

**Paisley Wastewater Treatment Plant
13-028**

**2022 Operation and Maintenance
Annual Report
March 2023**



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

**Prepared By:
GSS Engineering Consultants Ltd.
Suite 230, 945 3rd Ave, E.
Owen Sound, ON N4K 2K8**

TABLE OF CONTENTS

1.0	INTRODUCTION	2
2.0	DESCRIPTION OF FACILITIES	3
2.1	Sewage Pumping Stations.....	3
2.2	Wastewater Treatment Plant.....	3
3.0	SUMMARY OF WASTEWATER FLOWS	5
4.0	RAW SEWAGE AND TREATED EFFLUENT MONITORING	8
5.0	SUMMARY OF MAINTENANCE	12
6.0	SUMMARY OF COMPLAINTS RECEIVED	14
7.0	SEWAGE BY-PASS	15
8.0	LAND APPLICATION OF DIGESTED SLUDGE	16
9.0	MINISTRY OF THE ENVIRONMENT INSPECTION AND COMPLIANCE	17
10.0	RECOMMENDATIONS	18

LIST OF TABLES

Table 1	Summary of Raw Wastewater Flows – 2022
Table 1A	Summary of Capacity Utilization - 2022
Table 2	Summary of Raw Sewage Monitoring Data – 2022
Table 3	Summary of Treated Effluent Monitoring Data – 2022
Table 4	Summary of Monthly Average Waste Loadings to Receiver - 2022

APPENDICES

Appendix A	Environmental Compliance Approval
Appendix B	Flow Meter Calibration Report

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, 2021 to December 31, 2021), 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 OIT WWC OIT
Trevor Sweiger	WWT I
Chris Legge, Water/Sewers Foreman, Operator in Charge & Backup Overall Responsible Operator	WWT I WWC I
Chase Mcewen	WWT OIT WWC OIT
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 m³ and 50 m³ 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 m³ 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 m³/hour.

3.0 SUMMARY OF WASTEWATER FLOWS

A summary of wastewater flows received at the sewage treatment plant is provided in **Table 1**. In 2022 the average daily flow was 409 m³/day and the maximum flow was 1426 m³/day. The maximum day flow occurred in March month. The design capacity of the treatment plant is 705 m³/day. In 2022, the wastewater treatment plant operated at 57.9% of the design capacity.

In the enclosed **Table 1A**, capacity utilization over the years has been summarized along with maximum day flow data. The max day flow was higher than 2021, but similar when compared to the data from 2016 to 2019. Operators are investigating flow meter suitability in the modified duty of the Miltonic's Transducer after UV reactor installation.

The flow meter was calibrated in April 2022, 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 - 2022
Paisley Wastewater Treatment Plant
Municipality of Arran-Elderslie

March, 2023

13-028

Month	Total Effluent Flow (m ³)	Average Daily Flow (m ³ /day)	Maximum Daily Flow (m ³ /day)
January	8,619	278	360
February	11,649	416	906
March	18,195	587	1036
April	15,633	521	844
May	11,118	359	510
June	11,921	397	892
July	9,187	296	447
August	9,147	295	586
September	8,575	286	453
October	12,301	397	747
November	14,157	472	970
December	18,646	601	1426
Total	149,148		
Annual Average		409	
Maximum			1,426

TABLE 1A
Summary of Capacity Utilization - 2022
Paisley Wastewater Treatment Plant
Municipality of Arran-Elderslie

March, 2023

13-028

Year	Average Day Flow (m ³ /day)	Capacity Utilization %	Maximum Day Flow (m ³ /day)
2022	409	57.9	1,426
2021	292	41.4	1,360
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 BOD₅, 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 CBOD₅, 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 CBOD₅, 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” (CBOD₅, 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 - 2022

Paisley Wastewater Treatment Plant

Municipality of Arran-Elderslie

March, 2023

13-028

Month	BOD ₅ (mg/L)	Total Suspended Solids (mg/L)	Total Phosphorous (mg/L)	Total Kjeldahl Nitrogen (mg/L)
January	125	127	2.61	25.6
February	155	183	3.05	27.3
March	77	60	1.71	17.9
April	72	54	1.55	15.8
May	71	89	2.27	20.4
June	117	218	2.78	31.5
July	271	207	3.58	37.2
August	124	95	3.74	43.7
September	111	307	2.84	33.4
October	219	164	4.59	40.4
November	215	148	3.58	38.3
December	60	47	1.07	9.6
Annual Average	135	142	2.78	28.43

TABLE 3
Summary of Treated Effluent Monitoring Data - 2022
Paisley Wastewater Treatment Plant
Municipality of Arran-Elderslie

March, 2023

13-028

Month	Average Concentration						
	CBOD ₅ (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)	25	25	1		200 (May 1 to Oct 31)		6.0-9.5
ECA Effluent Objectives (mg/L)	20	20	0.8		150		6.5-9.0
January	5	3	0.06	0.10	36	0.000	7.12
February	4	2	0.06	0.10	15	0.000	7.22
March	4	3	0.10	0.30	33	0.001	7.20
April	4	3	0.14	0.35	14	0.002	7.38
May	4	2	0.17	1.33	7	0.009	7.18
June	3	2	0.17	3.60	3	0.38	7.57
July	4	3	0.20	3.60	6	0.059	7.58
August	4	3	0.18	1.30	6	0.008	7.18
September	4	2	0.15	1.30	2	0.022	7.57
October	4	2	0.12	0.13	5	0.001	7.43
November	4	3	0.38	0.10	12	0.003	7.42
December	4	2	0.09	0.10	28	0.001	7.63
Compliance with ECA Effluent Limits	Y	Y	Y		Y		Y

