	5.1670		
Mounting:	Remote		

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	606791	606792
FLOW (l/sec)	3.602	3.144

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Set-Point as Per Calibration KIT	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.016	4.01	0.02
A	1.98	5.14	1.971	5.13	-0.01
B	3.96	6.28	3.942	6.26	-0.02
C	7.92	8.56	7.935	8.52	0.01
D	19.79	15.39	19.810	15.33	0.02

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification.

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **KHRONE**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Khrone	Date:	August 23, 2022
Model:	IFC 010D	Report No:	CO1360-2208-55
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	A9915978		
Tag:	FIT02		
Job Location:	Tank 1 RAS Flow		
Asset ID:	0000062479		

Sensor Details		Flow Details	
Line size:	4"	Unit:	l/sec
GKL:	5.243	Flow Range:	0-66.7
Mounting:	Remote	Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	66.7

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	9537781	9537784
FLOW (l/sec)	15.99	14.43

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Set-Point as Per Calibration KIT	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.15	4.00	0.15
A	3.14	4.75	3.17	4.77	0.03
B	6.28	5.51	6.44	5.53	0.16
C	12.55	7.01	12.58	7.03	0.03
D	31.38	11.53	31.40	11.39	0.02
E	62.76	19.05	62.73	19.01	-0.03

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification.

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **KHRONE**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Khrone	Date:	August 23, 2022
Model:	IFC 010D	Report No:	CO1360-2208-56
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	A9915977		
Tag:	FIT03	**Flow Details**	
Job Location:	Tank 2 RAS Flow	Unit:	l/sec
Asset ID:	0000062480	Flow Range:	0-66.7
		Current Output:	4-20 mA
Sensor Details		4 mA Set Point	0
Line size:	4"	20 mA Set Point	66.7
GKL:	5.318		
Mounting:	Remote		

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	9924547	9924551
FLOW (l/sec)	17.87	16.27

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Set-Point as Per Calibration KIT	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.20	4.01	0.20
A	3.18	4.76	3.23	4.80	0.05
B	6.37	5.53	6.41	5.57	0.04
C	12.73	7.05	12.75	7.03	0.02
D	31.83	11.63	31.87	11.65	0.04
E	63.65	19.27	63.73	19.31	0.08

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification.

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **KHRONE**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Khrone	Date:	August 23, 2022
Model:	IFC 010D	Report No:	CO1360-2208-57
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	A9915979		
Tag:	FIT04		
Job Location:	Truck Fill Flow		
Asset ID:	NA		

Sensor Details		Flow Details	
Line size:	4"	Unit:	l/sec
GKL:	5.045	Flow Range:	0-75
Mounting:	Remote	Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	75

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	84967	84968
FLOW (l/sec)	0	0

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Set-Point as Per Calibration KIT	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.01	4.00	0.01
A	3.02	4.64	3.06	4.68	0.04
B	6.04	5.29	6.09	5.31	0.05
C	12.08	6.58	12.11	6.59	0.03
D	30.19	10.44	30.08	10.36	-0.11
E	60.39	16.88	60.27	16.83	-0.12

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification.

Service Technician :	Tushar Patel	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **OCM III**
OPEN CHANNEL FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Milltronics	Date:	August 23, 2022
Model:	OCM III	Report No:	CO1360-2208-58
Tag:	FIT05	Job No:	CO1360-2208
Job Location:	Effluent Flow		
Asset ID:	000052506	**Flow Details**	
		Unit:	l/sec
		Flow Range:	0-105
		Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	105

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	18757232 X 1000	18757236 X 1000
FLOW (l/sec)	31.29	4.07

Maintenance Checklist				Remarks
Visual Inspection:	☑	OK	☐ NOT OK	
Electrical Inspection:	☑	OK	☐ NOT OK	

Programming Parameter of Instrument

Parameter	Discription	Value	Parameter	Discription	Value
F0	Access Code	2.71828	P7	Height of Max. Head	34.4820
P1	Dimension Unit (cm)	0	P32	Totalizer Multiplier	6*1000
P3	Exponential Device	0	P42	Head by OCM III	0
P4	Cal. Method -Ratiometric	1	P45	Low Flow Cut-off	0
P5	Flow Unit - l/sec	0	P46	Range at Zero Head	85.66725 cm
P6	Max Flow rate	105.0009	P47	Blanking Distance	30.48264 cm

