Paisley Wastewater Treatment Plant
13-028

2024 Operation and Maintenance Annual Report
March 2025

Prepared for:
Municipality of Arran-Elderslie
PO Box 70, 1925 Bruce Road 10
Chesley, ON N0G 1L0

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1.0 INTRODUCTION

The Paisley Sewage Works System, in Arran-Elderslie, is comprised of three (3) sewage pumping stations and a wastewater treatment plant. The wastewater generated within Paisley is collected into the sewer system and pumped to the wastewater treatment plant by way of a 150 mm diameter force main. The treatment plant consists of a flow equalization basin, grit chamber, oxidation ditch, clarifiers, phosphorous removal system, two-stage aerobic digester system, an aerated sludge storage tank and a chlorine contact chamber. A 250 mm diameter outfall sewer discharges treated effluent to the Saugeen River.

This annual report has been prepared for compliance with ECA #5019-C25S2C dated May 25, 2021 issued by the Ministry of Environment Conservation and Parks (MECP). Refer to **Appendix A** for the current ECA. Various sections in this report address the requirements laid out in the ECA for an Annual Report and includes the following items:

1. Summary and interpretation of monitoring data and a comparison to the effluent limits and objectives.
2. Summary of maintenance carried out.
3. Summary of the calibration and maintenance carried out on all effluent monitoring equipment.
4. Description of operating problems encountered and corrective actions taken.
5. Summary of the sludge generated.
6. Summary of any complaints received and any steps taken to address the complaints.
7. Summary of all by-pass, spill or abnormal discharge events.

During the reporting period of this Annual Report (January 1, 2024 to December 31, 2024), the Paisley Sewage Works was operated by the Municipality of Arran-Elderslie namely:

Scott McLeod, Public Works Manger and Backup Overall Responsible Operator	WWT II WWC II
Ben Overeem	WWT I WWC I
Trevor Sweiger	WWT I WWC I
Chris Legge, Water/Sewers Foreman, Operator in Charge & Backup Overall Responsible Operator	WWT I WWC I
Chase Mcewen	WWT I WWC I
Shane Ryall	WWT I WWC I
Rakesh Sharma, P. Eng., Overall Responsible Operator	WWC IV WWT IV

2.0 DESCRIPTION OF FACILITIES

2.1 Sewage Pumping Stations

Ross Street Pumping Station

This main sewage pumping station is located at the southeast corner of Orchard Street and Ross Street and is equipped with two (2) submersible pumps (one duty and one standby) each rated at 48 L/s at a TDH of 12 m and a valve chamber that houses all associated valves and by-pass facilities. A 150 mm diameter forcemain carries the sewage from this pumping station to the Paisley Wastewater Treatment Plant. This pumping station is also equipped with a 35kW diesel fuel standby generator set complete with a 908 L capacity fuel tank to provide emergency power for the sewage pumps.

Albert Street Pumping Station

This is a subsidiary sewage pumping station located at the southeast corner of Water Street and Albert Street and is equipped with two (2) submersible sewage pumps (one duty, one standby) each rated at 26 L/s at a TDH of 7.5 m and a valve chamber that houses all associated valves and by-pass facilities. A 150 mm forcemain discharges sewage to the Queen Street north sanitary sewer at Water Street. This pumping station is equipped with one (1) 136 m³ capacity flow equalization basin complete with a jet aeration facility for mixing/aeration.

A 40 kW standby diesel generator set and a 908 L fuel tank is housed in the generator building which is constructed on top of the equalization basin.

Mill Street Pumping Station

This sewage pumping station is located near the Southwest of the intersection of Mill and Duke Streets and consist of a 3 m diameter and 9 m deep precast concrete structure with two (2) submersible pumps (one duty and one standby) each rated at 15.5 L/s at 26 m TDH. A 100 mm diameter forcemain discharges sewage to the manhole (MH4) on Victoria Street from where it is conveyed to the Paisley Wastewater Treatment Plant.

2.2 Wastewater Treatment Plant

The wastewater treatment plant has one (1) 345 m³ capacity flow equalization basin with a jet aeration facility for mixing/aeration. A flow restrictor restricts the maximum sewage flow into the grit chamber to approximately 30.3 L/s. Two (2) submersible sewage transfer pumps each rated at 15 L/s at a TDH of 4.9 m transfers the raw sewage into an oxidation ditch that measures 85.3 m centerline length. The ditch has 1.5 m water depth which provides an approximate volume of 412 m³. The oxidation ditch is equipped with one (1) rotor aerator and one (1) mixer to prevent

the settling of solids. Two (2) sludge transfer pumps each rated at 8.6 L/s at 2.0 m TDH transfers sludge to the digesters or for return to oxidation ditch.

The wastewater treatment plant includes two (2) clarifiers having a 7.3 m diameter, 3.05 m water depth and a two-storage aerobic digestion system equipped with air diffusers and mechanical decanting facilities. The Stage 1 and 2 digesters have a capacity of 100 m^3 and 50 m^3 respectively and are equipped with two (2) sludge pumps each rated at 15.14 L/s at 7.0 m TDH and one (1) submersible sewage supernatant pump rated at 15.14 L/s at 7.0 TDH. One (1) blower having an air flow rate of 91 L/s at 41.4 kPa and two (2) blowers having an air flow rate of 91 L/s at 60 kPa, supplies air to both the digesters

The Paisley Wastewater Treatment Plant also includes one (1) sludge storage tank with a storage capacity of 492 m^3 and is equipped with two (2) mechanical submersible mixers and a mechanical decanting facility. All three (3) of the blowers described above are capable of supplying air to the sludge storage tank.

The treatment plant was upgraded in 2021 to replace the gas chlorination system with a UV disinfection system. UV reactor comprises of 2 UV banks, each bank measuring 305mm wide x 2045mm long x 315mm deep and equipped with 16 UV lamps. Two (2) banks together can treat a flow of 180 m^3/hour.

3.0 SUMMARY OF WASTEWATER FLOWS

A summary of wastewater flows received at the sewage treatment plant is provided in **Table 1.** In 2024 the average daily flow was 325 m³/day and the maximum flow was 1,386 m³/day. The maximum day flow occurred on December 30, 2024. The design capacity of the treatment plant is 705 m³/day. In 2024, the wastewater treatment plant operated at 46% of the design capacity, which represents a sufficient reduction over the previous three (3) years.

In the enclosed **Table 1A,** capacity utilization over the years has been summarized along with maximum day flow data. The max day flow was lower than 2023.

The flow meter was calibrated in April 2024, by Tower Electronics Canada. The calibration check result was “Pass”. Full details of this report can be found within **Appendix B**.

TABLE 1

Summary of Effluent Wastewater Flows - 2024

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March, 2025 13-028

Month	Total Effluent Flow (m^3)	Average Daily Flow (m^3/day)	Maximum Daily Flow (m^3/day)	Day of Max Flow Occurrence	Total Raw Sewage Flow
January	12,922	417	676	26th	14,986
February	12,219	421	622	27th	14,620
March	12,810	413	587	1st	15,531
April	14,609	487	863	13th	17,412
May	10,224	329	520	1st	11,514
June	7,548	252	314	1st	8,513
July	7,725	249	503	10th	8,535
August	7,072	228	494	30TH	7,923
September	6,582	219	280	22	7,452
October	6,617	214	283	29th	7,944
November	6,892	230	296	22nd	8,522
December	13,613	439	1386	30th	16,391
Total	**118,833**				**139,343**
Annual Average		**325**			
Maximum			**1,386**		

TABLE 1A

Summary of Capacity Utilization - 2024

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March, 2025 13-028

Year	Average Day Flow (m^3/day)	Capacity Utilization %	Maximum Day Flow (m^3/day)
2024	325	46	1,386
2023	427	60.5	1,647
2022	408	57.9	1,426
2021	325	46.1	1,386
2020	291	41.3	1,255
2019	431	61.1	1,792
2018	449	63.7	3,968
2017	405	57.5	1,871
2016	366	51.9	2,093
2015	341	48.4	1,061
2014	411	58.3	1,970
2013	444	63.0	1,666
2012	338	47.9	808
Rated Capacity	**705**		

4.0 RAW SEWAGE AND TREATED EFFLUENT MONITORING

The Environment Compliance Approval (ECA) requires that the raw sewage be tested for BOD_5, Total Suspended Solids, Total Kjeldahl Nitrogen (TKN) and Total Phosphorous once every month. **Table 2** shows the summary of raw sewage monitoring data.

The ECA further specifies collection of an eight (8) hour composite sample of treated effluent on a weekly basis and analysis for $CBOD_5$, Total Suspended Solids, Total Phosphorous and Total Ammonia Nitrogen. It also requires that a grab sample of treated effluent is collected weekly and is analyzed for E.coli, DO, pH, and temperature. The unionized (free) ammonia in **Table 3** is an estimated amount, calculated as a percentage of total ammonia nitrogen based on field pH and temperature measurements.

Composite effluent samples as per ECA were collected and analyzed for $CBOD_5$, Total Suspended Solids, Total Phosphorous, and Total Ammonia Nitrogen and are summarized in **Table 3.**

In regard to E.coli, the ECA requires that weekly samples are collected and analyzed between May 1st and Oct 31st, and the E.coli levels are reported as monthly geometric mean density. The density is not to exceed 200 organisms per 100 ml of effluent. **Table 3** provides a summary of E.coli monitoring results.

“Average waste loadings” ($CBOD_5$, TSS, TP) are presented in **Table 4**.

None of the effluent parameters or waste loadings exceeded the ECA limits.