TABLE 4

Summary of Monthly Average Waste Loadings to Receiver - 2022
Paisley Wastewater Treatment Plant
Municipality of Arran-Elderslie

March, 2022

13-028

Month	CBOD ₅ (kg/day)	Total Suspended Solids (kg/day)	Total Phosphorous (kg/day)
ECA Effluent Limits	17.6	17.6	0.71
January	1.1	0.5	0.02
February	0.7	0.5	0.02
March	1.5	0.9	0.04
April	0.8	0.6	0.04
May	0.6	0.4	0.04
June	1.2	0.8	0.07
July	1.0	0.9	0.06
August	1.2	0.8	0.04
September	3.8	0.9	0.06
October	1.4	1.3	0.07
November	2.1	1.4	0.06
December	1.8	0.9	0.03
Compliance with ECA Effluent Limits	Y	Y	Y

5.0 SUMMARY OF MAINTENANCE

February 4, 16:

- Replaced diaphragm on Alum Feed Pump #1
- Repaired drive belt (A-30) on south clarifier
- Repaired rotor idler bearing

March 2, 31:

- Repaired anti rotation bolt on rotor
- Repaired rotor drive belt B81 (double)
- Replaced belt and scum arm wheel on south clarifier

April 5:

- Repaired frost free tap under sink for outside tap
- Calibrated raw and effluent flow meters

May 16, 19:

- Repaired belt (A-13) on north clarifier
- Completed calibration of raw and effluent flow meters

June 2:

- Repaired rotor rail

July 7:

- Replaced color cartridge in printer
- Repaired tensioner arm and bolt on rotor and also changed oil

August 23:

- Swap motor on north clarifier and also replaced belt

September 8:

- Repaired effluent bypass valve

October 27, 31:

- Cleaned Digester #3; removed aeration pipes and cleaned lines
- Installed new duck bill valves on Digester #2

November 1, 15:

- Checked sewage plant flat roof; re-screwed flashing on Alum building
- Clarifier inlet was cleaned and painted. Heat lamp bulb was changed

Paisley Ross St Pump Station

March 15, 19:

- Topped up battery fluid
- Changed oil at 1780.4 hours
- Air filter was replaced with a new one

Paisley Albert St Pump Station

March 15:

- Topped up battery fluid

6.0 SUMMARY OF COMPLAINTS RECEIVED

No complaints were received during 2022.

7.0 SEWAGE BY-PASS

There were no sewage bypasses from any of the three (3) Paisley pumping stations in 2022.

8.0 LAND APPLICATION OF DIGESTED SLUDGE

In 2022, no digested sludge was hauled to the sludge spreading site and incorporated into the soil. Instead, the sludge was pumped and held in geotubes for further dewatering. As per the operations records, a total of 314 m³ of sludge was removed from sludge storage tanks and pumped into geotubes at the plant. Volume pumped were: Aug 18 - 73 m³, Aug 19 – 75 m³, Aug 24 – 60 m³, Sept 15 – 83 m³ and Sept 29 – 23 m³. Supernatant was recycled back to the headworks for further treatment.

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 2022.

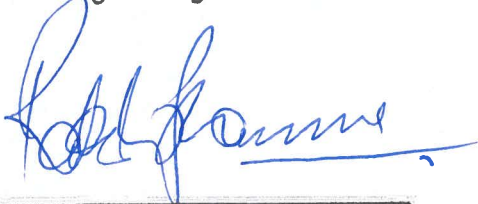
10.0 RECOMMENDATIONS

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 2023.
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.

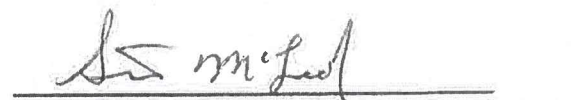


Rakesh Sharma, P. Eng., M.A.Sc.
Class IV License, WWC and WWT

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



Ministry of the Environment
Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 9892-7BCLYP
Issue Date: March 18, 2008

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

RECEIVED
MAR 28 2008
ARRAN-ELDERSLIE

Site Location: Paisley Sewage Treatment Plant
322 George St N
Arran-Elderslie Municipality, County of Bruce

You have applied in accordance with Section 53 of the Ontario Water Resources Act for approval of:

Alterations to the existing municipal sewage works at the above site location for the collection, transmission, treatment and disposal of sewage with a *Rated Capacity* of 705 m³/d, consisting of the following:

PROPOSED WORKS

Paisley Water Pollution Control Plant

- a chlorine control panel comprising two (2) dosing control systems, one automatic flow-paced with a capacity of 0 - 4.5 kg/d for fine tuning at lower residual and one (future) manually adjustable with a capacity of 0.5 - 4.5 kg/d for supplementary feed for high flows or high chlorine demands;
- an ultrasonic flowmeter on the V-notch weir at the outlet of the chlorine contact tank;
- all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

EXISTING WORKS

Sanitary Sewers

- sanitary sewers on Victoria Street South, Victoria Street North, Queen Street South, Queen Street North, Albert Street, Ross Street, Alma Street, Inkerman Street, Goldie Street, Water Street South, Church Street, Cambridge Street, Mill Street and Rowe Street;

Albert Street Sewage Pumping Station (off-site)