Test Point Report

Reference Distance (cm)	Measured Distance (cm)	Calculated Flow (l/sec)	UUT Flow Display (l/sec)	Calculated (mA)	Measured (mA)	Deviaiton Full Scale (l/sec)
7.23	7.09	9.62	9.34	5.47	5.42	-0.28
6.58	6.44	8.33	8.06	5.27	5.23	-0.27

Calculations

Flow Calculations

$Q = q_{cal} (h/h_{cal})^{Exp}$ Where, Q= Discharge Flow, qcal = max flow, h = head, hcal = max head

Exp = 1.53 , Hence,

$Q = 105 (7.23/34.48)^{1.53}$

Q = 9.62

Instrument Test Information and Results

Input (%)	Calculated Flow(l/sec)	Calculated Input (mA)	Flow on UUT (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.20	4.02	0.20
25	26.25	8.00	26.22	7.98	-0.03
50	52.50	12.00	52.34	11.94	-0.16
75	78.75	16.00	78.62	15.96	-0.13
100	105.00	20.00	104.82	19.98	-0.18

Information of Tools used for Verification of the Instruments

Device Description:	Manufacturer	Model
Electrical Multimeter	Fluke	179

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Program parameters verified. Single point verification done

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **ROSEMOUNT** ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Rosemount	Date:	August 23, 2022
Model:	8712	Report No:	CO1360-2208-59
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	860188157		
Tag:	FIT06		
Job Location:	Raw sewage flow		
Asset ID:	NA		

Sensor Details		Flow Details	
Line size:	8"	Unit:	l/sec
Flow Cal Tube No.:	1025505911000011	Flow Range:	0-150
Mounting:	Remote	Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	150

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	882766016	882761472
FLOW (L/SEC)	0.0	30.2

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Test-Point as Per Calibration KIT	Calculated Flow (FPS)	Calculated O/P (mA)	UUT Display (FPS)	UUT Measured Output (mA)	Deviation (FPS)
0.00	0.00	4.00	0.00	4.00	0.00
3.00	3.00	5.60	3.00	5.60	0.00
10.00	10.00	9.33	9.99	9.34	-0.01
30.00	30.00	20.00	29.99	19.98	-0.01

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Rosemount	Fluke	N/A
Model No:	8714D	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks: Measurement Works within Specification.

Service Technician : Tushar Patel

Printed Date: August 23, 2022

Stamp/Signature

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **KHRONE**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Khrone	Date:	August 23, 2022
Model:	IFC 100W	Report No:	CO1360-2208-60
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	C16501184		
Tag:	FIT014(UPPER)		
Job Location:	Upper filter		
Asset ID:	NA		

Sensor Details		Flow Details	
Line size:	10"	Unit:	l/sec
GKL:	8.6872	Flow Range:	0-200
Mounting:	Remote	Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	200

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	2771955.455	2771960.260
FLOW (l/sec)	0.00	0.00

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Set-Point as Per Calibration KIT	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.00	4.00	0.00
A	32.49	6.60	32.57	6.64	0.08
B	64.99	9.20	65.12	9.22	0.13
C	129.98	14.40	130.08	14.42	0.10

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification.

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **KHRONE**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	Khrone	Date:	August 23, 2022
Model:	IFC 100W	Report No:	CO1360-2208-61
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	C16501544		
Tag:	FIT014(LOWER)	**Flow Details**	
Job Location:	Lower filter	Unit:	l/sec
Asset ID:	NA	Flow Range:	0-200
		Current Output:	4-20 mA
Sensor Details		4 mA Set Point	0
Line size:	10"	20 mA Set Point	200
GKL:	8.2852		
Mounting:	Remote		

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	3287077.102	3287079.287
FLOW (l/sec)	0.00	0.00

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Set-Point as Per Calibration KIT	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0	0.00	4.00	0.00	4.00	0.00
A	30.99	6.48	31.13	6.52	0.14
B	61.98	8.96	62.16	9.01	0.18
C	123.96	13.92	124.16	13.95	0.20

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Calibrator	Electrical Multimeter	N/A
Manufacturer:	Khrone	Fluke	N/A
Model No:	GS8B	179	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Measurement Works within Specification.

