Kincardine Wastewater Treatment System

2020 Annual Performance Report

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1.0 Introduction

The Kincardine Wastewater Treatment Plant consists of an aerated lagoon cell and two conventional stabilization ponds. Alum is added to the Aerated Cell discharge to aid in phosphorous removal. The final effluent is disinfected year-round by ultraviolet radiation before being discharged to Lake Huron. A schematic of the overall system can be viewed in Appendix B.

Section 11(6) of the Kincardine Wastewater Treatment Plant Certificate of Approval #4648-8DVSSR requires that an Annual Performance Report is prepared and outlines the information that must be contained within it. A copy of the current Certificate of Approval is included in Appendix A.

The Kincardine Wastewater Collection System consists of six major pumping stations and three lift stations plus the groundwater and leachate pumping stations at the Valentine Avenue landfill. The Connaught Park Sewage Pumping Station was replaced in 2018 and requires an annual performance report under Environmental Compliance Approval #3066-APUHY9 Section 8. (See Appendix A) The requirements of both the treatment plant Certificate of Approval and the Connaught Park Environmental Compliance Approval are included in this report.

2.0 Summary and Interpretation of Monitoring Data

Operations staff collected biweekly grab samples of raw sewage and lagoon final effluent as well as semi-annual samples as required by the treatment facility Certificate of Approval. All samples were submitted to SGS Environmental Services for analysis. The analytical results of the biweekly sampling are tracked in monthly spreadsheets. In turn, these monthly results are summarized in an annual spreadsheet which is included in Appendix C.

There is no requirement to collect raw sewage samples from any of the pumping stations including the Connaught Park Sewage Pumping Station.

In 2020, the ability of the Kincardine lagoon system to treat and remove waste was comparable to previous years. Table 1 below, summarizes and compares the alum dosages and the percent removals achieved over the last 5 years. There is no BOD Percent Removal due to the fact that we test for CBOD on the final effluent and BOD on the raw influent.

Table 1 Comparison of Alum Dosage and Percent Removal

		2016	**2017**	**2018**	**2019**	**2020**
Alum Dosage	mg/L	17.09	15.83	15.33	15.6	14.8
	kg/day	59.98	60.35	57.14	55.8	53.4
Percent Removal	TSS	75%	79%	79%	83%	81%
	TP	90%	90%	90%	91%	92%
	TKN	23%	30%	12%	23%	35%

Tables 2 and 3 compare the Final Effluent annual average quality to the effluent criteria limits in Certificate of Approval #4648-8DVSSR. There were no exceedances of the Certificate limits.

Table 2 Final Effluent Quality

Effluent Parameter	C of A Objective	C of A Limit	Monthly Average Concentration (mg/L)
CBOD5	25	30	15.2
Total Suspended Solids	30	40	24.2
Total Phosphorous	1.0	1.0	0.20
E. coli	150	200	3
pH	6.5 – 9.0	6.0 – 9.5	6.8 – 8.9

Table 3 Final Effluent Waste Loading

Effluent Parameter	C of A Limit	Monthly Average Waste Loading (kg/d)
CBOD5	177.0	46
Total Suspended Solids	236.0	74
Total Phosphorous	5.9	0.6

The lagoon UV disinfection system provides disinfection of the effluent year-round. There were no major issues with the performance of the UV system. In 2020 the average UV dosage was 82 mJ/cm^2 with the range spanning from 31 to 316 mJ/cm^2.

The 2020 final effluent semi-annual chemical analysis results are in Appendix D of this report. All chemicals were within the Provincial Water Quality Objectives and/or less than the Method Detection Limit except for aluminum and phenol.

Table 4 on the following page, compares the precipitation and flow data over the past five years showing that the lagoon system is at approximately 65% capacity but definitely under the influence of inflow and infiltration. The precipitation data was obtained from Environment Canada and in-house data.

Table 4 Design capacity

	2016	2017	2018	2019	2020
Annual Influent Flow (m^3)	1,415,722	1,462,322	1,477,599	1,382,344	1,372,688
Overall Percentage of Influent Design Capacity	66%	68%	69%	64%	63%
Design Capacity Exceedances (days)	31	20	29	15	12
Annual Effluent Flow (m3)	890,329	1,099,752	1,111,004	1,135,261	1,108,680
Precipitation (mm)	835	953	670	709	444
Kincardine Drinking Water Produced (m^3)	1,083,995	940,208	1,049,209	1,072,574	1,130,119

3.0 Groundwater and Leachate

The current C of A has a Special Condition (Section 9) which outlines groundwater and leachate flow limits. A monthly average flow of approximately 200 m^3/d of Groundwater from the Valentine Avenue Landfill and 63 m^3/d of combined Leachate flow (approximately 30 m^3/d from the Valentine Avenue Landfill and approximately 33 m^3/d from the Kincardine Waste Management Centre) is permitted. Leachate was hauled from the Kincardine Waste Management Centre (KWMC) to the Valentine Avenue Leachate Pump Station in February and March of 2020 for a total of 148.46 m^3. Table 5 summarizes the groundwater and leachate flows for the past 5 years.

Table 5 Groundwater and Leachate Flows

		2016	2017	2018	2019	2020
Groundwater (max = 200 m^3/d)	Annual average flow (m^3/d)	1.2	1.9	2.3	2.2	2.1
	Total Annual flow (m^3)	450	707	828	816	783
Leachate (Valentine Ave max = 30 m^3/d) (KWMC max = 33 m^3/d)	Annual average flow (m^3/d)	41	23.5	36.3	14.6	14.2
	Total Annual flow (m^3)	15,034	8,565	13,240	5,325	5,178

Historically, pumping of the leachate from the Valentine Avenue Landfill is stopped during the hot summer months as the Dissolved Oxygen levels cannot be maintained. However, in 2020, the Leachate Pump Station did not need to be shut down.