TABLE 2

Summary of Raw Sewage Monitoring Data - 2024

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March, 2025 13-028

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Month	BOD (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorous (mg/L)	Total Kjeldahl Nitrogen (mg/L)
January	94	105	2.06	21.6
February	118	143	3.20	29.1
March	176	204	3.61	28.80
April	171	197	3.38	34.80
May	133	140	2.66	23.7
June	136	178	3.62	38.1
July	256	257	3.47	37.1
August	142	192	4.31	48.0
September	149	206	2.17	29.6
October	185	184	3.59	39.3
November	148	242	3.54	35.9
December	159	140	3.31	35.1
Annual Average:	**156**	**182**	**3.24**	**33.43**

TABLE 3

Summary of Treated Effluent Monitoring Data - 2024

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March, 2025 13-028

Month	Average Concentration						
	CBOD (mg/L)	TSS (mg/L)	Total Phosphorous (mg/L)	Total Ammonia Nitrogen (mg/L)	E.Coli Geometric Mean (cts/100mL)	Unionized Ammonia (mg/L)	Average pH
ECA Effluent Limits (mg/L)	30	30	1	3 14	200 (May 1 to Oct 31)		6.0-9.0
ECA Effluent Objectives (mg/L)	25	25	1		200		6.5-8.5
January	4	2	0.08	0.10	12	0.0005	7.51
February	4	2	0.07	0.10	14	0.001	7.46
March	4	2	0.11	0.10	10	0.001	7.39
April	4	3	0.12	0.12	7	0.001	7.47
May	4	2	0.20	0.13	4	0.001	7.49
June	3	3	0.19	0.10	3	0.001	7.36
July	4	2	0.24	0.10	5	0.002	7.35
August	4	3	0.19	0.10	12	0.0004	7.12
September	4	2	0.15	0.10	3	0.0002	7.14
October	4	2	0.16	0.10	10	0.0004	6.96
November	4	2	0.17	0.10	13	0.0004	7.03
December	4	2	0.15	0.10	14	0.0003	7.17
Compliance with ECA Effluent Limits	Y	Y	Y		Y		Y

TABLE 4

Summary of Monthly Average Waste Loadings to Receiver - 2024

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March, 2025 13-028

Month	CBOD (kg/day)	Total Suspended Solids (kg/day)	Total Phosphorous (kg/day)
ECA Effluent Limits	**17.6**	**17.6**	**0.71**
January	1.7	0.8	0.03
February	1.7	0.8	0.03
March	1.7	0.9	0.05
April	1.9	1.5	0.06
May	1.3	0.7	0.06
June	0.8	0.7	0.05
July	1.0	0.5	0.06
August	0.9	0.6	0.04
September	0.9	0.4	0.03
October	0.9	0.4	0.03
November	0.9	0.5	0.04
December	1.8	0.9	0.07
Compliance with ECA Effluent Limits	Y	Y	Y

5.0 SUMMARY OF MAINTENANCE

Ross Street Pump Station:

- Jan 8 – Removed and Replaced Low Level Float.
- Jan 30 – Completed Generator Engine Service. Changed oil and filter and engine fuel filter.
- Jan 30 – Checked Generator belts, air filter and battery. All were ok.
- March 20 – Replaced building interior lighting with LED lighting.
- Aug 16 – Dewar Electric checked amperage of both pumps and found them to be acceptable. Replaced Pump 1 wire lead connectors in electrical cabinet.

Albert Street Pump Station:

- Dec 10 – Removed and replaced door lock (by Dennis Ecker).

Mill Drive Pumping Station

- Feb 20 – Dewar Electric were onsite to replace low level float. Also corrected logic relay in Pulsar unit.

Paisley Sewage Plant:

- Jan 3 – Calibrated alum feed pumps.
- Jan 9 – Full set of new lamps and O rings were installed in the Bank “B” of UV reactor. Hours and cycles were reset to zero reading.
- Jan 17 – Installed new thermostat in alum room (CT 410B SR).
- Jan 26 – Provided new power cord on Liberty SR Pump (K001008).
- Feb 5 – Provided new wheel on south clarifier bridge.
- Feb 29 – Rebuilt spare alum pump and placed it into service.
- Mar 26 – Removed and replaced Blower #1. Air relief valve and pressure gauge were also replaced.
- April 3 – Replaced UV lamp A 3, 2 with a used lamp from Module B at 8,864 hrs.
- April 11 – Changed oil in blower #2 and #3. Greased both motors (Howden VG 220)
- April 16 – Removed and replaced clarifier 250 mm gate valve.
- April 29 – Tower Electronics calibrated raw and effluent flow meters.
- April 30 – Removed and replaced both North and South Clarifier inlet knife gate valves.
- May 8 – Replaced UV lamp A1, 2 with a used lamp from Module B at 8,864 hrs.
- May 28 – Changed oil in rotor’s gear box. Also greased electrical motor and checked belts (Telus 46 S3)

- June 25 – Fosters on site to flush vents at Albert St Pumping Station and cleanout at 216 Nelson St.
- July 10 – Repaired broken sewer at 406 Alma St., 125 mm shattered lateral was replaced with 150 mm – 1 x 560 mm.
- Aug 12 – Replaced UV lamps A 1, 3 with used lamps that already had 8,864 hrs.
- Aug 29 – Cleaned out both scum pits and George St basin.
- Sept 5 – Installed new tank in alum building.
- Sept 17 – New hour clock was fitted on blower #3. Old clock reading was 27,909.9 hrs.
- Sept 19 – Replaced UV lamps A 2, 4 with a used lamp that had 8,864 hrs.
- Sept 26 – Installed 2 sewer connections @551 Queen N
- Oct 11 – Calibrated alum feed pump #1. Flow was set to 2L/ hr.
- Oct 11 – Commissioned new alum tank.
- Oct 11 – Fitted new BPL on alum board and set it to 50 PSI setting.
- Oct 23 – Calibrated Alum feed pump #2.
- Oct 30 – Fosters completed annual sewer flushing of sanitary sewers.
- Nov 13 – Fosters cleaned Ross and Albert St wet wells. Also cleared manhole at WWTP.
- Nov 13 – Repaired manhole vents at Albert St.
- Nov 26 – Completed Annual inspection of flat roofs.
- Nov 27 – Cleaned UV channel and all modules.
- Nov – 12 New sewer laterals were installed on Arnaud between Albert and George by WT Land, Contractor.
- Dec 5 – New diaphragm valves provided for alum feed pump #2 and calibration completed.
- Dec 9 – Changed lamp A 3, 2 on UV. Provided used lamp.
- Dec 30 – Pulled and unclogged SP8.

6.0 SUMMARY OF COMPLAINTS RECEIVED

No complaints were received during 2024.

7.0 SEWAGE BY-PASS AND SPILLS

There were no sewage bypasses from any of the three (3) Paisley pumping stations in 2024.

However, there was a sludge spill on December 3, 2024 at the treatment plant location. MECP Spill Action Centre was contacted and all necessary actions were completed. Refer to Spill Report in **Appendix C.**

8.0 LAND APPLICATION OF DIGESTED SLUDGE

In 2024, no digested sludge was hauled to the sludge spreading site and incorporated into the soil. 411 m³ of Sludge was pumped into geotube in 7 days during late July and early August months.

Old geotube was opened and 191.9 tonnes of dewatered sludge was hauled to municipal landfill for daily land cover use.

9.0 MINISTRY OF THE ENVIRONMENT INSPECTION AND COMPLIANCE

The Ministry of the Environment did not conduct an inspection of the Paisley Sewage Treatment Plant in 2024.

10.0 RECOMMENDATIONS

We present the following recommendations:

1. Continue to operate the sewage works in accordance with the ECA and Regulations.
2. The flow meter calibration should be done before April 2025.
3. Sludge should be hauled/pumped in geotubes on an as-needed basis and maintain an account of sludge pumped into geotubes.
4. Ensure that discharge data including flows, bypasses, raw and effluent data is reported to MECP under the Municipal Monitoring Program on a quarterly basis.
5. The Municipality is advised to continue to participate in the Municipal utility monitoring program and submit the required data to the MECP.

Respectfully submitted:

GSS Engineering Consultants Ltd.

Rakesh Sharma, P. Eng., M.A.Sc.
Class IV License, WWC and WWT

Municipality of Arran-Elderslie

Chris Legge, Water & Sewer Foreman
Class I WWT & Class I WWC, Backup ORO

Municipality of Arran-Elderslie

Scott McLeod, Public Works Manager
Class II WWC & Class II WWT, Backup ORO

Appendix A

Environmental Compliance Approval

ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 5019-C25S2C
Issue Date: May 25, 2021

Municipality of Arran-Elderslie
1925 Bruce County Road 10
Post Office Box, No. 70
Chesley, Ontario
N0G 1L0

Site Location: Paisley Sewage Treatment Plant
322 George St N
Municipality of Arran-Elderslie, Ontario
N0G 2N0

You have applied under section 20.2 of Part II.1 of the Environmental Protection Act, R.S.O. 1990, c. E. 19 (Environmental Protection Act) for approval of:

establishment and alteration, usage and operation of new and existing municipal sewage works, for the treatment of sanitary sewage and disposal of effluent to Saugeen River via a Sewage Treatment Plant (Paisley Wastewater Treatment Plant) and Final Effluent disposal facilities as follows:

Classification of Collection System: Separate Sanitary Sewer System

Classification of Sewage Treatment Plant: Secondary Equivalent

Design Capacity of Sewage Treatment Plant

Design Capacity with All Treatment Trains in Operation	**Existing Works**
Rated Capacity	705 m3/d

Influent, Imported Sewage and Processed Organic Waste

Receiving Location	Types
In Collection System	Sanitary Sewage or Pretreated Industrial Wastewater
At Sewage Treatment Plant	None

Proposed Works:

Disinfection System

- a repurposed chlorine contact channel equipped with UV disinfection system having a total peak hourly capacity flow rate of 180 m^3/hr having two(2) banks each bank measuring 305 mm wide x 2045 mm long x 315 mm deep equipped with 16 UV lamps;

Oxidation Ditch

- one(1) mixer in oxidation ditch

Existing Works:

Paisley Sewage Treatment Plant

Preliminary Treatment System

Screening

- flow equalization basin complete with jet aeration facility for mixing/aeration complete with two(2) submersible sewage transfer pumps each rated at 15 L/s pumping at a TDH of 4.9 m
- manual bar screen
- a flow control device designed to restrict the max flow to the grit channel to approximately 30.3 L/s
- two(2) grit channels