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **ABB**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	ABB	Date:	August 23, 2022
Model:	MagMaster	Report No:	CO1360-2208-62
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	3K620000015306		
Tag:	FIT07		
Job Location:	Storm Flow		
Asset ID:	NA		

Sensor Details		Flow Details	
Line size:	10"	Unit:	l/sec
Mounting:	Remote	Flow Range:	0-200
		Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	200

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	818813	818814
FLOW (l/sec)	0.00	0.00

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Flow Input (%)	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0.00	0.00	4.00	0.00	4.00	0.00
25.00	50.00	8.00	49.98	7.98	-0.02
50.00	100.00	12.00	99.99	11.99	-0.01
75.00	150.00	16.00	150.01	16.01	0.01
100.00	200.00	20.00	200.00	20.01	0.00

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Electrical Multimeter	N/A	N/A
Manufacturer:	Fluke	N/A	N/A
Model No:	179	N/A	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks: Measurement Works within Specification.

Service Technician : Sanket Trada

Printed Date: August 23, 2022

Stamp/Signature

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **ABB**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	ABB	Date:	August 23, 2022
Model:	MagMaster	Report No:	CO1360-2208-63
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	3K620000015305		
Tag:	FIT08	**Flow Details**	
Job Location:	Storm return Flow	Unit:	l/sec
Asset ID:	NA	Flow Range:	0-100
		Current Output:	4-20 mA
Sensor Details		4 mA Set Point	0
Line size:	8"	20 mA Set Point	100
Mounting:	Remote		

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	849697	849697
FLOW (l/sec)	1.77	1.39

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Flow Input (%)	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0.00	0.00	0.25	0.02	4.01	0.02
25.00	25.00	24.54	25.00	8.00	0.00
50.00	50.00	49.85	50.01	12.01	0.01
75.00	75.00	74.99	74.98	15.98	-0.02
100.00	100.00	100.00	100.00	20.01	0.00

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Electrical Multimeter	N/A	N/A
Manufacturer:	Fluke	N/A	N/A
Model No:	179	N/A	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified
Overall Remarks:	Measurement Works within Specification.		

Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 23, 2022		

End of Report

Version: 19-12

Induscontrol Inc
3170 Ridgeway Drive, Unit #11
Mississauga, ON L5L 5R4

VERIFICATION REPORT - **ABB**
ELECTRO-MAGNETIC FLOW MEASUREMENT

Customer Name:	OCWA-Georgian Highlands Region	Site/Plant Address:	300 Centennial Rd,
Plant Name:	Shelburne WWTP		Shelburne,ON L0N 1S4

Device Information		Service Information	
Make:	ABB	Date:	August 23, 2022
Model:	MagMaster	Report No:	CO1360-2208-64
Order Code:	NA	Job No:	CO1360-2208
Serial No.:	3K620000015302		
Tag:	FIT09		
Job Location:	Sludge transfer Flow		
Asset ID:	NA		

Sensor Details		Flow Details	
Line size:	8"	Unit:	l/sec
Mounting:	Remote	Flow Range:	0-80
		Current Output:	4-20 mA
		4 mA Set Point	0
		20 mA Set Point	80

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	36597	36597
FLOW (l/sec)	0.00	0.00

Maintenance Checklist			Remarks
Visual Inspection:	☑ OK	☐ NOT OK	
Electrical Inspection:	☑ OK	☐ NOT OK	
Sensor Installation:	☑ OK	☐ NOT OK	
Transmitter Installation:	☑ OK	☐ NOT OK	

Instrument Test Information and Results

Flow Input (%)	Calculated Flow (l/sec)	Calculated O/P (mA)	UUT Display (l/sec)	UUT Measured Output (mA)	Deviation (l/sec)
0.00	0.00	4.00	0.00	4.00	0.00
25.00	20.00	8.00	19.99	7.99	0.01
50.00	40.00	12.00	40.00	12.00	0.00
75.00	60.00	16.00	60.00	16.00	0.00
100.00	80.00	20.00	80.01	20.01	-0.01

Information of Tools used for Verification of the Instruments

Details	Tool/Kit 1	Tool/Kit 2	Tool/Kit 3
Device Description:	Electrical Multimeter	N/A	N/A
Manufacturer:	Fluke	N/A	N/A
Model No:	179	N/A	N/A

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks: Measurement Works within Specification.