Municipal staff in conjunction with GHD, collected leachate and groundwater samples so that leachate testing was completed four times per year and groundwater testing twice per year. Appendix E includes the results for the leachate samples that were collected by the Municipality of Kincardine. GHD has been contracted by the Municipality to monitor the Valentine landfill site and prepare a separate annual report on their findings, which is submitted to the Ministry of the Environment, Conservation and Parks for review. Please refer to GHD's report for a detailed report on the landfill's collection system.

4.0 Effluent Quality Control Measures

Routine control measures were taken throughout the year including aerator time adjustments to maintain dissolved oxygen target levels between 2.0 and 6.0 mg/L in the Aerated Cell. Winter dissolved oxygen levels are maintained at + 4.0 mg/L in the Aerated Cell to provide sufficient dissolved oxygen to the frozen lagoons, which can potentially become anaerobic when frozen over.

Alum dosage adjustments were made to maintain final effluent Total Phosphorous levels below 1.0 mg/L. The pH of the effluent was maintained within the range of 6.0 to 9.5, was essentially free of floating and settleable solids and did 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.

5.0 Maintenance Summary

Table 6 summarizes maintenance and repair activities carried out during the reporting period on any major structure or equipment that forms part of the wastewater treatment and collection system.

Table 6 Maintenance Performed

MAINTENANCE PERFORMED	REASON
Annual maintenance of aerators: grease and oil change, check bearing temperature	Preventative maintenance
One pump from Hunter's Ridge Lift Station rebuilt	Required maintenance
Hunter Street Lift Station cleaned out with hydrovac truck	Required maintenance
Maintenance of alum chemical pumps: inspect piping, replace o-rings and diaphragms, etc.	Preventative maintenance
Maintenance of UV system	Preventative and as required maintenance
Maintenance to the UV channel	Required maintenance
Annual calibration checks on plant equipment	Maintain plant integrity and accuracy
Flushing of sanitary mains	Preventative and as required maintenance
Weekly cleaning of bar screens	Preventative maintenance
Transducer maintenance at Pump Stations	Required maintenance
Pumps greased at Pump Stations	Preventative maintenance
Repairs and replacements to distribution valves, cleanouts and maintenance access hatches	As required maintenance
Pumps pulled and debris removed at Hunter's Ridge, Harbour Street, Huron Terrace and Durham Street Pump Stations	Required maintenance
Main-line and lateral video inspections	Preventative maintenance

6.0 Calibration and Maintenance of Monitoring Equipment

Routine calibration and maintenance procedures are conducted on all the monitoring equipment used on the Wastewater Treatment System. The Alum metering pumps discharge volumes are measured minimally once/day to ensure proper dosage rates. If sodium hypochlorite is required for disinfection, the total chlorine residual is monitored using a Hach Pocket Colorimeter and the Colorimeter is routinely compared to Hach Standards for accuracy. Influent and effluent flow miltronics equipment is calibrated yearly to check that accuracy is within +/- 5% of full scale. Refer to Appendix F to review the 2020 Calibration Certificates. In addition, monitoring equipment for pH, dissolved oxygen, phosphorous and conductivity measurements are calibrated according to the manufacture's instruction prior to use.

7.0 By-passes, Spill or Abnormal Discharge Events

There was one by-pass in 2020 due to heavy precipitation. There were no spills or abnormal discharge events. Appendix G summarizes the date, location, volume and reason for the event. There are no meters in place to measure by-pass volumes, but they are estimated to the best of operations staff ability.

The Connaught Park Pump Station Environmental Compliance Approval requires by-pass events to be monitored and samples collected. There were no by-passes at the Connaught Park Pump Station in 2020.

8.0 Summary of Complaints

There were twenty eight complaints received and responded to from the public, mostly regarding sewer back-ups. A summary of all the complaints and the actions taken is attached in Appendix H.

9.0 Sludge Volumes

The sludge depths were measured in the Aerated Cell and Lagoon Cells 2 and 3 using a Sludge Judge. The estimated volume of sludge calculated is similar to previous years. No sludge was removed from any of the cells in 2020.

Table 7 Estimated Sludge Volumes

	2016	**2017**	**2018**	**2019**	**2020**
Aerated Cell (m^3)	5,404	6,124	4,976	5,442	4,665
East Cell (#2) (m^3)	22,674	29,139	19,789	25,901	20,721
West Cell (#3) (m^3)	22,408	21,922	22,992	25,145	21,277

10.0 Operating Problems and Corrective Actions

There continued to be issues with the aerators tripping. They are scheduled for replacement with a diffused air aeration system.

Problems with pumps plugging occurred at the Harbour Street, Hunter's Ridge, Huron Terrace and Durham Street Pump Stations. With the exception of the Connaught Park Sewage Pumping Station, no pump station has automatic bar screens and so require continual manual removal of solid waste from wet wells. This requires physical entry by staff into areas that are deemed confined spaces.

During the hot summer months, the Dissolved Oxygen (DO) in the Aerated Cell typically falls to less than 2 mg/L. Aerator hours and cycles are adjusted in an attempt to improve the DO without lifting the sludge blanket. The addition of leachate is typically stopped temporarily during this time as well.

11.0 Summary

Overall, there were no major problems with the treatment of the wastewater in 2020. The system was effective at treating the wastewater and maintaining the effluent CBOD, Total Suspended Solids and Total Phosphorous levels within non-compliance limits.