- a subsidiary sewage pumping station located at the southeast corner of Water Street and Albert Street, equipped with two (2) submersible sewage pumps (one standby), each rated at 26 L/s at a

- T.D.H. of 7.5 m, including a valve chamber to house all the associated valves and by-pass facility and a 150 mm dia. forcemain discharging to the Queen Street North sanitary sewer at Water Street;
- one (1) 136 m³ capacity flow equalization basin complete with a jet aeration facility for mixing/aeration and two (2) submersible sewage transfer pumps, one rated at 26 L/s at 7.5 m T.D.H. and the other rated at 17 L/s at a T.D.H. of 8 m;
- a 40 kW diesel generator set and a 908 L fuel tank housed in the generator building (5 m x 6 m) constructed on top of the equalization basin;

Ross Street Sewage Pumping Station (off-site)

- a main sewage pumping station located at the southeast corner of Orchard Street and Ross Street, equipped with two (2) submersible pumps each rated at 48 L/s at a T.D.H. of 12 m including a valve chamber to house all the associated valves and by-pass facility and a 150 mm dia. forcemain along Orchard Street and George and discharging to the Paisley Water Pollution Control Plant;
- a 35 kW diesel generator set;

Paisley Water Pollution Control Plant

- one (1) 345 m³ capacity Flow Equalization Basin, complete with a jet aeration facility for mixing/aeration, two (2) submersible sewage transfer pumps each rated at 15 L/s at a T.D.H. of 4.9 m and a flow control device to restrict the maximum flow into the grit channel to approximately 30.3 L/s;
- grit chamber;
- an Oxidation Ditch of approx. 85.3 m centreline length, 1.52 m water depth and approx. volume of 412 m³ and equipped with one (1) rotor aerator;
- two (2) 7.3 m dia. x 3.05 m SWD Final Clarifiers;
- a 4 m x 1.6 m x 1.6 m SWD Chlorine Contact Chamber, with approx. 11.5 m³ capacity,
- a 18 kg/d capacity chlorinator located in the Control Building, complete with weigh scale, ejector and associated equipment and appurtenances;
- a phosphorus removal system comprising one (1) 27,000 L capacity chemical storage tank and one (1) 9.5 L/h capacity chemical feed pump located in the Chemical Storage Building, including chemical feed pipe, valves and appurtenances;
- a two-stage Aerobic Digestion System with a 100 m³ capacity Stage 1 Digester and a 50 m³ capacity Stage 2 Digester, equipped with air diffusers and mechanical decanting facilities for each digester, two (2) submersible sewage sludge pumps (one standby) each rated at 15.14 L/s at 7.0 m TDH, one (1) submersible sewage supernatant pump rated at 15.14 L/s at 7.0 m TDH;
- an Aerated Sludge Storage Tank with a 492 m³ storage capacity, equipped with air diffusers, two (2) mechanical submersible mixers and mechanical decanting facility;
- two (2) sludge handling pumps located in the Control Building, each rated at 8.6 L/s at 2.0 m TDH for transfer of sludge to the Digesters or for return to Oxidation Ditch;
- one (1) blower having an air flow rate of 91 L/s at 41.4 kPa for the Digesters and two (2) blowers (one standby) each having an air flow rate of 91 L/s at 62.0 kPa, located in the Blower Building;
- a 250 mm dia. Effluent Outfall Sewer from the Chlorine Contact Chamber to the Saugeen River;

Miscellaneous

- all other controls, electrical equipment, instrumentation, piping, pumps, valves and appurtenances essential for the proper operation of the aforementioned sewage works;

all in accordance with the following submitted supporting documents:

1. Final plans and specifications prepared by Gamsby and Mannerow Limited, Consulting Engineers.
2. Application for Approval of Municipal and Private Sewage Works submitted by Matt Prentice of Henderson, Paddon & Associates Limited received dated December 10, 2007, including design calculations, engineering plans and specifications.

For the purpose of this Certificate of Approval and the terms and conditions specified below, the following definitions apply:

Act " means the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended;

"Average Daily Flow " means the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year;

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

"By-pass" means any discharge from the *Works* that does not undergo any treatment or only receives partial treatment before it is discharged to the environment;

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

"Certificate " means this entire certificate of approval document, issued in accordance with Section 53 of the *Act* , and includes any schedules;

"Daily Concentration " means the concentration of a contaminant in the effluent discharged over any single day, as measured by a composite or grab sample, whichever is required;

"Director " means any *Ministry* employee appointed by the Minister pursuant to section 5 of the *Act* ;

"District Manager " means the District Manager of the Barrie District Office of the Ministry;

"E. Coli " refers to the thermally tolerant forms of *Escherichia* that can survive at 44.5 degrees Celsius;

"Existing Works " means those portions of the sewage works previously constructed and existing

on-site on the date of issuance of this *Certificate* ;

"*Geometric Mean Density* " is the nth root of the product of multiplication of the results of n number of samples over the period specified;

"*Ministry* " means the Ontario Ministry of the Environment;

"*Monthly Average Concentration* " means the arithmetic mean of all *Daily Concentrations* of a contaminant in the effluent sampled or measured, or both, during a calendar month;

"*Monthly Average Daily Flow* " means the cumulative total sewage flow to the sewage works during a calendar month divided by the number of days during which sewage was flowing to the sewage works that month;

"*Monthly Average Loading* " means the value obtained by multiplying the *Monthly Average Concentration* of a contaminant by the *Monthly Average Daily Flow* over the same calendar month;

"*Owner* " means the Corporation of the Municipality of Arran-Elderslie and includes its successors and assignees;

"*Proposed Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* ;

"*Rated Capacity* " means the *Average Daily Flow* for which the *Works* are approved to handle;

"*Regional Director* " means the Regional Director of the Southwestern Region of the Ministry; and

"*Works* " means the sewage works described in the *Owner* 's application, this *Certificate* and in the supporting documentation referred to herein, to the extent approved by this *Certificate* and includes both *Existing Works* and *Proposed Works* .