Service Technician : Sanket Trada

Printed Date: August 23, 2022

Stamp/Signature

End of Report

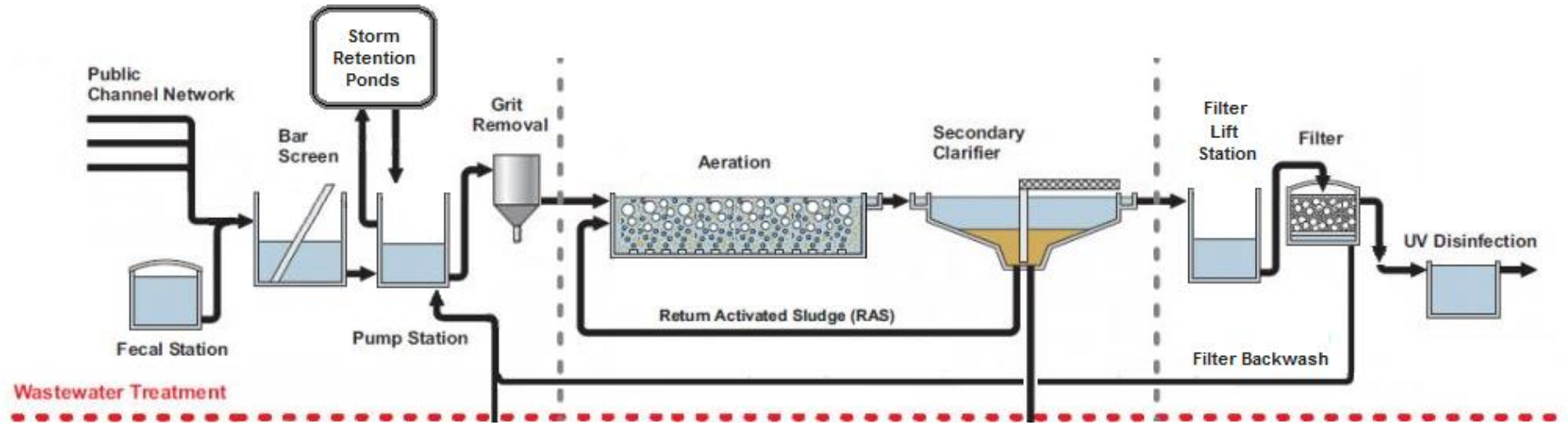
Version: 19-12

2022 Annual Performance Report
Shelburne Wastewater Treatment Plant
Amended Environmental Compliance Approval No. 6413-ABLQQS

Appendix D

Process Flow Schematic

Process Diagram



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3. THIS DRAWING IS TO BE READ AND UNDERSTOOD IN CONJUNCTION WITH ALL OTHER PLANS AND DOCUMENTS APPLICABLE TO THIS PROJECT.
4. DO NOT SCALE THE DRAWINGS.

PROF. STAMP

No.	DATE	ISSUE / REVISION	No.	DATE	ISSUE / REVISION
1.	05/04/2016	33% SUBMISSION	6.	14/06/2016	ISSUED REQUEST FOR PROPOSAL
2.	20/04/2016	66% SUBMISSION	7.	08/08/2016	ISSUED FOR CONSTRUCTION
3.	25/04/2016	ISSUED FOR MOE REVIEW	8.	26/01/2018	AS-BUILT
4.	26/04/2016	ISSUED FOR NVCA REVIEW			
5.	30/05/2016	REVISED AS PER NVCA COMMENTS			

CLIENT
TOWN OF SHELBURNE

PROJECT
WATER POLLUTION CONTROL PLANT
TERTIARY FILTER REPLACEMENT UPGRADES

TITLE
GENERAL PROCESS FLOW SCHEMATIC
TEMPORARY BY-PASS & UPGRADES

S. BURNETT & ASSOCIATES LIMITED
ENGINEERING AND ENVIRONMENTAL SERVICES
210 BROADWAY, UNIT 203
ORANGEVILLE, ONTARIO L9W 5G4
TELEPHONE: 519-941-2949 FAX: 519-941-2036

DESIGNED BY	DRAWN BY	VERIFIED BY	DRAWING No.
D.D.	B.U	S.B.	G4
SCALE: NTS	PROJECT No.: M15003		

Appendix E

Notice of Modification to the Sewage Works

2022

Ontario

Ministry of the Environment, Conservation and Parks

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA ON-SITE PRIOR TO THE SCHEDULED IMPLEMENTATION DATE.