APPENDIX A

Facility Certificate of Approval

Connaught Park Environmental Compliance Approval

Ontario

Ministry of the Environment
Ministère de l'Environnement

AMENDED CERTIFICATE OF APPROVAL
MUNICIPAL AND PRIVATE SEWAGE WORKS
NUMBER 4648-8DVSSR
Issue Date: April 8, 2011

The Corporation of the Municipality of Kincardine
1475 Concession 5
Rural Route, No. 5
Kincardine, Ontario
N2Z 2X6

Site Location: Kincardine Wastewater Treatment Plant
520 Bruce Avenue
Kincardine Municipality, County of Bruce

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

upgrading of the existing disinfection facilities for the treatment of sanitary sewage and landfill leachate located at the intersection of Bruce Avenue and Mahood - Johnston Drive, rated at an *Average Daily Flow* of 5,910 m^3 /day, consisting of the following:

PROPOSED WORKS

Ultraviolet Disinfection System

modification of the existing chlorination building to house the proposed electrical and control equipment and modification of the existing chlorine contact chamber into ultraviolet irradiation (UV) disinfection channels and installation of a new UV disinfection unit consisting of an open channel equipped with two (2) banks of ultraviolet lamp modules, each module having a peak capacity of 12,000 m^3/d, including all required piping and modified flow-measurement weir, low liquid level sensor, automatic level controller and electrical system, submersible ultraviolet intensity monitoring probe, and tie-in to existing outfall pipe. The existing (Sodium Hypochlorite) disinfection system to be retained to provide standby disinfection if the UV disinfection system is inoperable.

and all associated appurtenances, piping, electrical and control systems necessary to operate the Works,

all in accordance with the following submitted supporting documents:

1. Application for Approval of Sewage Works submitted by the Corporation of the Municipality of Kincardine dated November 24, 2010 and revised on December 14, 2010

along with a related letter dated November 26, 2010, from Richard Anderson of B.M. Ross and Associates Ltd. to Director of the Ministry of the Environment, Environmental Assessment and Approvals Branch;

2. Electronic mail transmission dated December 14, 2009, from Richard Anderson of B.M. Ross and Associates Ltd. to Farina Pannu of the Ministry of the Environment;

3. Memo entitled "Application in Support of Increasing the Quantity of Leachate Received by the Kincardine Wastewater Treatment Plant" dated July 20, 2010, from Steve Burns of B.M. Ross and Associates Ltd. to Jim O'Rourke of Municipality of Kincardine Public Works Manager;

4. Specification for Ultraviolet Disinfection System dated October 2010, a Design Brief for the proposed ultraviolet disinfection system dated August 4, 2009 and revised November 26, 2010 and designed drawings dated November 26, 2010, prepared by B.M. Ross and Associates Ltd.;

5. Calgon Carbon Corporation Proposal to B.M. Ross and Associates Ltd. for a $C^3500^{TM}D$ Ultraviolet Disinfection System for Municipality of Kincardine Wastewater Treatment Plant dated October 28, 2010.

6. Electronic mail transmission dated February 18, 2011, from Richard Anderson of B.M. Ross and Associates Ltd. to Andrew Miernicki of the Ministry of the Environment;

EXISTING WORKS

consolidating Certificates of Approval Nos. 3-0178-76-006 issued on April 27, 1976, 3-0838--84-006 issued on October 26, 1984, 3-1963-90-927 issued on April 15, 1992, presently revoked and replaced Certificate of Approval No. 3-1539-94-956 issued on January 18, 1995 along with three subsequent Notices of amendment dated March 20, 1996 (Notice No. 1), July 25, 2002 (Notice No. 2) and October 21, 2004 (Notice No. 3) related to Kincardine Sewage Treatment Plant located in the Town of Kincardine, rated at average daily flow of 5,910 m^3/day consisting of:

Aerated Lagoon

an aerated lagoon cell with a design volume of approximately 24,000 m^3 and 0.85 Ha surface area, located south of Bruce Avenue and west of Valentine Avenue, in the Town of Kincardine and equipped with four (4) 11 kW (15 hp) aerators, an inlet structure with a Parshall flume for measuring incoming sewage flow, a control building and a distribution chamber for directing the discharge from the aerated lagoon cell to two (2) conventional stabilization ponds;

Conventional Stabilization Ponds

two (2) conventional stabilization ponds located adjacent to the aerated lagoon cell with a design volume of approximately 118,000 m^3 each and a total combined volume of 236,000 m^3;

Disinfection

an existing disinfection system approved by Certificate of Approval No. 3-1539-94-956 consisting of " a chlorination building and a 120 m^3 chlorine contact tank located on the south side of Bruce Avenue and west of east of Mahood - Johnston Drive to provide 15 minutes contact time at maximum flow of 136 L/s and (as per Notice No. 1 of March 20, 1996) a Hypochlorite disinfection system consisting of a 400 litre day tank and two (2) chemical metering pumps, each with a rated capacity of 2.6 L/h including associated valves and tubing." to be modified to provide the required channels and to house the electrical and control equipment for the proposed ultraviolet (UV) system as described in *Proposed Works* section above.

the existing (Sodium Hypochlorite) disinfection system to be retained to provide standby disinfection if the UV disinfection system is inoperable.

Phosphorus Removal

phosphorus removal system consisting of a 27 m^3 chemical storage tank equipped with two (2) chemical metering pumps, associated valves, piping and control system, enclosed in a 6.2 m x 6.2 m storage building;

Outfall Sewer

outfall sewer from the conventional stabilization pond outlet structures to ultraviolet irradiation (UV) disinfection channel located on Bruce Avenue to Lake Huron as follows:

On	From	To
Waste Stabilization Pond and former CNR Right-of-Way	pond outlets	Bruce Avenue
Bruce Avenue	former CNR Right-of-way	UV disinfection channels
Bruce Avenue	UV disinfection channels	Penetangore Row
Bruce Avenue and Lake Huron	Penetangore Row	Approx. 305 m into Lake Huron

all in accordance with the following:

1. All original applications for approval, including design calculations, engineering drawings, and reports prepared in support of the previous Certificate(s) of Approval and Notices of amendment.