Secondary Treatment System

- an oxidation ditch approximately 85.3 m long, 1.52 m deep with an approximate volume of 412 m3, equipped with (1) rotor aerator

- two(2) 7.3 m dia, 3.05 m SWD primary clarifiers with sludge and scum removal
- two(2) return sludge transfer pumps each rated at 8.6 l/s rated at a TDH of 2.0 m

Supplementary Treatment System

- one(1) 27,000 litre capacity phosphorus removal chemical storage tank and one(1) metering pump

Disinfection System

- chlorine control panel complete with two(2) dose control systems, automatic flow paced and manual
- a 18 kg/day chlorinator complete with weigh scale, ejector and associated equipment (to be decommissioned upon installation of proposed works)
- chlorine contact channel 4 m x 1.6 m x 1.6 m SWD (to be repurposed for the installation of UV)

Final Effluent Flow Measurement and Sampling Point

- an ultrasonic flowmeter on V notch weir at outlet of UV contract chamber
- 200 mm diameter outfall sewer to Saugeen River

Sludge Management

Sludge Digestion

- Stage 1 and 2 sludge digesters with volume of 100 m^3 and 50 m^3 respectively complete with air diffusers and mechanical decanting
- each digester is equipped with two (2) sludge transfer pumps each rated at 15.14 L/s at a TDH of 7.0 m
- one(1) supernatant pump rated at 15.14 L/s at a TDH of 7.0 m
- three (3) blowers (two duty and one standby) each having an air flow rate of 91 l/s, two blowers rated at 62 kPa and one at 41.4 kPa

Biosolids Storage

- (1) one sludge storage having a capacity of 492 m3

For the purpose of this environmental compliance approval, the following definitions apply:

1. "Annual Average Daily Effluent Loading" means the value obtained by multiplying the Annual Average Effluent Concentration of a contaminant by the Annual Average Daily Effluent Flow over the same calendar year;

2. "Annual Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year, calculated and reported as per the methodology specified in Schedule F;

3. "Annual Average Daily Influent Flow" means the cumulative total sewage flow of Influent to the Sewage Treatment Plant during a calendar year divided by the number of days during which sewage was flowing to the Sewage Treatment Plant that year;

4. "Approval" means this environmental compliance approval and any schedules attached to it, and the application;

5. "BOD5" (also known as TBOD5) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demands;

6. "Bypass" means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities;

7. "CBOD5" means five day carbonaceous (nitrification inhibited) biochemical oxygen demand measured in an unfiltered sample;

8. "Director" means a person appointed by the Minister pursuant to section 5 of the EPA for the purposes of Part II.1 of the EPA;

9. "District Manager" means the District Manager of the appropriate local district office of the Ministry where the Works is geographically located;

10. "*E. coli* " refers to coliform bacteria that possess the enzyme beta-glucuronidase and are capable of cleaving a fluorogenic or chromogenic substrate with the corresponding release of a fluorogen or chromogen, that produces fluorescence under long wavelength (366 nm) UV light, or color development, respectively. Enumeration methods include tube, membrane filter, or multi-well procedures. Depending on the method selected, incubation temperatures include 35.5 $\pm$ 0.5 °C or 44.5 $\pm$ 0.2 °C (to enumerate thermotolerant species). Depending on the procedure used, data are reported as either colony forming units (CFU) per 100 mL (for membrane filtration methods) or as most probable number (MPN) per 100 mL (for tube or multi-well methods);

11. "EPA" means the *Environmental Protection Act* , R.S.O. 1990, c.E.19, as amended;

12. "Equivalent Equipment" means alternate piece(s) of equipment that meets the design requirements and performance specifications of the piece(s) of equipment to be substituted;

13. "Event" means an action or occurrence, at a given location within the Works that causes a Bypass or Overflow. An Event ends when there is no recurrence of Bypass or Overflow in the 12-hour period following the last Bypass or Overflow. Overflows and Bypasses are separate Events even when they occur concurrently;

14. "Existing Works" means those portions of the Works included in the Approval that have been constructed previously;

15. "Final Effluent" means effluent that is discharged to the environment through the approved effluent disposal facilities, including all Bypasses, that are required to meet the compliance limits stipulated in the Approval for the Sewage Treatment Plant at the Final Effluent sampling point(s);

16. "Influent" means flows to the Sewage Treatment Plant from the collection system ;

17. "Limited Operational Flexibility" (LOF) means the conditions that the Owner shall follow in order to undertake any modification that is pre-authorized as part of this Approval;

18. "Ministry" means the ministry of the government of Ontario responsible for the EPA and OWRA and includes all officials, employees or other persons acting on its behalf;

19. "Monthly Average Effluent Concentration" is the mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month, calculated and reported as per the methodology specified in Schedule F;

20. "Monthly Average Daily Effluent Flow" means the cumulative total Final Effluent discharged during a calendar month divided by the number of days during which Final Effluent was discharged that month;

21. "Monthly Geometric Mean Density" is the mean of all Single Sample Results of *E. coli* measurement in the samples taken during a calendar month, calculated and reported as per the methodology specified in Schedule F;

22. "Normal Operating Condition" means the condition when all unit process(es), excluding Preliminary Treatment System, in a treatment train is operating within its design capacity;

23. "Operating Agency" means the Owner or the entity that is authorized by the Owner for the management, operation, maintenance, or alteration of the Works in accordance with this Approval;

24. "Overflow" means a discharge to the environment from the Works at designed location(s) other than the approved effluent disposal facilities or via the effluent disposal facilities downstream of the Final Effluent sampling point;

25. "Owner" means Municipality of Arran-Elderslie and its successors and assignees;

26. "OWRA" means the *Ontario Water Resources Act* , R.S.O. 1990, c. O.40, as amended;

27. "Peak Hourly Flow Rate" (also referred to as maximum hourly flow or maximum hour flow) means the largest volume of flow to be received during a one-hour period for which the sewage treatment process unit or equipment is designed to handle;

28. "Preliminary Treatment System" means all facilities in the Sewage Treatment Plant associated with screening and grit removal;

29. "Professional Engineer" means a person entitled to practice as a Professional Engineer in the Province of Ontario under a license issued under the Professional Engineers Act;

30. "Proposed Works" means those portions of the Works included in the Approval that are under construction or to be constructed;

31. "Rated Capacity" means the Annual Average Daily Influent Flow for which the Sewage Treatment Plant is designed to handle;

32. "Sanitary Sewers" means pipes that collect and convey wastewater from residential, commercial, institutional and industrial buildings, and some infiltration and inflow from extraneous sources such as groundwater and surface runoff through means other than stormwater catch basins;

33. "Separate Sewer Systems" means wastewater collection systems that comprised of Sanitary Sewers while runoff from precipitation and snowmelt are separately collected in Storm Sewers;

34. "Sewage Treatment Plant" means all the facilities related to sewage treatment within the sewage treatment plant site excluding the Final Effluent disposal facilities;

35. "Single Sample Result" means the test result of a parameter in the effluent discharged on any day, as measured by a probe, analyzer or in a composite or grab sample, as required;

36. "Storm Sewers" means pipes that collect and convey runoff resulting from precipitation and snowmelt (including infiltration and inflow);

37. "Works" means the approved sewage works, and includes Proposed Works, Existing Works and modifications made under Limited Operational Flexibility.

You are hereby notified that this environmental compliance approval is issued to you subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. GENERAL PROVISIONS

1. The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the terms and conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

2. The Owner shall design, construct, operate and maintain the Works in accordance with the conditions of this Approval.

3. Where there is a conflict between a provision of any document referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence.

2. CHANGE OF OWNER AND OPERATING AGENCY

1. The Owner shall, within thirty (30) calendar days of issuance of this Approval, prepare/update and submit to the District Manager the Municipal and Local Services Board Wastewater System Profile Information Form, as amended (Schedule G) under any of the following situations:

    a. the form has not been previously submitted for the Works;

    b. this Approval is issued for extension, re-rating or process treatment upgrade of the Works;

    c. when a notification is provided to the District Manager in compliance with requirements of change of Owner or Operating Agency under this condition.

2. The Owner shall notify the District Manager and the Director, in writing, of any of the following changes within thirty (30) days of the change occurring:

    a. change of address of Owner;

    b. change of Owner, including address of new owner;

    c. change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the *Business Names Act, R.S.O. 1990, c. B.17* , as amended, shall be included in the notification;

    d. change of name of the corporation where the Owner is or at any time becomes a corporation, and a copy of the most current information filed under the *Corporations Information Act, R.S.O. 1990, c. C.39* , as amended, shall be included in the notification.

3. The Owner shall notify the District Manager, in writing, of any of the following changes within thirty (30) days of the change occurring:

a. change of address of Operating Agency;

b. change of Operating Agency, including address of new Operating Agency.

4. In the event of any change in ownership of the Works, the Owner shall notify the succeeding owner in writing, of the existence of this Approval, and forward a copy of the notice to the District Manager.

5. The Owner shall ensure that all communications made pursuant to this condition refer to the environmental compliance approval number.

3. CONSTRUCTION OF PROPOSED WORKS / RECORD DRAWINGS

1. All Proposed Works in this Approval shall be constructed and installed and must commence operation within five (5) years of issuance of this Approval, after which time the Approval ceases to apply in respect of any portions of the Works not in operation. In the event that the construction, installation and/or operation of any portion of the Proposed Works is anticipated to be delayed beyond the time period stipulated, the Owner shall submit to the Director an application to amend the Approval to extend this time period, at least six (6) months prior to the end of the period. The amendment application shall include the reason(s) for the delay and whether there is any design change(s).

2. Within thirty (30) days of commencement of construction, the Owner shall prepare and submit to the District Manager a schedule for the completion of construction and commissioning operation of the Proposed Works. The Owner shall notify the District Manager within thirty (30) days of the commissioning operation of any Proposed Works. Upon completion of construction of the Proposed Works, the Owner shall prepare and submit a statement to the District Manager, certified by a Professional Engineer, that the Proposed Works is constructed in accordance with this Approval.

3. Within one (1) year of completion of construction of the Proposed Works, a set of record drawings of the Works shall be prepared or updated. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be readily accessible for reference at the Works.