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility

(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)
6413-ABLQQS	07/19/16	01

ECA Owner	Municipality
Town of Shelburne	Town of Shelburne

Part 2: Description of the modifications as part of the Limited Operational Flexibility

(Attach a detailed description of the sewage works)

AQUABACxt is a highly effective, US EPA-registered biological larvicide. It contains a species of bacteria called bacillus thuringiensis, an approved pesticide for controlling red worms and midge flies in wastewater treatment plants.

On a weekly basis from spring to fall operator will dose the incoming raw sewage and aeration tank to eliminate midge flies at the plant during the summer months.

Description shall include:
1. A detail description of the modifications and/or operations to the sewage works (e.g. sewage work component, location, size, equipment type/model, material, process name, etc.)
2. Confirmation that the anticipated environmental effects are negligible.
3. List of updated versions of, or amendments to, all relevant technical documents that are affected by the modifications as applicable, i.e. submission of documentation is not required, but the listing of updated documents is (design brief, drawings, emergency plan, etc.)

Part 3 – Declaration by Professional Engineer

I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:
1. Has been prepared or reviewed by a Professional Engineer who is licensed to practice in the Province of Ontario;
2. Has been designed in accordance with the Limited Operational Flexibility as described in the ECA;
3. Has been designed consistent with Ministry's Design Guidelines, adhering to engineering standards, industry's best management practices, and demonstrating ongoing compliance with s.53 of the Ontario Water Resources Act; and other appropriate regulations.

hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name (Print)	PEO License Number
Jose A. Casal, P.Eng. PMP	100133268
Signature (Digitally signed by Jose Casal Date: 2022.03.29 10:46:11 -04'00')	Date (mm/dd/yy) March 29, 2022
Name of Employer: Ontario Clean Water Agency (OCWA)	

Part 4 – Declaration by Owner

I hereby declare that:
1. I am authorized by the Owner to complete this Declaration;
2. The Owner consents to the modification; and
3. This modifications to the sewage works are proposed in accordance with the Limited Operational Flexibility as described in the ECA.
4. The Owner has fulfilled all applicable requirements of the *Environmental Assessment Act.*

I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate

Name of Owner Representative (Print)	Owner representative's title (Print)
Jim Moss	**Director, Development and Operations**
Owner Representative's Signature	Date (mm/dd/yy) 03/22/2022

AQUABACxt & BugJuice

Eliminates Red Worms and Midge Flies In Wastewater

AQUABACxt

AQUABACxt is a highly effective, US EPA-registered biological larvicide. It contains a species of bacteria called *bacillus thuringiensis* (BT), an approved larvicide for controlling red worms and midge flies in wastewater treatment plants.

Red worms find wastewater plants to be a perfect home. They survive by eating your MLSS, then hatch into midge flies, and the cycle repeats. The active ingredient in AQUABACxt kills the red worms and breaks the cycle.

Common symptoms of red worm infestations include: disappearing MLSS (the red worms are eating it), stringy or clumpy return activated sludge, and nuisance flies that attract pests. AQUABACxt is safe to use and will only kill a very narrow set of target species; larvae of the mosquito, midge flies, and black flies. It will not cause effluent toxicity issues.