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;

"*Annual Average Concentration*" means the arithmetic mean of the *Monthly Average Concentrations* of a contaminant in the effluent calculated for any particular calendar year;

"*Annual Average Loading*" means the value obtained by multiplying the *Annual Average Concentration*

of a contaminant by the *Average Daily Flow* over the same calendar year;

"*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;

"*Average Flow*" means the total flow to the sewage works during the period of operation opon which the report is based, divided by the number of days in the period;

"*BOD5*" (also known as $TBOD_5$) 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;

"*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 Owen Sound 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 approved under a certificate of approval;

"*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 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 Kincardine and includes its successors and assignees;

"*Operating Authority* " means the *Owner* or the designated agent of the *Owner* ;

"*Peak Flow Rate*" means the maximum rate of sewage flow for which the plant or process unit was designed;

"*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;

"*Source Protection Plan*" means a drinking water source protection plan prepared under the Clean Water Act, 2006;

"*Substantial Completion*" has the same meaning as "*substantial performance*" in the Construction Lien Act; 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 *Previous 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.

2. EXPIRY OF APPROVAL

The approval issued by this *Certificate* will cease to apply to those parts of the *Proposed 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 thirty (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 Informations 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. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

(1) Upon the *Substantial Completion* of the *Proposed Works,* the *Owner* shall prepare a statement, certified by a Professional Engineer, that the works are constructed in accordance with this *Certificate,* and upon request, shall make the written statement available for inspection by Ministry personnel.

(2) Within one year of the *Substantial Completion* of the *Proposed Works* , a set of as-built drawings showing the works "as constructed" shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a 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(5).

(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.

(4) The *Owner* shall, in the event of a *By-pass* event pursuant to subsection (1), disinfect the by-passed effluent prior to it reaching the receiver such that the receiver is not negatively impacted.

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.*

Table 1 - Effluent Objectives

Effluent Parameter	**Concentration Objective** (milligrams per litre unless otherwise indicated)
$CBOD_5$	25
Total Suspended Solids	30
Total Phosphorus	1.0
E-Coli	150 organisms/100 mL (Monthly *Geometric Mean Density*)

(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 Conditions 10, a summary of the efforts made and results achieved under this Condition.

7. EFFLUENT LIMITS

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

Table 2 - Effluent Limits		
Effluent Parameter	**Monthly Average Concentration** (milligrams per litre unless otherwise indicated)	**Monthly Average Waste Loading** (kilograms per day unless otherwise indicated)
Column 1	Column 2	Column 3
CBOD5	30.0	177.0
Total Suspended Solids	40.0	236.0
Total Phosphorus	1.0	5.9
E. *Coli*	200 E. Coli/100 mL (Monthly *Geometric Mean Density)*	-
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 $CBOD_5$, suspended solids, and total phosphorus in Column 1 of Table 2 in subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of Table 2 in subsection (1).

(b) The *Monthly Average Loading* of $CBOD_5$, suspended solids, and total phosphorus in Column 1 of Table 2 in subsection (1) shall not exceed the corresponding average loading set out in Column 3 of Table 2 in subsection (1).

(c) The *Monthly Geometric Mean Density* of *E. Coli* named in Column 1 of subsection (1) shall not exceed the corresponding maximum density set out in Column 2 of subsection (1).

(d) The effluent shall be continuously disinfected so that the monthly *Geometric Mean Density* of *E. Coli* does not exceed 200 organisms per 100 millilitres of effluent discharged from the *works* .

(3) The effluent limits set out in subsections (1 and 2) shall apply upon the issuance of this *Certificate* .

(4) Only those monitoring results collected during the corresponding time period shall be used in calculating the *Monthly Average Concentrations* and *Monthly Average Loading* for 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 prepare an operations manual within six (6) months of *Substantial Completion* of the *Proposed Works* , 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 follow-up 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. SPECIAL CONDITION - LOADING RATES FOR CO-TREATMENT

(1) The *Owner* shall operate and maintain the *Works* such that the design monthly average landfill leachate flow of 63 cubic metres per day (approximately 30 cubic metres per day from Valentine Avenue Landfill and approximately 33 cubic metres per day from the proposed Kincardine Waste Management Centre) and groundwater (contaminated) flow of approximately 200 cubic metres per day from Valentine Avenue Landfill for co-treatment at the *Works* is not exceeded.

(2) The *Owner* shall operate and maintain the *Works* such that the sum of all daily influent flows during a calendar year, including raw sewage, and groundwater (contaminated) and landfill leachate flow for co-treatment, does not exceed the Rated Capacity of the *Works* .

10. 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:

(c) Bi-weekly means once every two weeks;
(g) Semi-annually means once every six months;

(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

Parameters	Sample Type	Frequency
BOD5	Grab	Bi-weekly
Total Suspended Solids	Grab	Bi-weekly
Total Phosphorus	Grab	Bi-weekly
Total Kjeldahl Nitrogen	Grab	Bi-weekly
Alkalinity	Grab	Bi-weekly