You are hereby notified that this 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 *Certificate* and the conditions herein and shall take all reasonable measures to ensure any such person complies with the same.

(2) Except as otherwise provided by these Conditions, the *Owner* shall design, build, install, operate and maintain the *Works* in accordance with the description given in this *Certificate* , the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this *Certificate* .

(3) Where there is a conflict between a provision of any submitted document referred to in this *Certificate* and the Conditions of this *Certificate*, the Conditions in this *Certificate* shall take precedence, and where there is a conflict between the listed submitted documents, the document bearing the most recent date shall prevail.

(4) Where there is a conflict between the listed submitted documents, and the application, the application shall take precedence unless it is clear that the purpose of the document was to amend the application.

(5) The requirements of this *Certificate* are severable. If any requirement of this *Certificate*, or the application of any requirement of this *Certificate* to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this certificate shall not be affected thereby.

(6) The approval granted by this *Certificate* is based upon a review of the *Works* in the context of its effect on the environment, its process performance and general principles of wastewater engineering. The review did not include a consideration of the architectural, mechanical, electrical or structural components and minor details of the *Works* except to the extent necessary to review the *Works*.

2. EXPIRY OF APPROVAL

The approval issued by this *Certificate* will cease to apply to those parts of the *Works* which have not been constructed within five (5) years of the date of this *Certificate*.

3. CHANGE OF OWNER

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

(a) change of *Owner* ;

(b) change of address of the *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.B17 shall be included in the notification to the *District Manager* ;

(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. C39 shall be included in the notification to the *District Manager* ;

(2) In the event of any change in ownership of the *Works*, other than a change to a successor municipality, the *Owner* shall notify in writing the succeeding owner of the existence of this

Certificate , and a copy of such notice shall be forwarded to the *District Manager* and the *Director* .

4. RECORD DRAWINGS

(1) A set of as-built drawings showing the *Works* "as constructed" shall be kept up to date through revisions undertaken from time to time and copy shall be retained at the *Works* for the operational life of the *Works* .

5. BY-PASSES

(1) Any *By-pass* of sewage from any portion of the *Works* is prohibited, except where:

(a) it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage;

(b) the *District Manager* agrees that it is necessary for the purpose of carrying out essential maintenance and the *District Manager* has given prior written acknowledgment of the *by-pass* ; or

(c) the *Regional Director* has given prior written acknowledgment of the *By-pass* .

(2) The *Owner* shall collect at least one (1) grab sample of the *By-pass* and have it analyzed for the parameters outlined in Condition 7 using the protocols in Condition 10.

(3) The *Owner* shall maintain a logbook of all *By-pass* events which shall include, at a minimum, the time, location, duration, quantity of *By-pass* , the authority for *By-pass* pursuant to subsection (1), and the reasons for the occurrence.

6. EFFLUENT OBJECTIVES

(1) The *Owner* shall use best efforts to design, construct and operate the *Works* with the objective that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the *Works* .

Effluent Parameter	Average Concentration (milligrams per litre unless otherwise indicated)
Column 1	Column 2
<i>CBOD5</i>	20.0
Total Suspended Solids	20.0
Total Phosphorus	0.8

(2) The *Owner* shall use best efforts to:

(a) maintain the pH of the effluent from the *Works* within the range of 6.5 to 9.0, inclusive,

at all times;

(b) operate the works within the *Rated Capacity* of the *Works* ;

(c) ensure that the effluent from the *Works* 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.

(3) The *Owner* shall include in all reports submitted in accordance with Condition 10 a summary of the efforts made and results achieved under this Condition.

7. EFFLUENT LIMITS

(1) The *Owner* shall operate and maintain the *Works* such that the concentrations of the materials named below as effluent parameters are not exceeded in the effluent from the *Works* .

Effluent Parameter	Average Concentration (milligrams per litre unless otherwise indicated)	Average Waste Loading (kilograms per day unless otherwise indicated)
Column 1	Column 2	Column 3
<i>CBOD5</i>	25.0	17.6
Total Suspended Solids	25.0	17.6
Total Phosphorus	1.0	0.71
pH of the effluent maintained between 6.0 to 9.5, inclusive, at all times		

(2) For the purposes of determining compliance with and enforcing subsection (1):

(a) The *Monthly Average Concentration* of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of subsection (1).

(b) The *Monthly Average Loading* of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum waste loading set out in Column 3 of subsection (1).

(c) The pH of the effluent shall be maintained within the limits outlined in subsection (1), at all times.

(3) Notwithstanding subsection (1), the *Owner* shall operate and maintain the *Works* such that the effluent is continuously disinfected during the period between May 1 and October 31 of each year so that the monthly *Geometric Mean Density* of *E. Coli* does not exceed 200 organisms per 100 millilitres of effluent discharged from the *Works* .

(4) Paragraphs (a), (b) and (c) of subsection (2) shall apply upon the issuance of this certificate.

(5) The effluent limit set out in subsection (3) shall apply upon the issuance of this certificate.