BugJuice

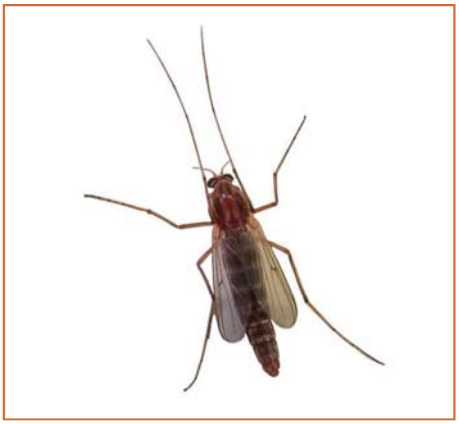
BugJuice degrades the cocoons red worms build around themselves, exposing more red worms to the AQUABACxt treatment. You can often find these cocoons on the walls of clarifier rings, or the sides of basins. This technique increases the effectiveness of AQUABACxt dramatically.

We recommend using BugJuice for the first 20 to 40 days of any treatment. After the initial treatment, an annual or biannual 20 day treatment is helpful for restoring the benefits.

Figure 1:

Isolated midge fly and an isolated red worm

Red Worm



Midge Fly

The Bugman AQUAFIX Inc.

P.O. Box 8682
Madison, WI
53708-8682

P: 888.757.9577
F: 866.636.1864

info@teamaquafix.com
www.teamaquafix.com

Dose Rates

AQUABACxt & BugJuice

AQUABACxt: Wastewater Plant Dosing

Flow Rate Gallons per day	Super Dose Twice per week for 1-2 weeks	Initial Dose Twice per week for 2 weeks	Maintenance Dose Once per week
10,000 GPD	0.5 pt or 8 oz	4 oz	2 oz
50,000 GPD	1 qt or 2 pt	1 pt	8 oz
100,000 GPD	0.5 gal	1 qt	1 pt
200,000 GPD	1 gal	2 qt	2 pt
300,000 GPD	1.5 gal	3 qt	3 pt
400,000 GPD	2 gal	4 qt	4 pt
500,000 GPD	2.5 gal	5 qt	5 pt
600,000 GPD	3 gal	6 qt	6 pt
700,000 GPD	3.5 gal	7 qt	7 pt
800,000 GPD	4 gal	8 qt	8 pt
900,000 GPD	4.5 gal	9 qt	9 pt
1,000,000 GPD	5 gal	10 qt	10 pt

AQUABACxt: Wastewater Lagoon Dosing

Lagoon Size	Initial Dose Once per week for 4 weeks	Maintenance Dose Once per week
1 Acres	2.5 gal	1 gal
4 Acres	10 gal	4 gal
8 Acres	20 gal	8 gal

BugJuice Dose Rate

Flow Rate Gallons per day	Dose: Add Daily at the head of treatment plant
100,000 GPD	1 pt
200,000 GPD	2 pt
300,000 GPD	3 pt
400,000 GPD	4 pt
500,000 GPD	5 pt
600,000 GPD	6 pt
700,000 GPD	7 pt
800,000 GPD	8 pt
900,000 GPD	9 pt
1,000,000 GPD	10 pt

AQUABACxt:

- Add directly to areas with red worms, often secondary clarifiers and tertiary processes
- Can be metered instead of weekly slug dose, if desired
- Continue to use throughout your climate's active midge fly season

BugJuice:

- Add daily at headworks of plant
- Use for at least the first 20-40 days of any AQUABACxt treatment

Available Sizes:

- 5 gal case
- 135 gal pallet
- 250 gal tote (AQUABACxt)
- 275 gal tote (BugJuice)

From: Weber, Martha (MECP)
To: Melissa Cortes
Cc: Don Irvine; Monika Kowalska; Jenna Porter
Subject: RE: Shelburne WWTP - Midge Fly Control
Date: March-21-22 7:57:13 AM

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning Melissa,

I double-checked with Approvals, and they agree this item would fall within the LOF provisions as proposed.

Thanks for reaching out!

Martha Weber
Water Inspector/Provincial Officer
Ministry of the Environment, Conservation and Parks
Guelph District Office
Cell (519) 830-5977

From: Melissa Cortes <MCortes@ocwa.com>
Sent: Wednesday, March 16, 2022 12:01 PM
To: Weber, Martha (MECP) <Martha.Weber@ontario.ca>
Cc: Donald Irvine <dirvine@ocwa.com>; Monika Kowalska <MKowalska@ocwa.com>; Jenna Porter <JPorter2@ocwa.com>
Subject: Shelburne WWTP - Midge Fly Control

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Martha,

I wanted to reach out to you to start a discussion on the use of a products called AQUABACxt and Bug Juice at the Shelbune WWTP to control midge flies. Our operator reached out and provided documentation/research on this product and how effective it is in controlling midge flies and wanted to try it at the Shelburne WWTP. Attached is some information on the product as well as dosing calculations that our operator has completed with a schedule of dosing.