Table 4 - Final Effluent Monitoring (Samples to be collected from the lagoon outfall downstream of the UV disinfection unit)		
Parameters	**Sample Type**	**Frequency**
CBOD5	Grab	Bi-weekly
Total Suspended Solids	Grab	Bi-weekly
Total Phosphorus	Grab	Bi-weekly
Total Kjeldahl Nitrogen	Grab	Bi-weekly
Total Ammonia (Ammonia + Ammonium) Nitrogen	Grab	Bi-weekly
Nitrite	Grab	Bi-weekly
Nitrate	Grab	Bi-weekly
Alkalinity	Grab	Bi-weekly
E. Coli	Grab	Bi-weekly
pH	Grab	Bi-weekly
Temperature	Grab	Bi-weekly
Total Residual Chlorine (when in use)	Grab	Bi-weekly
Chloride	Grab	Semi-annually
COD	Grab	Semi-annually
DOC	Grab	Semi-annually
Hardness	Grab	Semi-annually
Phenols	Grab	Semi-annually
Metals (total): ICP Metal Scan	Grab	Semi-annually
Volatile Organic Compounds (VOC) US EPA 624 Parameters	Grab	Semi-annually
pH	Grab	Semi-annually
Conductivity	Grab	Semi-annually
Temperature	Grab	Semi-annually

(4) Samples of landfill leachate 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 5 - Landfill Leachate Monitoring*

(Samples of the leachate and groundwater contaminated with leachate to be collected from the Valentine Avenue Landfill and Kincardine Waste Management Centre leachate pumping station, the discharge end of the leachate forcemain, or at the point of addition to the sewer system or to the Works.)

Parameters	Sample Type	Frequency
Alkalinity	Grab	Semi-annually
BOD5	Grab	Semi-annually
Chloride	Grab	Semi-annually
COD	Grab	Semi-annually
DOC	Grab	Semi-annually
Hardness	Grab	Semi-annually
Nitrate	Grab	Semi-annually
Nitrite	Grab	Semi-annually
Total Kjeldahl Nitrogen	Grab	Semi-annually
Ammonia	Grab	Semi-annually
Metals (Total): ICP 24 Metal Scan	Grab	Semi-annually
Volatile Organic Compounds (VOC): US EPA 624 parameters	Grab	Semi-annually
pH	Grab	Semi-annually
Conductivity	Grab	Semi-annually
Temperature	Grab	Semi-annually

* Representative samples of landfill leachate shall be collected for analysis on a semi-annually basis, subject to availability of the leachate requiring co-treatment at the STP.

(5) 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" (21st edition), as amended from time to time by more recently published editions;

(6) The temperature and pH of the effluent from the *Works* shall be measured in the field on a fresh grab sample collected on the day 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).

(7) The *Owner* shall install, maintain and operate a sufficient number of flow measuring devices, calibrated at regular intervals not exceeding one year to ensure their accuracy to within plus or minus 5% of the full scale reading of the measuring devices, in order to measure:

(i) the quantity of sewage being conveyed to the sewage treatment plant;

(ii) the quantity of groundwater (contaminated) and leachate being conveyed to the sewage treatment plant;

(iii) the quantity of untreated sewage being bypassed without treatment and/or being bypassed to the disinfection facility;

(8) The *Owner* shall measure and record the daily quantities of leachate and groundwater (contaminated) waste received for co-treatment at the *works* and the flowrate at which the blended hauled sewage is fed into the inlet works for cotreatment.

(9) The *Owner* can use applicable existing samples collected from the Valentine Avenue Landfill site as specified in subsection (4), (5) and (6) of groundwater (contaminated) as required by the Certificate of Approval No. 3-0408-93-006 and of leachate as required by the Certificate of Approval No. 3-0354-94-006 and analyze for parameters as specified in subsections (4).

(10) The measurement frequencies specified in subsections (3)and (4) in respect to any parameter are minimum requirements which may, after 24 months of monitoring in accordance with this Condition, be modified by the *District Manager* in writing from time to time.

(11) The *Owner* shall retain for a minimum of three (3) years from the date of their creation, all records and information related to or resulting from the monitoring activities required by this *Certificate.*

11. REPORTING

(1) One week prior to the start up of the operation of the *Proposed Works* , the *Owner* shall notify the *District Manager* (in writing) of the pending start up date.

(2) Ten (10) days prior to the date of a planned *By-pass* being conducted pursuant to Condition 5 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.*

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

(4) In addition to the obligations under Part X of the Environmental Protection Act, the *Owner* shall, within ten (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.

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

(6) 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* , including the effectiveness of the cotreatment of leachate and groundwater (contaminated);

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

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

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

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

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

(g) a tabulation of the quantity of groundwater (contaminated) and landfill leachate added to the *Works* for co-treatment during the reporting period;

(h) 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;

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

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

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

(7) A final report for leachate cotreatment shall be submitted to the *District Manager* within three (3) months of end of the two year period commencing from the date that Kincardine Waste Management Centre is reopen to new waste and conveyance of leachate to the *works* is initiated. The report shall provide an assessment on the treatability of the leachate at the *works* and provide recommendations on any upgrade, if necessary to ensure the leachate is being effectively treated at the *rated capacity* of the plant.

12. REVOCATION OF EXISTING APPROVALS

(1) The descriptions of the approved *Works* and conditions of approval in this *Certificate* apply in place of all existing descriptions and conditions in the Certificates of Approval under the Ontario Water Resources Act for sewage works which are part of the *Works* approved by this *Certificate* .

(2) Notwithstanding subsection (1) above, the original applications for approval, including design calculations, engineering drawings and reports prepared in support of the existing Certificate(s) of Approval whose descriptions of the approved *Works* and conditions are now replaced pursuant to subsection (1) above, shall form part of this *Certificate* .

(3) Where an existing Certificate of Approval referred to in subsection (1) above applies to *Works* in addition to the *Works* approved by this *Certificate* , it shall continue to apply to those additional *Works* .

13. SOURCE WATER PROTECTION

The *Owner* shall, within sixty (60) calendar days of the Minister of the Environment posting approval of a *Source Protection Plan* on the environmental registry established under the Environmental Bill of Rights, 1993 for the area in which this *Certificate* is applicable, apply to the *Director* for an amendment to this *Certificate* that includes the necessary measures to conform with all applicable policies in the approved *Source Protection Plan.*

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, when the *Works* are constructed, the *Works* will meet the 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 the *Works* are constructed in accordance with the approval and 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 7 are exceeded.