4. BYPASSES

1. Any Bypass is prohibited, except:

a. an emergency Bypass when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of a treatment process or when an unforeseen flow condition exceeds the design capacity of a treatment process that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not bypassed;

b. a planned Bypass that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Bypass, including an estimated quantity and duration of the Bypass, an assessment of the impact on the quality of the Final Effluent and the

mitigation measures if necessary, and the District Manager has given written consent of the Bypass;

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) prior to bypassing.

3. At the beginning of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the type of the Bypass as indicated in Paragraph 1 and the reason(s) for the Bypass;

   b. the date and time of the beginning of the Bypass;

   c. the treatment process(es) gone through prior to the Bypass and the treatment process(es) bypassed;

   d. the effort(s) done to maximize the flow through the downstream treatment process(es) and the reason(s) why the Bypass was not avoided.

4. Upon confirmation of the end of a Bypass Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the date and time of the end of the Bypass;

   b. the estimated or measured volume of Bypass.

5. For any Bypass Event, the Owner shall collect daily sample(s) of the Final Effluent, inclusive of the Event and analyze for all effluent parameters outlined in Compliance Limits condition that require composite samples, following the same protocol specified in the Monitoring and Recording condition for the regular samples. The sample(s) shall be in addition to the regular Final Effluent samples required under the monitoring and recording condition. If the Event occurs on a scheduled monitoring day, the regular sampling requirements prevail. If representative sample for the effluent parameter(s) that require grab sample cannot be obtained, they shall be collected after the Event at the earliest time when situation returns to normal.

6. The Owner shall submit a summary report of the Bypass Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary reports shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5) and either a statement of compliance or a summary of the non-compliance notifications submitted as required under Paragraph 1 of Condition 11. If there is no Bypass Event during a quarter, a statement of no occurrence of Bypass is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Bypass Event.

5. OVERFLOWS

1. Any Overflow is prohibited, except:

   a. an emergency Overflow in an emergency situation when a structural, mechanical or electrical failure causes a temporary reduction in the capacity of the Works or when an unforeseen flow condition exceeds the design capacity of the Works that is likely to result in personal injury, loss of life, health hazard, basement flooding, severe property damage, equipment damage or treatment process upset, if a portion of the flow is not overflowed;

   b. a planned Overflow that is a direct and unavoidable result of a planned repair and maintenance procedure or other circumstance(s), the Owner having notified the District Manager in writing at least fifteen (15) days prior to the occurrence of Overflow, including an estimated quantity and duration of the Overflow, an assessment of the impact on the environment and the mitigation measures if necessary, and the District Manager has given written consent of the Overflow;

2. Notwithstanding the exceptions given in Paragraph 1, the Operating Agency shall undertake everything practicable to maximize the flow through the downstream treatment process(es) and Bypass(es) prior to overflowing.

3. At the beginning of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the type of the Overflow as indicated in Paragraph 1 and the reason(s) for the Overflow;

   b. the date and time of the beginning of the Overflow;

   c. the point of the Overflow from the Works, the treatment process(es) gone through prior to the Overflow, the disinfection status of the Overflow and whether the Overflow is discharged through the effluent disposal facilities or an alternate location;

   d. the effort(s) done to maximize the flow through the downstream treatment process(es) and Bypass(es) and the reason(s) why the Overflow was not avoided.

4. Upon confirmation of the end of an Overflow Event, the Owner shall immediately notify the Spills Action Centre (SAC) and the local Medical Officer of Health. This notice shall include, at a minimum, the following information:

   a. the date and time of the end of the Overflow;

   b. the estimated or measured volume of the Overflow.

5. For any Overflow Event

   a. in the Sewage Treatment Plant, the Owner shall collect grab sample(s) of the Overflow, one near the

beginning of the Event and one every eight (8) hours for the duration of the Event, and have them analyzed at least for CBOD5, total suspended solids, total phosphorus, total ammonia nitrogen, nitrate as N, nitrite as N, total Kjeldahl nitrogen, E. coli except that raw sewage and primary treated effluent Overflow shall be analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen only.

b. at a sewage pumping station in the collection system, the Owner shall collect at least one (1) grab sample representative of the Overflow Event and have it analyzed for BOD5, total suspended solids, total phosphorus and total Kjeldahl nitrogen.

6. The Owner shall submit a summary report of the Overflow Event(s) to the District Manager on a quarterly basis, no later than each of the following dates for each calendar year: February 15, May 15, August 15, and November 15. The summary report shall contain, at a minimum, the types of information set out in Paragraphs (3), (4) and (5). If there is no Overflow Event during a quarter, a statement of no occurrence of Overflow is deemed sufficient.

7. The Owner shall develop a notification procedure in consultation with the District Manager and SAC and notify the public and downstream water users that may be adversely impacted by any Overflow Event.

8. The Owner shall develop a response plan for any unplanned Overflows, consisting of measures to mitigate and prevent the contamination of drinking water.

6. DESIGN OBJECTIVES

1. The Owner shall design and undertake everything practicable to operate the Sewage Treatment Plant in accordance with the following objectives:

   a. Final Effluent parameters design objectives listed in the table(s) included in Schedule B.

   b. Final Effluent is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

   c. Prior to the completion of the Works the Total Residual Chlorine (TRC) in the Final Effluent shall be non-detectable as measured by a method with a sensitivity of at least 0.02 mg/L. Normal operation of de-chlorination equipment should provide for an excess of reagents to ensure that total chlorine residuals are not detected.

   d. Annual Average Daily Influent Flow is within the Rated Capacity of the Sewage Treatment Plant.

7. COMPLIANCE LIMITS

1. The Owner shall operate and maintain the Sewage Treatment Plant such that compliance limits for the Final Effluent parameters listed in the table(s) included in Schedule C are met.

2. Prior to the completion of the proposed works the Owner shall operate and maintain the Sewage Treatment Plant such that the Final Effluent is disinfected during the disinfection period between May 1 and October 31 inclusive.

8. OPERATION AND MAINTENANCE

1. The Owner shall ensure that, at all times, the Works and the related equipment and appurtenances used to achieve compliance with this Approval are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate staffing and training, including training in all procedures and other requirements of this Approval and the OWRA and regulations, adequate laboratory facilities, process controls and alarms and the use of process chemicals and other substances used in the Works.

2. The Owner shall update maintain the operations manual for the Works within six (6) months of completion of construction of the Proposed Works, that includes, but not necessarily limited to, the following information:

   a. operating procedures for the Works under Normal Operating Conditions;

   b. inspection programs, including frequency of inspection, for the Works and the methods or tests employed to detect when maintenance is necessary;

   c. repair and maintenance programs, including the frequency of repair and maintenance for the Works;

   d. procedures for the inspection and calibration of monitoring equipment;

   e. operating procedures for the Works to handle situations outside Normal Operating Conditions and emergency situations such as a structural, mechanical or electrical failure, or an unforeseen flow condition, including procedures to minimize Bypasses and Overflows;

   f. a spill prevention and contingency plan, consisting of procedures and contingency plans, including notification to the District Manager, to reduce the risk of spills of pollutants and prevent, eliminate or ameliorate any adverse effects that result or may result from spills of pollutants;

   g. procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

3. The Owner shall maintain the operations manual up-to-date and make the manual readily accessible for reference at the Works.

4. The Owner shall ensure that the Operating Agency fulfills the requirements under O. Reg. 129/04, as amended for the Works, including the classification of facilities, licensing of operators and operating standards.

9. MONITORING AND RECORDING

1. The Owner shall, upon commencement of operation of the Works, carry out a scheduled monitoring program of collecting samples at the required sampling points, at the frequency specified or higher, by means of the specified sample type and analyzed for each parameter listed in the tables under the monitoring program included in Schedule D and record all results, as follows:

    a. all samples and measurements are to be taken at a time and in a location characteristic of the quality and quantity of the sewage stream over the time period being monitored.

    b. definitions and preparation requirements for each sample type are included in document referenced in Paragraph 3.b.

    c. definitions for frequency:

        i. Daily means once every day;

        ii. Weekly means once every week;

        iii. Monthly means once every month;

    d. a schedule of the day of the week/month for the scheduled sampling shall be created. The sampling schedule shall be revised and updated every year through rotation of the day of the week/month for the scheduled sampling program, except when the actual scheduled monitoring frequency is three (3) or more times per week.

2. In addition to the scheduled monitoring program required in Paragraph 1, the Owner shall collect daily sample(s) of the Final Effluent, on any day when there is any situation outside Normal Operating Conditions, and analyze for all effluent parameters outlined in Compliance Limits condition that require composite samples, following the same protocol specified in this condition for the regular samples. If the Event occurs on a scheduled monitoring day, the regular sampling requirements prevail. If representative sample for the effluent parameter(s) that require grab sample cannot be obtained, they shall be collected after the Event at the earliest time when situation returns to normal.

3. The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following documents and all analysis shall be conducted by a laboratory accredited to the ISO/IEC:17025 standard or as directed by the District Manager:

    a. the Ministry's Procedure F-10-1, “Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only), as amended;

    b. the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater Version 2.0" (January 2016), PIBS 2724e02, as amended;

    c. the publication "Standard Methods for the Examination of Water and Wastewater", as amended.

4. The Owner shall monitor and record the flow rate and daily quantity using flow measuring devices or

other methods of measurement as approved below calibrated to an accuracy within plus or minus 15 per cent (+/- 15%) of the actual flowrate of the following:

a. Final Effluent discharged from the Sewage Treatment Plant by continuous flow measuring devices and instrumentations/pumping rates or in lieu of an actual installation of equipment, adopt the flow measurements of the Influent for the purpose of estimating Final Effluent flows if the Influent and Final Effluent streams are considered not significantly different in flow rates and quantities;

5. The Owner shall retain for a minimum of five (5) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this Approval.

10. LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make pre-authorized modifications to the sewage pumping stations and Sewage Treatment Plant in Works in accordance with the document "Limited Operational Flexibility - Protocol for Pre-Authorized Modifications to Municipal Sewage Works" (Schedule E), as amended, subject to the following:

   a. the modifications will not involve the addition of any new treatment process or the removal of an existing treatment process, including chemical systems, from the liquid or solids treatment trains as originally designed and approved.

   b. the scope and technical aspects of the modifications are in line with those delineated in Schedule E and conform with the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended, Ministry's regulations, policies, guidelines, and industry engineering standards;

   c. the modifications shall not negatively impact on the performance of any process or equipment in the Works or result in deterioration in the Final Effluent quality;

   d. where the pre-authorized modification requires notification, a "Notice of Modifications to Sewage Works" (Schedule E), as amended shall be completed with declarations from a Professional Engineer and the Owner and retained on-site prior to the scheduled implementation date. All supporting information including technical memorandum, engineering plans and specifications, as applicable and appropriate to support the declarations that the modifications conform with LOF shall remain on-site for future inspection.