If you could provide your feedback and directions we can take to start using these products I would greatly appreciate it. I believe it would fall under LOF and a notice of modification form will be

completed before using this product.

Thanks Melissa

Melissa Cortes
Process & Compliance Technician
Highlands Hub, Georgian Highlands Region
300 Centennial Road
Shelburne ON, L9V 2Z4
519-938-6909

From: Monika Kowalska <MKowalska@ocwa.com>
Sent: March-11-22 9:48 AM
To: Don Irvine <DIrvine@ocwa.com>
Cc: Jose Casal <JCasal@ocwa.com>; Jenna Porter <JPorter2@ocwa.com>; Melissa Cortes <MCortes@ocwa.com>
Subject: RE: Shelburne WWTP

Hi

I initially found out about this product through the email correspondence attached by Don. Another OCWA facility used this product last year and had great success.

Looking at the website, https://teamaquafix.com/products/midge-flies/aquabac-xt-midge-flies/
It is a product specifically designed for use at WWTP to eliminate red worms which develop into midge flies. These flies in turn attract spiders into the plant.
"It contains a species of bacteria called ***bacillus thuringiensis***, an approved larvicide for controlling red worms and midge flies in wastewater treatment plants and waterways. Highly effective against red worms but safe for fish, birds, mammals, and other lifeforms. AQUABACxt is safe to use and will only kill a very narrow set of target species; larvae of the mosquito, midge flies, and black flies. It will not cause effluent toxicity issues."

I am also a member of a wastewater operator group, and within this group, there have been many post about how other operators around the world manage the flies at their facilities, and the operators that have used this product highly recommend it.

Only other way to reduce/eliminate these flies at the source is through chlorination (which can negatively impact the microorganisms in the RAS). All other methods (bug zappers, etc,) are only treating the symptoms and are not effective.

Attached is the product sheet which can be found on the AQUAFIX website, and states the recommended doses.
Attached is the calculations I performed to determine how much product is required this year based off of the plant's flow per day.

There are 2 products that will be used.
Bug Juice draws out the red worms that are hiding in rags/grit and degrades their protective cocoons. The AQUABACxt is fed upon by these red worms which kills them, thereby eliminating the midge flies.

Bug Juice also carries the added benefit of improving digester settling and denser sludge (similar to XLR8 product used at the plant a couple of years ago). https://teamaquafix.com/products/aerobic-digester-sludge-storage-tank/bug-juice-sludge-reduction/

Attached is the SDS for both Bug Juice and AQUABACxt.
Attached is email correspondence with Landon from AQUAFIX, with some answers to questions I had earlier this year.

Let me know if there's any other info required.

Thanks,

Monika Kowalska, C.Tech.
Water & Wastewater Operator | Ontario Clean Water Agency
Highlands Hub | Georgian Highlands Region
300 Centennial Rd, Shelburne, Ontario L9V 2Z4
Cell 519-940-6057 | mkowalska@ocwa.com

Appendix F

ECA Limit Exceedance Email/Written Notifications

2022

Melissa Cortes

From: Melissa Cortes
Sent: June-17-22 3:51 PM
To: martha.weber@ontario.ca
Cc: Stephen Burnett - S. Burnett & Associates Limited (stephen.burnett@sbaengineering.com); jmoss@shelburne.ca; Don Irvine; Camille Leung; Mike Mortimer; Monika Kowalska; Jenna Porter
Subject: Shelburne Wastewater Treatment Plant (WWTP) ECA Compliance Limit Exceedance (CBOD5) - May 2022

Hello Martha,

This is a notification that the Shelburne Wastewater Treatment Plant (WWTP) has met all but one of its ECA compliance limits (**CBOD5**) for the month of **May 2022**.