7. Condition 7 is imposed to ensure that the effluent discharged from the *Works* to the Lake Huron 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 ensure that the *Works* are operated within the design capacity, including groundwater (contaminated) and landfill leachate co-treatment capability and capacity.

10. Condition 10 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.

11. Condition 11 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.

12. Condition 12 is included to stipulate that this *Certificate* replaces all previous approvals for the *Works* being the subject of this *Certificate* , and that the existing approvals remain in force for the purpose of any *Works* which are not subject to this *Certificate* .

13. Condition 13 is included to ensure that the works covered by this *Certificate* will conform to the significant threat policies and designated Great Lakes policies in the *Source Protection Plan.*

This Certificate of Approval revokes and replaces Certificate(s) of Approval No. 3-1539-94-956, Notice No. 1, Notice No. 2 and Notice No. 3 issued on January 18, 1995, March 20, 1996, July 25, 2002 and October 21, 2004, respectively.

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
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

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**

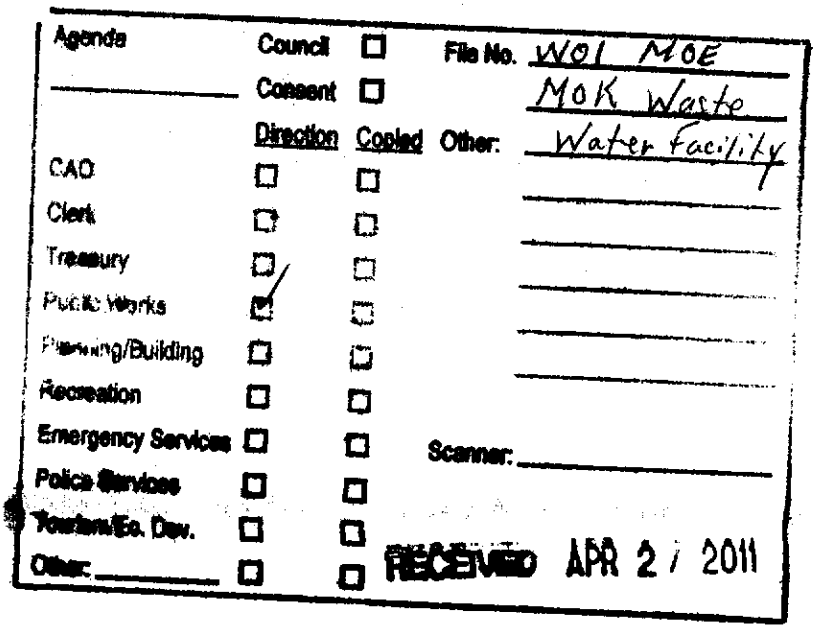
The above noted sewage works are approved under Section 53 of the Ontario Water Resources Act.

DATED AT TORONTO this 8th day of April, 2011

Ian Parrott, P.Eng.
Director
Section 53, *Ontario Water Resources Act*

AM/

c: District Manager, MOE Owen Sound
Richard R. Anderson, P.Eng., B. M. Ross and Associates Limited



Ontario

Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER 3066-APUHY9
Issue Date: November 14, 2017

The Corporation of the Municipality of Kincardine
1475 Concession 5
R.R. #5
Kincardine, Ontario
N2Z 2X6

Site Location: Connaught Park Sewage Pumping Station Trunk Sewer Project
133 Broadway Street
Municipality of Kincardine, County of Bruce

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:

upgrades of the existing sanitary sewage pumping station including the replacement/construction of sanitary sewers and storm sewers and forcemain, in the Municipality of Kincardine, as follows:

Proposed Works

- sanitary sewers on Golf Course Trail easement, Cedar Lane, Shevchenko Blvd., Kingsway Street, Walkway and on Racetrack within Connaught Park discharging to the sewage pumping station;

- a wet well sewage pumping station located in Connaught Park, adjacent to the southeast portion of the former horse racing track, consisting of a two (2) cell wet well having a dimension of 8 m by 4 m, equipped with an automated rake bar screen, a 450 mm diameter inlet pipe and a 375 mm diameter emergency overflow pipe to a storm sewer located on Broadway Street, three (3) variable speed submersible pumps, two (2) duty, one (1) standby, having a firm design capacity of 88.5 L/s at 25.2 m Total Dynamic Head (TDH), one (1) space for future pump, complete with electrical and electronic control systems, a radar level transmitter with back-up float switches for each cell, discharge piping, ventilation system, air release valves and flow meter, a 150 kW standby diesel generator set, and all other appurtenances necessary to have a complete and operable pumping station;

- a 250 mm diameter forcemain from the sewage pumping and along Broadway Street to the existing sanitary sewer on Huron Terrace;

- decommissioning of the existing sewage pumping station and structures located at Broadway Street and Saugeen Street and removing the associated standby power facilities;

- storm sewers on Shevchenko Boulevard and Kingsway Street discharging to the existing storm sewer, storm sewers on Broadway Street discharging via an outlet structure with a headwall and energy dissipation blocks to Lake Huron;

including erosion/sedimentation control measures during construction and all other controls and appurtenances essential for the proper operation of the aforementioned Works;

all in accordance with the submitted supporting documents listed in Schedule "A", forming part of this Approval.