8. OPERATION AND MAINTENANCE

(1) The *Owner* shall exercise due diligence in ensuring that, at all times, the *Works* and the related equipment and appurtenances used to achieve compliance with this *Certificate* are properly operated and maintained. Proper operation and maintenance shall include effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of this *Certificate* and the *Act* 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 maintain an operations manual, that includes, but not necessarily limited to, the following information:

(a) operating procedures for routine operation of the *Works* ;

(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) a spill prevention control and countermeasures plan, consisting of contingency plans and procedures for dealing with equipment breakdowns, potential spills and any other abnormal situations, including notification of the *District Manager* ; and

(f) procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

(3) The *Owner* shall maintain the operations manual current and retain a copy at the location of the *Works* for the operational life of the *Works* . Upon request, the *Owner* shall make the manual available to *Ministry* staff.

(4) The *Owner* shall provide for the overall operation of the *Works* with an operator who holds a licence that is applicable to that type of facility and that is of the same class as or higher than the class of the facility in accordance with Ontario Regulation 129/04.

9. EFFLUENT MONITORING AND RECORDING

The *Owner* shall, upon commencement of operation of the *Works* , carry out the following monitoring program:

(1) All samples and measurements taken for the purposes of this *Certificate* are to be taken at a time and in a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

(2) For the purposes of this condition, the following definitions apply:

- (a) Weekly means once each week;
- (b) Bi-weekly means once every two weeks; ~~_____~~
- (c) Monthly means once every month;

(3) Samples shall be collected at the following sampling points, at the frequency specified, by means of the specified sample type and analyzed for each parameter listed and all results recorded:

Table 3 - Raw Sewage Monitoring	
Frequency	Monthly
Sample Type	Grab or Composite
Parameters	<i>BOD5</i> , Total Suspended Solids, Total Phosphorus, Total Kjeldahl Nitrogen

Table 4 - Effluent Monitoring		
Parameters	Sample Type	Frequency
<i>CBOD5</i>	Composite	Bi-weekly
Total Suspended Solids	Composite	Bi-weekly
Total Phosphorus	Composite	Bi-weekly
Total Ammonia Nitrogen	Composite	Bi-weekly
<i>E. Coli</i>	Grab	Weekly
pH	Grab	Bi-weekly
Temperature	Grab	Bi-weekly
Total Chlorine Residual	Grab	Daily (during disinfection period)

(4) The methods and protocols for sampling, analysis and recording shall conform, in order of precedence, to the methods and protocols specified in the following:

- (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 from time to time by more recently published editions;
- (b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions;
- (c) the publication "Standard Methods for the Examination of Water and Wastewater" (20th

edition), as amended from time to time by more recently published editions;

(5) The temperature and pH of the effluent from the *Works* shall be determined in the field at the time of sampling for Total Ammonia Nitrogen. The concentration of un-ionized ammonia shall be calculated using the total ammonia concentration, pH and temperature using the methodology stipulated in "Ontario's Provincial Water Quality Objectives" dated July 1994, as amended, for ammonia (un-ionized).

(6) The measurement frequencies specified in subsection (2) in respect to any parameter are minimum requirements which may be modified by the *District Manager* in writing from time to time.

(7) The *Owner* shall install and maintain continuous flow measuring device(s), to measure the flowrate of the influent to or effluent from the Paisley Water Pollution Control Plant with an accuracy to within plus or minus 15 per cent (+/- 15%) of the actual flowrate for the entire design range of the flow measuring device, and record the flowrate at a daily frequency.

10. REPORTING

(1) Ten (10) days prior to the date of a planned *By-pass* being conducted pursuant to Condition 4 and as soon as possible for an unplanned *By-pass*, the *Owner* shall notify the *District Manager* (in writing) of the pending start date, in addition to an assessment of the potential adverse effects on the environment and the duration of the *By-pass*.

(2) The *Owner* shall report to the *District Manager* or designate, any exceedence of any parameter specified in Condition 6 orally, as soon as reasonably possible, and in writing within seven (7) days of the exceedence.

(3) In addition to the obligations under Part X of the Environmental Protection Act, the *Owner* shall, within 10 working days of the occurrence of any reportable spill as defined in Ontario Regulation 675/98, bypass or loss of any product, by-product, intermediate product, oil, solvent, waste material or any other polluting substance into the environment, submit a full written report of the occurrence to the *District Manager* describing the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken and schedule of implementation.

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

(5) The *Owner* shall prepare, and submit to the *District Manager*, a performance report, on an annual basis, within ninety (90) days following the end of the period being reported upon. The first such report shall cover the first annual period following the commencement of operation of the *Works* and subsequent reports shall be submitted to cover successive annual periods following thereafter. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent

limits outlined in Condition 7, including an overview of the success and adequacy of the *Works* ;

(b) a description of any operating problems encountered and corrective actions taken;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the *Works* ;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment; and

(f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6.

(g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

(h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;

(i) a summary of all *By-pass* , spill or abnormal discharge events; and

(j) any other information the *District Manager* requires from time to time.

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

1. Condition 1 is imposed to ensure that the *Works* are built and operated in the manner in which they were described for review and upon which approval was granted. This condition is also included to emphasize the precedence of Conditions in the *Certificate* and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review. The condition also advises the Owners their responsibility to notify any person they authorized to carry out work pursuant to this *Certificate* the existence of this *Certificate* .
2. Condition 2 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.
3. Condition 3 is included to ensure that the *Ministry* records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the *Works* are made aware of the *Certificate* and continue to operate the *Works* in compliance with it.