2. The following modifications are not pre-authorized under Limited Operational Flexibility:

   a. Modifications that involve addition or extension of process structures, tankages or channels;

   b. Modifications that involve relocation of the Final Effluent outfall or any other discharge location or that may require reassessment of the impact to the receiver or environment;

   c. Modifications that involve addition of or change in technology of a treatment process or that may involve reassessment of the treatment train process design;

d. Modifications that require changes to be made to the emergency response, spill prevention and contingency plan; or

e. Modifications that are required pursuant to an order issued by the Ministry.

11. REPORTING

1. The Owner shall report to the District Manager orally as soon as possible any non-compliance with the compliance limits, and in writing within seven (7) days of non-compliance.

2. The Owner shall, within fifteen (15) days of occurrence of a spill within the meaning of Part X of the EPA, submit a full written report of the occurrence to the District Manager describing the cause and discovery of the spill, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation, in addition to fulfilling the requirements under the EPA and O. Reg. 675/98 "Classification and Exemption of Spills and Reporting of Discharges".

3. The Owner shall, upon request, make all manuals, plans, records, data, procedures and supporting documentation available to Ministry staff.

4. The Owner shall prepare performance reports on a calendar year basis and submit to the District Manager by March 31 of the calendar year following the period being reported upon. The reports shall contain, but shall not be limited to, the following information pertaining to the reporting period:

   a. a summary and interpretation of all Influent, monitoring data, and a review of the historical trend of the sewage characteristics and flow rates;

   b. a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates, loading and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works;

   c. a summary of all operating issues encountered and corrective actions taken;

   d. a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus or mechanism forming part of the Works;

   e. a summary of any effluent quality assurance or control measures undertaken;

   f. a summary of the calibration and maintenance carried out on all Influent and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer;

   g. a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:

      i. when any of the design objectives is not achieved more than 50% of the time in a year, or there

is an increasing trend in deterioration of Final Effluent quality;

ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity;

h. a tabulation of the volume of sludge generated, 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;

i. a summary of any complaints received and any steps taken to address the complaints;

j. a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events;

k. a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification.

l. a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted.

m. any changes or updates to the schedule for the completion of construction and commissioning operation of major process(es) / equipment groups in the Proposed Works.

n. a summary of any deviation from the monitoring schedule and reasons for the current reporting year and a schedule for the next reporting year;

Schedule A

1. Application for Environmental Compliance Approval submitted by Rakesh Sharma of GSS Engineering Ltd received on September 16, 2020 for the proposed UV disinfection system, design report, final plans and specifications.

Schedule B

Final Effluent Design Objectives

Concentration Objectives prior to completion of construction of all Proposed Works

Final Effluent Parameter	**Averaging Calculator**	**Objective** (milligrams per litre unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	20.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	20.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.8 mg/L
E. coli	Monthly Geometric Mean Density	*150 CFU/100 mL (May 1 to Oct 31)
pH	Single Sample Result	6.5 - 9.0 inclusive
Total Residual Chlorine**	Single Sample Result	Non-detectable (May 1 to Oct 31)

*If the MPN method is utilized for *E. coli* analysis the objective shall be 150 MPN/100 mL

**Total Residual Chlorine shall be non-detectable as measured by a method with a sensitivity of at least 0.02 mg/L

Concentration Objectives upon completion of construction of all Proposed Works

Final Effluent Parameter	**Averaging Calculator**	**Objective**
CBOD5	Monthly Average Effluent Concentration	20.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	20.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	0.8 mg/L
E. coli	Monthly Geometric Mean Density	*150 CFU/100 mL
pH	Single Sample Result	6.5 - 8.5 inclusive

*If the MPN method is utilized for *E. coli* analysis the objective shall be 150 MPN/100 mL

Schedule C

Final Effluent Compliance Limits

Concentration Limits prior to completion of construction of all Proposed Works

Final Effluent Parameter	**Averaging Calculator**	**Limit** (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	25.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	25.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL (May 1 to Oct 31)
pH	Single Sample Result	between 6.0 - 9.5 inclusive

*If the MPN method is utilized for E. coli analysis the limit shall be 200 MPN/100 mL

Concentration Limits upon completion of construction of all Proposed Works

Final Effluent Parameter	**Averaging Calculator**	**Limit** (maximum unless otherwise indicated)
CBOD5	Monthly Average Effluent Concentration	25.0 mg/L
Total Suspended Solids	Monthly Average Effluent Concentration	25.0 mg/L
Total Phosphorus	Monthly Average Effluent Concentration	1.0 mg/L
E. coli	Monthly Geometric Mean Density	*200 CFU/100 mL
pH	Single Sample Result	between 6.0 - 9.5 inclusive

*If the MPN method is utilized for E. coli analysis the limit shall be 200 MPN/100 mL

Loading Limits prior to completion of construction of all Proposed Works

Loading Limits upon completion of construction of all Proposed Works

Final Effluent Parameter	**Averaging Calculator**	**Limit** (maximum unless otherwise indicated)
CBOD5	Monthly Average Daily Effluent Loading	17.6 kg/d
Total Suspended Solids	Monthly Average Daily Effluent Loading	17.6 kg/d
Total Phosphorus	Monthly Average Daily Effluent Loading	0.71 kg/d

Schedule D

Monitoring Program

Influent - Influent sampling point

Parameters	Sample Type	Minimum Frequency
BOD5	8 hour composite	Monthly
Total Suspended Solids	8 hour composite	Monthly
Total Phosphorus	8 hour composite	Monthly
Total Kjeldahl Nitrogen	8 hour composite	Monthly

Imported Sewage - Imported Sewage Receiving Station

Parameters	Sample Type	Minimum Frequency
BOD5	Grab	Monthly
Total Suspended Solids	Grab	Monthly
Total Phosphorus	Grab	Monthly
Total Kjeldahl Nitrogen	Grab	Monthly

Final Effluent - Final Effluent sampling point

Parameters	Sample Type	Minimum Frequency
CBOD5	8 hour composite	Weekly
Total Suspended Solids	8 hour composite	Weekly
Total Phosphorus	8 hour composite	Weekly
Total Ammonia Nitrogen	8 hour composite	Weekly
E. coli	Grab	Weekly
Total Residual Chlorine	Grab	Weekly(May 1 to Oct 31) prior to completion of proposal works
Dissolved Oxygen	Grab	Weekly
pH*	Grab	Weekly
Temperature*	Grab	Weekly

*pH and temperature of the Final Effluent shall be determined in the field at the time of sampling for Total Ammonia Nitrogen.

Sludge/Biosolids – drawn from inside the geotube

Parameters	Sample Type	Minimum Frequency
Total Solids	Grab	Annually
Total Phosphorus	Grab	Annually
Total Ammonia Nitrogen	Grab	Annually
Nitrate as Nitrogen	Grab	Annually
Metal Scan - Arsenic - Cadmium - Cobalt - Chromium - Copper - Lead - Mercury - Molybdenum - Nickel - Potassium - Selenium - Zinc	Grab	Annually

Schedule E

Limited Operational Flexibility

Protocol for Pre-Authorized Modifications to Municipal Sewage Works

1. General

1. Pre-authorized modifications are permitted only where Limited Operational Flexibility has already been granted in the Approval and only permitted to be made at the pumping stations and sewage treatment plant in the Works, subject to the conditions of the Approval.

2. Where there is a conflict between the types and scope of pre-authorized modifications listed in this document, and the Approval where Limited Operational Flexibility has been granted, the Approval shall take precedence.

3. The Owner shall consult the District Manager on any proposed modifications that may fall within the scope and intention of the Limited Operational Flexibility but is not listed explicitly or included as an example in this document.

4. The Owner shall ensure that any pre-authorized modifications will not:

    a. adversely affect the hydraulic profile of the Sewage Treatment Plant or the performance of any upstream or downstream processes, both in terms of hydraulics and treatment performance;

    b. result in new Overflow or Bypass locations, or any potential increase in frequency or quantity of Overflow(s) or Bypass(es).

    c. result in a reduction in the required Peak Flow Rate of the treatment process or equipment as originally designed.

2. Modifications that do not require pre-authorization:

1. Sewage works that are exempt from Ministry approval requirements;

2. Modifications to the electrical system, instrumentation and control system.

3. Pre-authorized modifications that do not require preparation of "Notice of Modification to Sewage Works"

1. Normal or emergency maintenance activities, such as repairs, renovations, refurbishments and replacements with Equivalent Equipment, or other improvements to an existing approved piece of equipment of a treatment process do not require pre-authorization. Examples of these activities are:

    a. Repairing a piece of equipment and putting it back into operation, including replacement of minor

components such as belts, gear boxes, seals, bearings;

b. Repairing a piece of equipment by replacing a major component of the equipment such as motor, with the same make and model or another with the same or very close power rating but the capacity of the pump or blower will still be essentially the same as originally designed and approved;

c. Replacing the entire piece of equipment with Equivalent Equipment.

2. Improvements to equipment efficiency or treatment process control do not require pre-authorization. Examples of these activities are:

a. Adding variable frequency drive to pumps;

b. Adding on-line analyzer, dissolved oxygen probe, ORP probe, flow measurement or other process control device.