Previous Works

construction of sewage works for the Town of Kincardine as follows:

- sanitary sewers on Shevchenko Boulevard, Fairgrounds (Easement), Lovers Lane and Easement, Saugeen Street, Lambton Street, Durham Street, Broadway Street, Lane in Lot 1, MacDonald Street, Princess Street, Nelson Street, James Street, Mechanics Avenue, Sutton Street, King Street, including building sewers from the main sewer to the street line, together with the installation of a new 650 igpm pump in the existing main sewage pumping station located on Huron Terrace south of Harbour Street., a new sewage pumping station to be located at Broadway Street and Saugeen Street equipped with two 500 igpm pumps and standby power facilities, a forcemain from the new pumping station to the existing sewer south of Harbour Street. on Huron Terrace, all in accordance with the preliminary material submitted by B.M. Ross & Assoc. Ltd., at a total estimated cost, including engineering and contingencies and assessment, of THREE HUNDRED AND SEVEN THOUSAND SOLLARS ($307,000.00).

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

1. "Approval" means this entire document and any schedules attached to it, and the application;

2. "BOD5"(also known as $TBOD_5$) means five day biochemical oxygen demand measured in an unfiltered sample and includes carbonaceous and nitrogenous oxygen demand;

3. "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;

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

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

6. "Emergency Situation" means a structural, mechanical or electrical failure that causes a temporary reduction in the capacity of the Sewage Pumping Station or an unforeseen flow condition that may result in:

    1. a danger to the health or safety of any person; or

    2. injury or damage to any property, or serious risk of injury or damage to any property;

7. "Equivalent Equipment" means a substituted equipment or like-for-like equipment that meets the required quality and performance standards of a named equipment;

8. "Event" means an action or occurrence at the Sewage Pumping Station that causes a Sewage Pumping Station Overflow. An Event ends when there is no recurrence of a Sewage Pumping Station Overflow in the 12-hour period following the last Sewage Pumping Station Overflow. Two Events are separated by at least 12 hours during which there has been no recurrence of a Sewage Pumping Station Overflow;

9. "Limited Operational Flexibility" (LOF) means any modifications that the Owner is permitted to make to the Works under this Approval;

10. "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;

11. "Notice of Modifications" means the form entitled "Notice of Modification to Sewage Works";

12. "Owner" means The Corporation of the Municipality of Kincardine, and includes its successors and assignees;

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

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

15. "Sewage Pumping Station Overflow" means any discharge from a Sewage Pumping Station to the environment that does not undergo any treatment or only receives partial treatment before it is discharged to the environment;

16. "Substantial Completion" has the same meaning as "substantial performance" in the *Construction Lien Act;*

17. "Previous Works" means the those portions of the sewage Work previously approved under an Approval;

18. "Water Supervisor" means the Water Supervisor of the appropriate local office of the Safe Drinking Water Branch of the Ministry, where the Works are geographically located;

19. "Works" means the sewage works described in the Owner's application, this Approval, and the 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 CONDITIONS

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 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 Approval, and the application for approval of the Works.

3. Where there is a conflict between a provision of any document in the schedule referred to in this Approval and the conditions of this Approval, the conditions in this Approval shall take precedence, and where there is a conflict between the documents in the schedule, the document bearing the most recent date shall prevail.

4. Where there is a conflict between the documents listed in Schedule 'A' 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 conditions of this Approval are severable. If any condition of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such condition to other circumstances and the remainder of this Approval shall not be affected thereby.

2. EXPIRY OF APPROVAL

1. This Approval will cease to apply to those parts of the Works which have not been constructed within five (5) years of the date of this Approval.

2. In the event that completion and commissioning of any portion of the Works is anticipated to be delayed beyond the specified expiry period, the Owner shall submit an application of extension to the expiry period, at least twelve (12) months prior to the end of the period. The application for extension shall include the reason(s) for the delay, whether there is any design change(s) and

a review of whether the standards applicable at the time of Approval of the Works are still applicable at the time of request for extension, to ensure the ongoing protection of the environment.

3. CHANGE OF OWNER

1. The Owner shall notify the Water Supervisor and the Director, in writing, of any of the following changes within thirty (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 Water Supervisor; or

   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 Water Supervisor.

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 Approval, and a copy of such notice shall be forwarded to the Water Supervisor and the Director.

3. The Owner shall ensure that all communications made pursuant to this condition refer to the number at the top of this Approval.

4. UPON THE SUBSTANTIAL COMPLETION OF SEWAGE PUMPING STATION

1. Upon the Substantial Completion of the Works, the Owner shall prepare a statement, certified by a Professional Engineer, that the works are constructed in accordance with this Approval, and upon request, shall make the written statement available for inspection by Ministry personnel.

2. Within six (6) months of the Substantial Completion of the Works, a set of as-built drawings showing the works "as constructed" shall be prepared. These drawings shall be kept up to date through revisions undertaken from time to time and a copy shall be retained at the Works for the operational life of the Works.

5. SEWAGE PUMPING STATION OVERFLOW

1. Any Sewage Pumping Station Overflow is prohibited, except:

   a. in an Emergency Situation; and

b. where the Sewage Pumping Station Overflow is a direct and unavoidable result of a planned maintenance procedure, the Owner having notified the Water Supervisor at least fifteen (15) days prior to the occurrence of the Sewage Pumping Station Overflow and the Water Supervisor having given written consent of the Sewage Pumping Station Overflow.

2. The Owner shall forthwith notify the Spills Action Centre (SAC) and the Medical Officer of Health of all Events as soon as possible. This notice shall include, at a minimum, the following information:

   a. the date, time, and duration of the Event;

   b. the location of the Sewage Pumping Station Overflow and the receiver;

   c. the measured or estimated volume of the Event (unless the Event is ongoing); and

   d. the reason for the Event.

3. The Owner shall submit a summary report of the Sewage Pumping Station Overflow Events to the Water Supervisor on a quarterly basis, no later than each of the following dates for each calendar year: February 14, May 15, August 14, and November 15. The summary reports shall be in a format specified by the Ministry, which shall include, at a minimum, the following information on any Events that occurred during the preceding quarter:

   a. the date of the Event(s);

   b. the measured or estimated volume of the Event(s);

   c. the duration of the Event(s);

   d. the location of the Sewage Pumping Station Overflow and the receiver;

   e. the reason for the Event(s); and

   f. the impact of the Event(s) on the receiver(s).