4. Condition 4 is included to ensure that record drawings of the *Works* "as constructed" are maintained for future references.
5. Condition 5 is included to indicate that by-passes of untreated sewage to the receiving watercourse is prohibited, save in certain limited circumstances where the failure to *By-pass* could result in greater injury to the public interest than the *By-pass* itself where a *By-pass* will not violate the approved effluent requirements, or where the *By-pass* can be limited or otherwise mitigated by handling it in accordance with an approved contingency plan. 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 *By-pass* events.
6. Condition 6 is imposed to establish non-enforceable effluent quality objectives which the *Owner* is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs and before the compliance limits of Condition 6 are exceeded.
7. Condition 7 is imposed to ensure that the effluent discharged from the *Works* to the Sauble River meets the *Ministry*'s effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body.
8. Condition 8 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 and made available to the *Ministry*. 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 work.
9. Condition 9 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 effluent limits specified in the *Certificate* and that the *Works* does not cause any impairment to the receiving watercourse.
10. Condition 10 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 all the terms and conditions outlined in this *Certificate*, so that the *Ministry* can work with the *Owner* in resolving any problems in a timely manner.

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 7098-659N8A issued on February 5, 2005.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, as amended, 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 101 of the Ontario Water Resources Act, R.S.O. 1990, Chapter 0.40, provides that the Notice requiring the hearing shall state:

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

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the works are located;

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

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
2300 Yonge St., Suite 1700
P.O. Box 2382
Toronto, Ontario
M4P 1E4

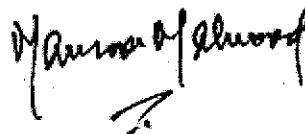
AND

The Director
Section 53, Ontario Water Resources Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

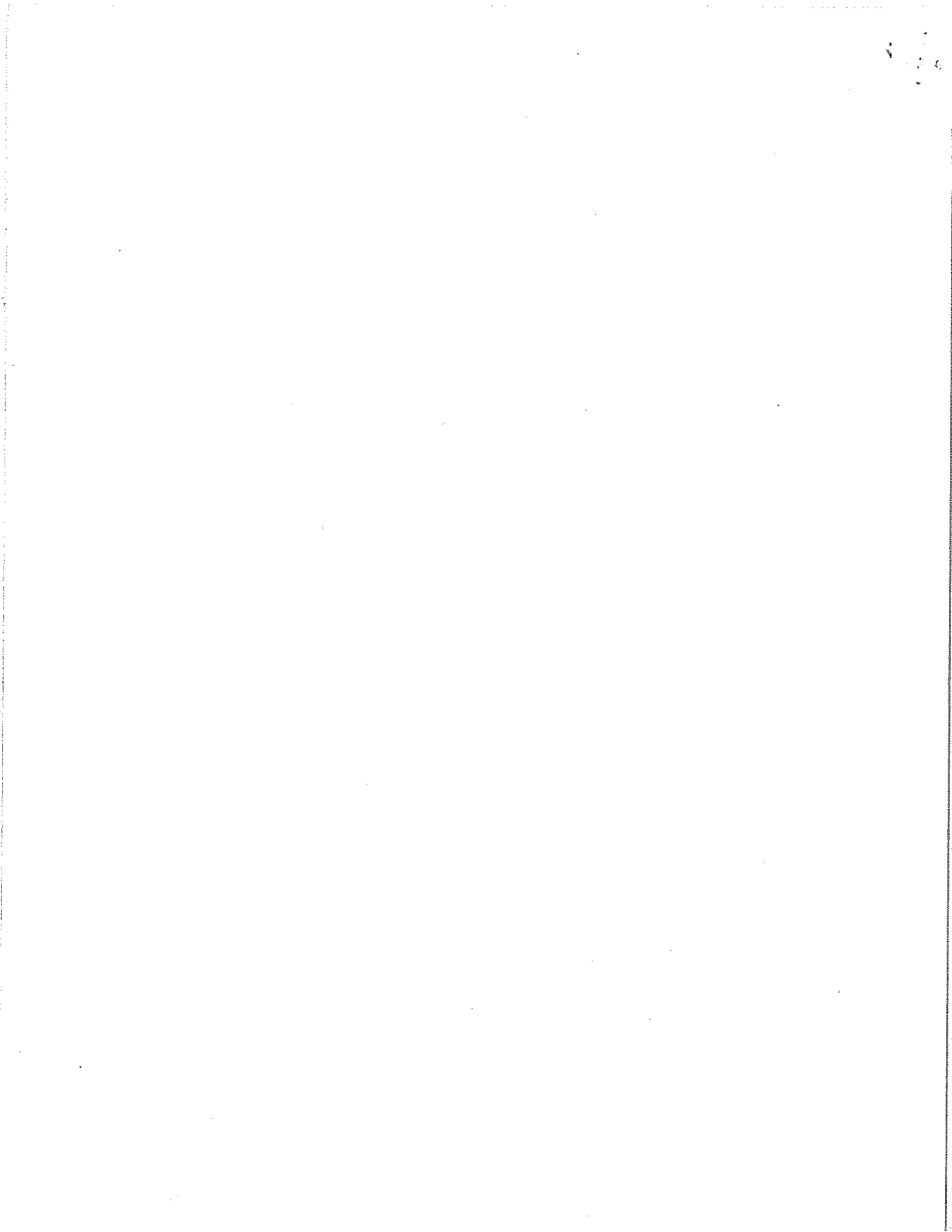
DATED AT TORONTO this 18th day of March, 2008



Mansoor Mahmood, P.Eng.
Director
Section 53, Ontario Water Resources Act

FL/

c: District Manager, MOE Owen Sound
Matt G. Prentice, Henderson Paddon & Associates Limited
Water Standards Section, MOE Standards Development Branch



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 m³/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 m³ and 50 m³ 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 ± 0.5 °C or 44.5 ± 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 discoloration 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
<i>E. coli</i>	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
<i>E. coli</i>	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
<i>E. coli</i>	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
<i>E. coli</i>	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
<i>E. coli</i>	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 suction 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.