4. Pre-Authorized Modifications that require preparation of "Notice of Modification to Sewage Works"

1. Pumping Stations

a. Replacement, realignment of existing sewers including manholes, valves, gates, weirs and associated appurtenances provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved.

b. Extension or partition of wetwell to increase retention time for emergency response and improve station maintenance and pump operation;

c. Replacement or installation of inlet screens to the wetwell;

d. Replacement or installation of flowmeters, construction of station bypass;

e. Replacement, reconfiguration or addition of pumps and modifications to pump suctions and discharge pipings including valve, gates, motors, variable frequency drives and associated appurtenances to maintain firm pumping capacity or modulate the pump rate provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head or an increase in the peak pumping rate of the pumping station as originally designed;

f. Replacement, realignment of existing forcemain(s) including valves, gates, and associated appurtenances provided that the modifications will not reduce the flow capacity or increase the total dynamic head and transient in the forcemain.

2. Sewage Treatment Plant

1. Sewers and appurtenances

a. Replacement, realignment of existing sewers (including pipes and channels) or construction of new

sewers, including manholes, valves, gates, weirs and associated appurtenances within the a sewage treatment plant, provided that the modifications will not add new influent source(s) or result in an increase in flow from existing sources as originally approved and that the modifications will remove hydraulic bottlenecks or improve the conveyance of sewage into and through the Works.

2. Flow Distribution Chambers/Splitters

    a. Replacement or modification of existing flow distribution chamber/splitters or construction of new flow distribution chamber/splitters, including replacements or installation of sluice gates, weirs, valves for distribution of flows to the downstream process trains, provided that the modifications will not result in a change in flow distribution ratio to the downstream process trains as originally designed.

3. Imported Sewage Receiving Facility

    a. Replacement, relocation or installation of loading bays, connect/disconnect hook-up systems and unloading/transferring systems;

    b. Replacement, relocation or installation of screens, grit removal units and compactors;

    c. Replacement, relocation or installation of pumps, such as dosing pumps and transfer pumps, valves, piping and appurtenances;

    d. Replacement, relocation or installation of storage tanks/chambers and spill containment systems;

    e. Replacement, relocation or installation of flow measurement and sampling equipment;

    f. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity and waste loading of each type of Imported Sewage already approved for co-treatment.

4. Preliminary Treatment System

    a. Replacement of existing screens and grit removal units with equipment of the same or higher process performance technology, including where necessary replacement or upgrading of existing screenings dewatering washing compactors, hydrocyclones, grit classifiers, grit pumps, air blowers conveyor system, disposal bins and other ancillary equipment to the screening and grit removal processes.

    b. Replacement or installation of channel aeration systems, including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers.

5. Primary Treatment System

    a. Replacement of existing sludge removal mechanism, including sludge chamber;

    b. Replacement or installation of scum removal mechanism, including scum chamber;

    c. Replacement or installation of primary sludge pumps, scum pumps, provided that:the modifications will not result in a reduction in the firm pumping capacity or discharge head that the primary sludge pump(s) and scum pump(s) are originally designed to handle.

6. Secondary Treatment System

    1. Biological Treatment

        a. Conversion of complete mix aeration tank to plug-flow multi-pass aeration tank, including modifications to internal structural configuration;

        b. Addition of inlet gates in multi-pass aeration tank for step-feed operation mode;

        c. Partitioning of an anoxic/flip zone in the inlet of the aeration tank, including installation of submersible mixer(s);

        d. Replacement of aeration system including air blowers, air supply main, air headers, air laterals, air distribution grids and diffusers, provided that the modifications will not result in a reduction in the firm capacity or discharge pressure that the blowers are originally designed to supply or in the net oxygen transferred to the wastewater required for biological treatment as originally required.

    2. Secondary Sedimentation

        a. Replacement of sludge removal mechanism, including sludge chamber;

        b. Replacement or installation of scum removal mechanism, including scum chamber;

        c. Replacement or installation of return activated sludge pump(s), waste activated sludge pump(s), scum pump(s), provided that the modifications will not result in a reduction in the firm pumping capacity or discharge head that the activated sludge pump(s) and scum pump(s) are originally designed to handle.

7. Post-Secondary Treatment System

    a. Replacement of filtration system with equipment of the same filtration technology, including feed pumps, backwash pumps, filter reject pumps, filtrate extract pumps, holding tanks associated with the pumping system, provided that the modifications will not result in a reduction in the capacity of the filtration system as originally designed.

8. Disinfection System

    1. UV Irradiation

        a. Replacement of UV irradiation system, provided that the modifications will not result in a reduction in the design capacity of the disinfection system or the radiation level as originally designed.

    2. Chlorination/Dechlorination and Ozonation Systems

        a. Extension and reconfiguration of contact tank to increase retention time for effective disinfection and reduce dead zones and minimize short-circuiting;

        b. Replacement or installation of chemical storage tanks, provided that the tanks are provided with effective spill containment.

9. Supplementary Treatment Systems

    1. Chemical systems

        a. Replacement, relocation or installation of chemical storage tanks for existing chemical systems only, provided that the tanks are sited with effective spill containment;

        b. Replacement or installation of chemical dosing pumps provided that the modifications will not result in a reduction in the firm capacity that the dosing pumps are originally designed to handle.

        c. Relocation and addition of chemical dosing point(s) including chemical feed pipes and valves and controls, to improve phosphorus removal efficiency;

        d. Use of an alternate chemical provided that it is a non-proprietary product and is a commonly used alternative to the chemical approved in the Works, provided that the chemical storage tanks, chemical dosing pumps, feed pipes and controls are also upgraded, as necessary..

10. Sludge Management System

    1. Sludge Holding and Thickening

        a. Replacement or installation of sludge holding tanks, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids storage or handling capacities;

    2. Sludge Digestion

        a. Replacement or installation of digesters, sludge handling pumps, such as transfer pumps, feed pumps, recirculation pumps, provided that modifications will not result in reduction in the solids

storage or handling capacities;

b. replacement of sludge digester covers.

3. Sludge Dewatering and Disposal

a. Replacement of sludge dewatering equipment, sludge handling pumps, such as transfer pumps, feed pumps, cake pumps, loading pumps, provided that modifications will not result in reduction in solids storage or handling capacities.

4. Processed Organic Waste

a. Changes to the source(s) or quantity from each source, provided that changes will not result in an increase in the total quantity already approved for co-processing.

11. Standby Power System

1. Replacement or installation of standby power system, including feed from alternate power grid, emergency power generator, fuel supply and storage systems, provided that the existing standby power generation capacity is not reduced.

12. Pilot Study

1. Small side-stream pilot study for existing or new technologies, alternative treatment process or chemical, provided:

a. all effluent from the pilot system is hauled off-site for proper disposal or returned back to the sewage treatment plant for at a point no further than immediately downstream of the location from where the side-stream is drawn;

b. no proprietary treatment process or propriety chemical is involved in the pilot study;

c. the effluent from the pilot system returned to the sewage treatment plant does not significantly alter the composition/concentration of or add any new contaminant/inhibiting substances to the sewage to be treated in the downstream process;

d. the pilot study will not have any negative impacts on the operation of the sewage treatment plant or cause a deterioration of effluent quality;

e. the pilot study does not exceed a maximum of two years and a notification of completion shall be submitted to the District Manager within one month of completion of the pilot project.

13. Lagoons

a. installing baffles in lagoon provided that the operating capacity of the lagoon system is not reduced;

b. raise top elevation of lagoon berms to increase free-board;

c. replace or install interconnecting pipes and chambers between cells, provided that the process design operating sequence is not changed;

d. replace or install mechanical aerators, or replace mechanical aerators with diffused aeration system provided that the mixing and aeration capacity are not reduced;

e. removal of accumulated sludge and disposal to an approved location offsite.

3. Final Effluent Disposal Facilities

a. Replacement or realignment of the Final Effluent channel, sewer or forcemain, including manholes, valves and appurtenances from the end of the treatment train to the discharge outfall section, provided that the sewer conveys only effluent discharged from the Sewage Treatment Plant and that the replacement or re-aligned sewer has similar dimensions and performance criteria and is in the same or approximately the same location and that the hydraulic capacity will not be reduced.

This page contains an image of the form entitled "Notice of Modification to Sewage Works". A digital copy can be obtained from the District Manager.

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)

ECA Owner	Municipality

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

(Attach a detailed description of the sewage works)

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.

I 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

Signature	Date (mm/dd/yy)

Name of Employer

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)

Owner Representative's Signature	Date (mm/dd/yy)

Schedule F

Methodology for Calculating and Reporting Monthly Average Effluent Concentration, Annual Average Effluent Concentration and Monthly Geometric Mean Density

1. Monthly Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar month, then report and use this arithmetic mean as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar month, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar month and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar month and record it as **Monthly Average NBPD Effluent Concentration**;

c. Obtain the "**Total Monthly NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar month;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar month and record it as **Monthly Average BPD Effluent Concentration**;

e. Obtain the "**Total Monthly BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar month;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Monthly Average NBPD Effluent Concentration × Total Monthly NBPD Flow) + (Monthly Average BPD Effluent Concentration × Total Monthly BPD Flow)] ÷ (Total Monthly NBPD Flow + Total Monthly BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the month, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Monthly Average Effluent Concentration for this parameter where applicable in this Approval.

2. Annual Average Effluent Concentration

Step 1: Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed as follows depending on the result of the calculation:

a. If the arithmetic mean does not exceed the compliance limit for the contaminant, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

b. If the arithmetic mean exceeds the compliance limit for the contaminant and there was no Bypass Event during the calendar year, then report and use this arithmetic mean as the Annual Average Effluent Concentration for this parameter where applicable in this Approval;

c. If the arithmetic mean exceeds the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, then proceed to Step 2;

d. If the arithmetic mean does not exceed the compliance limit for the contaminant and there was Bypass Event(s) during the calendar year, the Owner may still elect to proceed to Step 2 calculation of the flow-weighted arithmetic mean.