Facility: Shelburne WWTP
ECA # 6413-ABLQQS
ECA Issued: July 19, 2016

May 2022

Shelburne WWTP			**3rd**	**10th**	**17th**	**24th**	**31st**	**MONTHLY AVERAGE**	**Reportable**
PARAMETER	*LIMIT*	*OBJECTIVE*							
CBOD5	5.0mg/L	4.0mg/L	4	13	4	2	4	5.40	Monthly

Results Summary

- **$CBOD_5$** – the monthly average concentration of 5.40 mg/L was **above** the ECA Compliance Limit.

Reporting Actions

Verbally notified Martha Weber, Provincial Office/Water Inspector with the MECP Guelph District Office of the exceedance on Friday June 17th, 2022 via phone call, left voicemail with details.

Process Observations

- North Clarifier out of service since April 28 while repairs were being scheduled and plant may have taken a shock load of BOD from possible industrial section of town (North Clarifier returned to service June 6)
- Sludge blanket in South Clarifier was higher due to the extra loading with the North Clarifier being out of service

Corrective Actions taken

- Operator adjusted raw sewage and RAS flows daily until blanket in South Clarifier returned to normal operating levels

If there are any questions or comments concerning this matter, please let us know.

Thank you,

Melissa Cortes

Process & Compliance Technician
Highlands Hub, Georgian Highlands Region
300 Centennial Road
Shelburne ON, L9V 2Z4
519-938-6909

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

Melissa Cortes

From: Melissa Cortes
Sent: January-13-23 12:43 PM
To: martha.weber@ontario.ca
Cc: Stephen Burnett - S. Burnett & Associates Limited (stephen.burnett@sbaengineering.com); jmoss@shelburne.ca; Don Irvine; Camille Leung; Caralynn McRae; Monika Kowalska; Suhail Auzam
Subject: Shelburne Wastewater Treatment Plant (WWTP) ECA Compliance Limit Exceedance Total Suspended Solids - December 2022

Hello Martha,

This is a notification that the Shelburne Wastewater Treatment Plant (WWTP) has met all but one of its ECA compliance limits (**Total Suspended Solids**) for the month of **December 2022**.

Facility: Shelburne WWTP
ECA # 6413-ABLQQS
ECA Issued: July 19, 2016

December 2022

Shelburne WWTP			**6th**	**13th**	**20th**	**28th**		**MONTHLY AVERAGE**	**Reportable**
PARAMETER	*LIMIT*	*OBJECTIVE*							
TSS	5.0mg/L	4.0mg/L	2	7	5	8		5.50	Monthly

Results Summary

- **TSS (Total Suspended Solids)** – the monthly average concentration of **5.50** mg/L was **above** the ECA Compliance Limit.

Reporting Actions

Verbally notified Martha Weber, Provincial Office/Water Inspector with the MECP Guelph District Office of the exceedance on Friday January 13, 2023 at 12:39 via phone call, left voicemail with exceedance information.

Process Observations

13th - Possible high concentration of solids entering plant after hours
28th - Operations observed on December 20th, 2022 incoming raw sewage was black (unsure of source), H2S gas in headworks was high.

- December 21st, 2022 final effluent was cloudy and ammonia was high (0.94 mg/L).
- December 23rd, 2022 grit vortex was clogged and needed to be unclogged.
- December 23rd-24th, 2022 power failure due to snow storm.
- December 24th, 2022 aeration blower 1 failure due to snow storm, filters were clogged.
- December 25th-28th wasting didn't occur due to return activated sludge pump 2 failure and pump 3 out of service
- December 26th, 2022 return activated sludge pump 2 failure due to electrical cable issue

Corrective Actions taken

13th - Cleaned UV channel, auto-sampler suction/discharge lines, increased aeration blower and return activated sludge into aeration

28th - December 21st, 2022 increased aeration blower 1, decreased raw sewage into plant, increased return activated sludge into aeration.

- December 23rd, 2022 unclogged grit vortex
- December 24th, 2022 changed filters on aeration blower 1
- December 26th, 2022 return activated sludge pump 2 running, electrical issue temporarily solved
- December 30th, 2022 return activated sludge pump 3 back in service, wasting issue resolved

If there are any questions or comments concerning this matter, please let us know.

Thank you,

Melissa Cortes
Process & Compliance Technician
Highlands Hub, Georgian Highlands Region
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