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		
<i>(Insert the ECA's owner, number and issuance date and notice number, which should start with "01" and consecutive numbers thereafter)</i>		
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
<i>(Attach a detailed description of the sewage works)</i>
<p>Description shall include:</p> <ol style="list-style-type: none"> 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						
<p>I hereby declare that I have verified the scope and technical aspects of this modification and confirm that the design:</p> <ol style="list-style-type: none"> 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. <p>I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate</p>						
<table border="1"> <tr> <td>Name (Print)</td> <td>PEIO License Number</td> </tr> <tr> <td>Signature</td> <td>Date (mm/dd/yy)</td> </tr> <tr> <td colspan="2">Name of Employer</td> </tr> </table>	Name (Print)	PEIO License Number	Signature	Date (mm/dd/yy)	Name of Employer	
Name (Print)	PEIO License Number					
Signature	Date (mm/dd/yy)					
Name of Employer						

Part 4 – Declaration by Owner				
<p>I hereby declare that:</p> <ol style="list-style-type: none"> 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 <i>Environmental Assessment Act</i>. <p>I hereby declare that to the best of my knowledge, information and belief the information contained in this form is complete and accurate</p>				
<table border="1"> <tr> <td>Name of Owner Representative (Print)</td> <td>Owner representative's title (Print)</td> </tr> <tr> <td>Owner Representative's Signature</td> <td>Date (mm/dd/yy)</td> </tr> </table>	Name of Owner Representative (Print)	Owner representative's title (Print)	Owner Representative's Signature	Date (mm/dd/yy)
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:
- 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;
 - 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;
 - 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;
 - 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:
- Group No Bypass Days (**NBPD**) data and Bypass Days (**BPD**) data during a calendar month separately;
 - 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**;
 - Obtain the “**Total Monthly NBPD Flow**” which is the total amount of Final Effluent discharged on all NBPD during the calendar month;
 - 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:

$$\frac{[(\text{Monthly Average NBPD Effluent Concentration} \times \text{Total Monthly NBPD Flow}) + (\text{Monthly Average BPD Effluent Concentration} \times \text{Total Monthly BPD Flow})]}{(\text{Total Monthly NBPD Flow} + \text{Total Monthly BPD Flow})}$$

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:

$$\frac{[(\text{Annual Average NBPD Effluent Concentration} \times \text{Total Annual NBPD Flow}) + (\text{Annual Average BPD Effluent Concentration} \times \text{Total Annual BPD Flow})]}{(\text{Total Annual NBPD Flow} + \text{Total Annual BPD Flow})}$$

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	<i>E. coli</i> 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.)



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)		<input type="checkbox"/> New Profile <input type="checkbox"/> Update Existing Profile	
Name of System		Level of Treatment (select one*) <input type="checkbox"/> Primary <input type="checkbox"/> Secondary <input type="checkbox"/> Tertiary <input type="checkbox"/> Secondary Equivalent <input type="checkbox"/> Other (specify): <i>*See Terms and Concepts on page 4</i>	
Name of Municipality or Local Services Board			
Population Served	Population (Design)	Type of System <input type="checkbox"/> Treatment & Collection System <input type="checkbox"/> 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 %)			
<input type="checkbox"/> Sanitary Sewer		<input type="checkbox"/> Combined Sewer	
<input type="checkbox"/> Nominally Separated Sewer		<input type="checkbox"/> Partially Separated Sewer <i>*See Terms and Concepts on page 4</i>	

[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	
<input type="checkbox"/> Dr <input type="checkbox"/> Miss <input type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms	Owner Contact First Name	Owner Contact Last Name	Owner Contact Job Title	
Tel. No. () - ext.	Fax Number () -	Email address		

[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	
<input type="checkbox"/> Dr <input type="checkbox"/> Miss <input type="checkbox"/> Mr <input type="checkbox"/> Mrs <input type="checkbox"/> Ms	Operator Contact First Name	Operator Contact Last Name	Operator Contact Job Title	
Tel. No. () - ext.	Fax Number () -	Email address		