Step 2: Calculate the flow-weighted arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured during a calendar year and proceed depending on the result of the calculation:

a. Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar year separately;

b. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all NBPD during a calendar year

and record it as **Annual Average NBPD Effluent Concentration**;

c. Obtain the "**Total Annual NBPD Flow**" which is the total amount of Final Effluent discharged on all NBPD during the calendar year;

d. Calculate the arithmetic mean of all Single Sample Results of the concentration of a contaminant in the Final Effluent sampled or measured on all BPD during a calendar year and record it as **Annual Average BPD Effluent Concentration**;

e. Obtain the "**Total Annual BPD Flow**" which is the total amount of Final Effluent discharged on all BPD during the calendar year;

f. Calculate the flow-weighted arithmetic mean using the following formula:

[(Annual Average NBPD Effluent Concentration × Total Annual NBPD Flow) + (Annual Average BPD Effluent Concentration × Total Annual BPD Flow)] ÷ (Total Annual NBPD Flow + Total Annual BPD Flow)

It should be noted that in this method, if there are no Bypass Event for the calendar year, the calculated result would be the same as the non-flow-weighted arithmetic mean method;

g. Report and use the lesser of the flow-weighted arithmetic mean obtained in Step 2 and the arithmetic mean obtained in Step 1 as the Annual Average Effluent Concentration for this parameter where applicable in this Approval.

3. Monthly Geometric Mean Density

Geometric mean is defined as the n^{th} root of the product of n numbers. In the context of calculating Monthly Geometric Mean Density for *E. coli*, the following formula shall be used:

$$\sqrt[n]{x_1 x_2 x_3 \cdots x_n}$$

in which,

"n" is the number of samples collected during the calendar month; and

"x" is the value of each Single Sample Result.

For example, four weekly grab samples were collected and tested for *E. coli* during the calendar month. The *E. coli* densities in the Final Effluent were found below:

Sample Number	*E. coli* Densities* (CFU/100 mL)
1	10
2	100
3	300
4	50

The Geometric Mean Density for these data:

$$\sqrt[4]{10 \times 100 \times 300 \times 50} = 62$$

*If a particular result is zero (0), then a value of one (1) will be substituted into the calculation of the Monthly Geometric Mean Density. If the MPN method is utilized for E. coli analysis, values in the table shall be MPN/100 mL.

Schedule G

Municipal and Local Services Board Wastewater System
Profile Information Form

(For reference only, images of the form are attached on the next four pages. A digital copy can be obtained from the District Manger.)

Ontario

Ministry of the Environment, Conservation and Parks

Municipal and Local Services Board Wastewater System Profile Information Form

The information in this form is necessary to administer the Ministry's approvals, compliance and enforcement programs with respect to wastewater treatment and collection systems owned by municipalities and local services boards. These programs are authorized under the *Ontario Water Resources Act*, the *Environmental Protection Act*, the *Nutrient Management Act* and their respective regulations.

Email the completed form to: waterforms@ontario.ca
For any questions call 1-866-793-2588.

[A] SYSTEM PROFILE INFORMATION

Wastewater System Number *(if assigned)*

☐ New Profile
☐ Update Existing Profile

Name of System

Name of Municipality or Local Services Board

Level of Treatment (select one*)
☐ Primary
☐ Secondary
☐ Tertiary
☐ Secondary Equivalent
☐ Other (specify):
**See Terms and Concepts on page 4*

Population Served	Population (Design)	Type of System
		☐ Treatment & Collection System ☐ Collection System Only

Design Rated Capacity (m^3/day)	Peak Flow Rate (m^3/day)	Current Environmental Compliance Approval (ECA) Number	Current ECA Issue Date (yyyy/mm/dd):

The treatment plant receives sewage from: (Check all that applies.* If you have checked more than one option below, indicate the approximate %)

☐ Sanitary Sewer ☐ Combined Sewer
☐ Nominally Separated Sewer ☐ Partially Separated Sewer **See Terms and Concepts on page 4*

[B] OWNER INFORMATION

Legal Name of Municipality or Local Services Board

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title

Tel. No.	Fax Number	Email address
( ) - ext.	( ) -	

[C] OPERATING AUTHORITY ☐ Check if same as owner

Legal Name of Operator

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

☐ Dr ☐ Miss ☐ Mr ☐ Mrs ☐ Ms	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title

Tel. No.	Fax Number	Email address
( ) - ext.	( ) -	

[D] 24/7 CONTACT

☐ Dr ☐ Miss ☒ Mr ☐ Mrs ☐ Ms	First Name	Last Name	Job Title

Tel. No. ( ) - ext.	Fax Number ( ) -	Email address

[E] SYSTEM CIVIC LOCATION ADDRESS (I.E. ADDRESS OF TREATMENT PLANT)

Unit No	Street No.	Street Name.	Street Type (St, Rd, etc)	Street Direction (N,S,E,W)

PO Box	City/Town	Postal Code

If the Wastewater System has no street address

Geographical Township	Lot	Concession

Geographical Referencing (if known, enter the Geographical Reference Information for this Wastewater System)

Map Datum	Geo-Referencing Method	Accuracy Estimate	Location Reference	
Latitude	**Longitude**	**Zone**	**Easting**	**Northing**

[F] TREATMENT PROCESS

Preliminary	Primary	Secondary	Secondary Equivalent	Post-Secondary	Additional Treatment
☐ Screening	☐ Settling/sedimentation/ clarification	☐ Conventional Activated Sludge (CAS)	☐ Aerated Lagoon	☐ Filtration	☐ Phosphorous Removal ☐ Biological ☐ Chemical
☐ Shredding/ grinding	☐ Scum Removal	☐ Extended Aeration	☐ Facultative Lagoon	☐ Clarification	If chemical is used, specify:
☐ Grit Removal	☐ Polymer Addition	☐ Membrane Bioreactor (MBR)	☐ Anaerobic Lagoon	☐ Intermittent Sand Filter (after lagoons)	☐ Nitrification
☐ Other(specify):	☐ Other(specify):	☐ Sequencing Batch Reactor (SBR)	☐ Aerobic Lagoon	☐ Polishing Wetlands	☐ Denitrification
		☐ Rotating Biological Contactor (RBC)	☐ Other(specify):	☐ Polishing Lagoons	☐ Other(specify):
		☐ Trickling Filter (TF)		☐ Other(specify):	
		☐ Biological Aerated Filter (BAF)			
		☐ Other(specify):			

[G] DISINFECTION

Method of Disinfection	Disinfection Period
☐ Chlorination If you chlorinate, do you practice de-chlorination? ☐ Yes ☐ No	☐ Continuous ☐ Seasonal
☐ Ultraviolet Irradiation	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

[H] SLUDGE	
Sludge Stabilization Process	Method of Sludge Disposal/Utilization
☐ Aerobic Digestion	☐ Agricultural
☐ Anaerobic Digestion	☐ Landfill
☐ Drying & Pelletization	☐ Incineration
☐ Lime Treatment	☐ Other (specify):
☐ Composting	
☐ Other (specify):	

Available Sludge Storage Capacity (m^3):

[I] EFFLUENT	
Effluent Disposal Method	Effluent Discharge Frequency
☐ Surface Water Receiving Water Body Name:	☐ Continuous ☐ Seasonal
☐ Subsurface	☐ Continuous ☐ Seasonal
☐ Other (specify):	☐ Continuous ☐ Seasonal

Is the effluent discharged in a vulnerable area identified in the local source protection assessment report approved under the Clean Water Act, 2006?
☐ Yes ☐ No

[J] INFLUENT

Does the plant receive sewage from another municipality or local services board either through an interconnected collection system or hauled sewage?
☐ Yes ☐ No
(if yes, name(s) of other municipality or local services board):

Plant receives:
☐ Leachate (approximate annual volume in m^3):
☐ Septage (approximate annual volume in m^3):
☐ Industrial input (approximate annual volume in m^3):
or (approximate volume in %):

Terms and Concepts

The following Terms and Concepts are provided to assist you when completing Wastewater System Profile Information Form.

In order to determine the level of treatment that applies to the wastewater system, the effluent quality objectives that the wastewater treatment plant was designed to meet must be considered. The process based approach often used in the past has led to confusion and is open to interpretation due to recent developments and practices in the wastewater treatment industry. For example, a plant with a high rate filter (often referred to as a tertiary filter) after its secondary treatment was considered a tertiary treatment in the past since the filter was designed and operated to produce a tertiary quality effluent. However, secondary plants are now being constructed with these filters as a safeguard against any potential secondary clarifier performance degradation and not for the purpose of ensuring tertiary treatment performance. Also, new technologies have evolved that can produce tertiary quality effluent without having these high rate filters (e.g., membrane bioreactors). Lagoons were considered in the past as being capable of providing only secondary equivalent treatment. However, with add-on treatment after the lagoons (e.g. intermittent sand filters), many lagoon treatment systems are capable of producing secondary or tertiary quality effluent.

During the establishment of sewage works, site-specific effluent limits (including averaging periods) are provided by the Ministry's Regional Technical Support Section, considering the assimilative capacity of the receivers and the minimum treatment requirements provided in Procedure F-5-1. The designer of the sewage works then selects objective values that are acceptable to the Ministry and are less (i.e. more stringent) than the effluent limits , in order to provide an adequate safety factor based on the designer's confidence/experience with the technology chosen and other site-specific conditions. The sewage works are then designed (and operated) to meet these design objectives in a reliable and consistent manner. Therefore, the values that are to be used in the determination of the level of treatment that applies to the sewage works must be based on the design objectives, and not the effluent limits.

Two common parameters used in almost all sewage works designs and performance evaluations are $CBOD_5$ (carbonaceous biochemical oxygen demand) (BOD_5 – biochemical oxygen demand - for primary sewage works) and total suspended solids (TSS). Therefore, it is logical that the **objective values** of these two parameters are used to determine the level of treatment at the sewage works.

Level of Treatment:

Primary:
Wastewater treatment plants that have only settling/sedimentation (with or without chemical addition) and providing 30% and 50% or better reduction of BOD_5 and TSS respectively are considered primary plants (MOE Procedures F-5-1 and F-5-5).

Secondary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 15 mg/L or better are considered secondary plants (MOE Design Guidelines for Sewage Works, 2008).

Secondary Equivalent:
Wastewater treatment plants producing an effluent quality of $CBOD_5$ of 25 mg/L and TSS of 30 mg/L or better are considered as secondary equivalent plants.

Note: Wastewater treatment plants that provide only primary settling of solids and the addition of chemicals to improve the removal of TSS (and phosphorus) are not considered as secondary treatment plants or secondary equivalent plants (MOE Design Guidelines for Sewage Works, 2008).

Tertiary:
Wastewater treatment plants that have biological processes (e.g. activated sludge process and its variations, fixed film processes) and/or physical-chemical processes producing an effluent quality of $CBOD_5$ and TSS of 5 mg/L or better are considered tertiary plants.

Note: Biological processes such as nitrification, denitrification and enhanced biological phosphorus removal can be part of either a secondary or tertiary treatment plant. They may be described as secondary treatment plant with nitrification, secondary treatment plant with enhanced biological phosphorus removal, tertiary treatment plant with nitrification etc.

Sewer System Type:

Sanitary Sewers:
Pipes that convey sanitary sewage flows made up of wastewater discharges from residential, commercial, institutional and industrial establishments plus extraneous flow components from such sources as groundwater and surface run off.

Combined Sewers:
Pipes that convey both sanitary sewage and stormwater runoff through a single-pipe system.

Partially Separated Sewers:
Exist when either a portion of the combined sewer area was retrofitted to separate (sanitary and storm) sewers and/or a service area with combined sewers has had a new development area with separate sewers added to the service area; whatever the case may be, the final flows will be combined sewage.

Nominally Separated Sewers:
These sewers are constructed as separate sewers, but the sanitary sewers accept stormwater from roof and foundation drains (i.e., these are separated sewers in name only).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 regarding general provisions is imposed to ensure that the Works are constructed and operated in the manner in which they were described and upon which approval was granted.

2. Condition 2 regarding change of Owner and Operating Agency is included to ensure that the Ministry records are kept accurate and current with respect to ownership and Operating Agency of the Works and to ensure that subsequent owners of the Works are made aware of the Approval and continue to operate the Works in compliance with it.

3. Condition 3 regarding construction of Proposed Works is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction to ensure the ongoing protection of the environment, and that prior to the commencement of construction of the portion of the Works that are approved in principle only, the Director will have the opportunity to review detailed design drawings, specifications and an engineer's report containing detailed design calculations for that portion of the Works, to determine capability to comply with the Ministry's requirements stipulated in the terms and conditions of the Approval, and also ensure that the Works are constructed in accordance with the Approval and that record drawings of the Works "as constructed" are updated and maintained for future references.

4. Condition 4 regarding Bypasses is included to indicate that Bypass is prohibited, except in circumstances where the failure to Bypass could result in greater damage to the environment than the Bypass itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Bypass Events.

5. Condition 5 regarding Overflows is included to indicate that Overflow of untreated or partially treated sewage to the receiver is prohibited, except in circumstances where the failure to Overflow could result in greater damage to the environment than the Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and will ensure the Owner is aware of the extent and frequency of Overflow Events.

6. Condition 6 regarding design objectives is imposed to establish non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs.

7. Condition 7 regarding compliance limits is imposed to ensure that the Final Effluent discharged from the Works to the environment meets the Ministry's effluent quality requirements.

8. Condition 8 regarding operation and maintenance is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by the Owner. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act

as a benchmark for Ministry staff when reviewing the Owner's operation of the Works.

9. Condition 9 regarding monitoring and recording is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and compliance limits.

10. Condition 10 regarding Limited Operational Flexibility is included to ensure that the Works are constructed, maintained and operated in accordance with the Approval, and that any pre-approved modification will not negatively impact on the performance of the Works.

11. Condition 11 regarding reporting is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for this Approval.

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

a. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
b. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

1. The name of the appellant;
2. The address of the appellant;
3. The environmental compliance approval number;
4. The date of the environmental compliance approval;
5. The name of the Director, and;
6. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of
Part II.1 of the Environmental Protection Act
Ministry of the Environment,
Conservation and Parks
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca**

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 25th day of May, 2021

Aziz Ahmed, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

WS/
c: District Manager, DWECD, MECP Owen Sound
Rakesh Sharma, P.Eng., GSS Engineering Consultants Ltd.

Appendix B

Flow Meter Calibration Report

Tower Electronics Canada Inc. Calibration Certificate

Customer:
Municipality of Arran-Elderslie
Chris Legge
Water Foreman
Water@arran-elderslie.ca

Calibration by:
Dan Matchett

Standards:
Fluke 289 S/N 96220182 NIST Cal Due March 2025

Instrument Type
Open Channel

Meter Information

Date of Test:	2024-04-29
Location:	Paisley WWTP
Meter Under Test	Effluent Meter
Client Tag:	N/A
Manufacturer:	Vega
Model:	Vegamet 841
Serial Number:	59019784
Totalizer As Found:	114163M3
Totalizer As Left:	114176M3
Acceptable Error:	15%

Programming Parameters:

Max Flow	23.2LPS
Max Head	0.195M
Primary Device	90 Degree Vnotch Weir

Calibration Due: Apr-25

Method of verification
Head Simulation

Units: LPS
Zero: 0.00
Span: 23.20
Totalizer: M3

Flow Test

Head Applied	Sim Flow	Meter Display	Current Output	Disp Error%	mA Error %
0.000	0.000	0.000	4.001	0.000	0.025
0.110	5.538	5.500	7.830	0.164	0.137
0.155	13.050	13.000	13.014	0.216	0.108
0.170	16.440	16.300	15.352	0.603	0.092
0.195	23.170	23.000	19.995	0.733	0.079
			Average Error%	0.34	0.09
			Result:	PASS	PASS

Totalizer Test

Sim Flow Rate	22.300	LPS
Start Totalizer	114174.000	M3
End Totalizer	114176.000	M3
Volume Simulated	2.000	M3
Time(Seconds)	86.600	
Calculated Totalizer(MUT)	1.931	
Error%	3.564	
Result:	PASS	

Comments:
Unit passes verification.

Tower Electronics Canada
2687 Hwy 40
K0K 3M0
Wooler On
Canada

Email: Dan@Tecanada.ca
Website: www.tecanada.ca

Tower Electronics Canada Inc. Calibration Certificate

Customer:
Municipality of Arran-Elderslie
Chris Legge
Water Foreman
Water@arran-elderslie.ca

Calibration by:
Dan Matchett

Standards:
Fluke 289 S/N 96220182 NIST Cal Due March 2025

Instrument Type
Open Channel

Meter Information

Date of Test:	2024-04-29
Location:	Paisley WWTP
Meter Under Test	Influent Meter
Client Tag:	N/A
Manufacturer:	Pulsar
Model:	Flow 3
Serial Number:	F048933
Totalizer As Found:	877645.1M3
Totalizer As Left:	877682.1M3
Acceptable Error:	15%

Programming Parameters:

Max Flow	108LPS
Max Head	0.450M
Primary Device	6" Parshall Flume

Calibration Due: Apr-25

Method of verification
Head Simulation

Units: LPS
Zero: 0.00
Span: 108.00
Totalizer: M3

Flow Test

Head Applied	Sim Flow	Meter Display	Current Output	Disp Error%	mA Error %
0.000	0.000	0.020	4.045	0.019	1.125
0.100	10.027	9.340	5.427	0.636	1.066
0.200	29.976	30.130	8.530	0.143	1.056
0.300	56.886	55.830	12.346	0.978	0.656
0.440	104.186	105.010	19.719	0.763	1.461
			Average Error%	0.51	1.07
			Result:	PASS	PASS

Totalizer Test

Sim Flow Rate	104.186	LPS
Start Totalizer	64.020	M3
End Totalizer	72.270	M3
Volume Simulated	8.250	M3
Time(Seconds)	78.420	
Calculated Totalizer(MUT)	8.170	
Error%	0.976	
Result:	PASS	

Comments:
Unit passes verification.

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Appendix C

Sludge Spill Report

December 3rd, 2024 Paisley WWTP sludge spill

What Happened: attach to Leak reporting form

Staff was conducting routine digested sludge movement at the Sludge storage tanks. Moving sludge from tank 3 to tanks 1&2 in order to facilitate some maintenance in tank 3. After changing valving configurations, staff confirmed that sludge was flowing in the intended direction. The plant had snow coverage due to recent winter storms.

Outside of the sludge storage tanks there is a catch basin that is used to collect the supernatant from our sludge dewatering bag systems. This flows into a pump chamber that pumps the supernatant back the aeration ditch for re-treatment. This catch basin was covered in snow and not visible as normal.

It was discovered at 15:00 that one of the valves in the valve gallery was not fully sealed and a portion of the sludge being transferred was leaking unintendedly into the pump chamber connected to the outside catch basin.

The partial flow was discovered once the sludge had flowed backwards into the catch basin and out under the snow cover until it reached the snow cleared access roadway to the WWTP.

Sludge transfer activity was immediately shut down at 15:00 and valving put back to normal and pumped any volume in the catch basin back to Aeration ditch as normal.

Staff closed the access road and got Town owned backhoe and created a snow berm as quickly as possible.

Contacted a local excavating company (Ed Karcher Construction) for an Excavator and Trucks for cleanup efforts.

Temperatures below freezing caused the sludge spill to begin freezing and facilitated piling and loading the spilt material mixed with snow already on the ground.

Arran-Elderslie staff assisted with shoveling and piling as excavator scraped up sludge, and snow from roadway.

2 Triaxle truckloads of material were taken to the Chesley Sewage lagoons and dumped at the Cell 1 intake pond corner.

Clean up efforts were complete by 19:50

Spills Action contacted at 16:24 Reference # 1-E9C42S

Contacted again at 19:50 to update that clean up completed

Local MECP office contacted at 16:32– Spoke to Kim (Duty officer)

Saugeen Valley conservation contacted at 16:36 (left message) Tried contacting again Dec4 at 12:39 Left message with General Manager)

Grey Bruce Public Health contacted at 11:47 Dec 4, Called back by Dan at 12:25