[D] 24/7 CONTACT					
<input type="checkbox"/> Dr <input checked="" type="checkbox"/> Mr <input type="checkbox"/> Ms	<input type="checkbox"/> Miss <input type="checkbox"/> Mrs	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
<input type="checkbox"/> Screening <input type="checkbox"/> Shredding/ grinding <input type="checkbox"/> Grit Removal <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Settling/sedimentation/ clarification <input type="checkbox"/> Scum Removal <input type="checkbox"/> Polymer Addition <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Conventional Activated Sludge (CAS) <input type="checkbox"/> Extended Aeration <input type="checkbox"/> Membrane Bioreactor (MBR) <input type="checkbox"/> Sequencing Batch Reactor (SBR) <input type="checkbox"/> Rotating Biological Contactor (RBC) <input type="checkbox"/> Tricking Filter (TF) <input type="checkbox"/> Biological Aerated Filter (BAF) <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Aerated Lagoon <input type="checkbox"/> Facultative Lagoon <input type="checkbox"/> Anaerobic Lagoon <input type="checkbox"/> Aerobic Lagoon <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Filtration <input type="checkbox"/> Clarification <input type="checkbox"/> Intermittent Sand Filter (after lagoons) <input type="checkbox"/> Polishing Wetlands <input type="checkbox"/> Polishing Lagoons <input type="checkbox"/> Other(specify):	<input type="checkbox"/> Phosphorous Removal <input type="checkbox"/> Biological <input type="checkbox"/> Chemical If chemical is used, specify: <input type="checkbox"/> Nitrification <input type="checkbox"/> Denitrification <input type="checkbox"/> Other(specify):
[G] DISINFECTION					
Method of Disinfection			Disinfection Period		
<input type="checkbox"/> Chlorination If you chlorinate, do you practice de-chlorination? <input type="checkbox"/> Yes <input type="checkbox"/> No			<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal		
<input type="checkbox"/> Ultraviolet Irradiation			<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal		
<input type="checkbox"/> Other (specify):			<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal		

[H] SLUDGE

Sludge Stabilization Process	Method of Sludge Disposal/Utilization
<input type="checkbox"/> Aerobic Digestion	<input type="checkbox"/> Agricultural
<input type="checkbox"/> Anaerobic Digestion	<input type="checkbox"/> Landfill
<input type="checkbox"/> Drying & Pelletization	<input type="checkbox"/> Incineration
<input type="checkbox"/> Lime Treatment	<input type="checkbox"/> Other (specify):
<input type="checkbox"/> Composting	
<input type="checkbox"/> Other (specify):	

Available Sludge Storage Capacity (m³):

[I] EFFLUENT

Effluent Disposal Method	Effluent Discharge Frequency
<input type="checkbox"/> Surface Water Receiving Water Body Name:	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
<input type="checkbox"/> Subsurface	<input type="checkbox"/> Continuous <input type="checkbox"/> Seasonal
<input type="checkbox"/> Other (specify):	<input type="checkbox"/> Continuous <input type="checkbox"/> 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 m³):
- Septage (approximate annual volume in m³):
- Industrial input (approximate annual volume in m³):
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 CBOD₅ (carbonaceous biochemical oxygen demand) (BOD₅ – 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 BOD₅ 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 CBOD₅ 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 CBOD₅ 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 CBOD₅ 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
 Mark O'leary
 Water Foreman
Water@arran-elderslie.ca

Meter Information

Date of Test: 2022-04-06
 Location: Paisley WWTP
 Meter Under Test: Effluent Meter
 Client Tag: N/A
 Manufacturer: Miltronics
 Model: OCMIII
 Serial Number: 7ML10203EA04
 Totalizer As Found: 170303.0M3
 Totalizer As Left: 170312.0M3
 Acceptable Error: 15%

Calibration by:

Dan Matchett

Standards:

Fluke 289 S/N 96220182 NIST Cal Due March 2023

Programming Parameters:

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

Instrument Type

Open Channel

Calibration Due:

April 2022

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	4.006	0.000	0.150
0.059	0.770	0.490	4.838	1.207	6.775
1.000	4.360	4.880	7.374	2.241	5.239
0.150	12.030	13.140	13.082	4.784	6.388
0.190	21.720	22.070	19.248	1.509	1.416
Average Error%				1.95	3.99
Result:				PASS	PASS

Totalizer Test

Sim Flow Rate	21.720	LPS
Start Totalizer	985.700	M3
End Totalizer	988.200	M3
Volume Simulated	2.500	M3
Time(Seconds)	115.500	
Calculated Totalizer(MUT)	2.509	
Error%	-0.345	
Result:	PASS	

Comments:

Unit passes verification.

Transducer was relocated, empty distance changed from 90.17cm to 90.57cm

Tower Electronics Canada Inc. Calibration Certificate

Customer:

Municipality of Arran-Elderslie
 Mark O'Leary
 Water Foreman
Water@arran-elderslie.ca

Calibration by:

Dan Matchett

Standards:

Fluke 289 S/N 96220182 NIST Cal Due March 2023

Instrument Type

Open Channel

Meter Information

Date of Test: 2022-04-05
 Location: Paisley WWTP
 Meter Under Test: Influent Meter
 Client Tag: N/A
 Manufacturer: Pulsar
 Model: Flow 3
 Serial Number: F048933
 Totalizer As Found: 520928M3
 Totalizer As Left: 521185M3
 Acceptable Error: 15%

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

Calibration Due:

Apr-23

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	0.533	4.010	0.494	0.250
0.100	10.027	11.025	5.625	0.924	2.543
0.200	29.976	30.020	8.760	0.041	3.781
0.300	56.886	59.420	13.160	2.346	5.894
0.440	104.186	104.200	19.860	0.013	2.187
Average Error%				0.76	2.93
Result:				PASS	PASS

Totalizer Test

Sim Flow Rate	104.186	LPS
Start Totalizer	177.780	M3
End Totalizer	185.160	M3
Volume Simulated	7.380	M3
Time(Seconds)	70.880	
Calculated Totalizer(MUT)	7.385	
Error%	-0.064	
Result:	PASS	

Comments:

Unit passes verification.