4. The Owner shall use best efforts to collect a representative sample consisting of a minimum of two (2) grab samples of the Sewage Pumping Station Overflow and have it analyzed for the parameters outlined in Condition 7 using the protocols specified in Condition 7, one at the beginning of the Event and the second approximately near the end of the Event, to best reflect the effluent quality of the Sewage Pumping Station Overflow.

5. The Owner shall maintain a logbook of all Sewage Pumping Station Overflows, which shall contain, at a minimum, the types of information set out in sub-conditions 2(a) to 2(d) in respect of each Sewage Pumping Station Overflow.

6. OPERATION AND MAINTENANCE (SEWAGE PUMPING STATION)

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 Approval 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 Approval and the EPA 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 prepare an operations manual within six (6) months of Substantial Completion of the Works, that includes, but is not necessarily limited to, the following information:

   a. operating and maintenance 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 to the Spills Action Centre (SAC), the Medical Officer of Health, and the Water Supervisor; and

   f. procedures for receiving, responding and recording public complaints, including recording any follow-up 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 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.

7. 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 Approval are to be taken at a time and in a location characteristic of the quality and quantity of the Sewage Pumping Station Overflow stream over the time period being monitored.

2. 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, as outlined in Schedule C.

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:

   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; and

   c. the publication "Standard Methods for the Examination of Water and Wastewater" (21st edition), as amended from time to time by more recently published editions.

8. REPORTING

1. One (1) week prior to the start-up of the operation of the Works, the Owner shall notify the Water Supervisor (in writing) of the pending start-up date.

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

3. The Owner shall prepare and submit a performance report to the Water Supervisor 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, 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 the calibration and maintenance carried out on all monitoring equipment;

e. a summary of any complaints received during the reporting period and any steps taken to address the complaints;

f. a summary of all Sewage Pumping Station Overflows, spill or abnormal discharge events;

g. a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule B, Section 1, with a status report on the implementation of each modification;

h. a report summarizing all modifications completed as a result of Schedule B, Section 3; and

i. any other information the Water Supervisor requires from time to time.

4. The Owner shall, within thirty (30) calendar days of issuance of this Approval, submit a Municipal Wastewater System Profile Information Form, and shall resubmit the updated document every time a notification is provided to the Water Supervisor in compliance with requirements of change of ownership under this Approval.

9. LIMITED OPERATIONAL FLEXIBILITY

1. The Owner may make modifications to the Works in accordance with the Terms and Conditions of this Approval and subject to the Ministry's "Limited Operational Flexibility Criteria for Modifications to Sewage Works", included under Schedule B of this Approval, as amended.

2. Sewage works proposed under Limited Operational Flexibility shall adhere to the design guidelines contained within the Ministry's publication "Design Guidelines for Sewage Works 2008", as amended.

3. The Owner shall ensure at all times, that the Works, related equipment and appurtenances which are installed or used to achieve compliance are operated in accordance with all Terms and Conditions of this Approval.

4. For greater certainty, the following are not permitted as part of Limited Operational Flexibility:

   a. modifications to the Works that result in an increase of the approved Rated Capacity of the Works;

   b. modifications to the Works that may adversely affect the approved effluent quality criteria or the location of the discharge/outfall;

   c. modifications to the treatment process technology of the Works, or modifications that involve construction of new reactors (tanks) or alter the treatment train process design;

d. modifications to the Works approved under s.9 of the EPA; and

e. modifications to the Works pursuant to an order issued by the Ministry.

5. Implementation of Limited Operational Flexibility is not intended to be used for piecemeal measures that result in major alterations or expansions.

6. If the implementation of Limited Operational Flexibility requires changes to be made to the Emergency Response, Spill Reporting and Contingency Plan, the Owner shall, as deemed necessary in consultation with the Water Supervisor, provide a revised copy of this plan to the local fire services authority prior to implementing Limited Operational Flexibility.

7. For greater certainty, any modification made under the Limited Operational Flexibility may only be carried out after other legal obligations have been complied with, including those arising from the *Environmental Protection Act, Niagara Escarpment Planning and Development Act, Oak Ridges Moraine Conservation Act, Lake Simcoe Protection Act* and *Greenbelt Act.*

8. Prior to implementing Limited Operational Flexibility, the Owner shall complete a Notice of Modifications describing any proposed modifications to the Works and submit it to the Water Supervisor.

Schedule A

1. Application for Environmental Compliance Approval, dated March 23, 2017 and revised on August 8, 2017, submitted by The Corporation of the Municipality of Kincardine

2. Connaught Park Sewage Pumping Station Design Brief, dated March 23, 2017, and Supplemental Design Brief for Storm Sewers on Broadway Street and Shevchenko Blvd., dated August 21, 2017, prepared by B. M. Ross and Associates Limited.

3. Engineering Drawings and Pipe Data Form prepared by B. M. Ross and Associates Limited.

4. Additional supporting information and documentation provided by B. M. Ross and Associates Limited.

SCHEDULE 'B'

Limited Operational Flexibility Criteria for Modifications to Municipal Sewage Works

1. The modifications to sewage works approved under an Environmental Compliance Approval (*Approval*) that are permitted under the *Limited Operational Flexibility* (LOF), are outlined below and are subject to the LOF conditions in the *Approval* , and require the submission of the *Notice of Modifications* . If there is a conflict between the sewage works listed below and the Terms and Conditions in the *Approval* , the Terms and Conditions in the *Approval* shall take precedence.

    1. Sewage Pumping Stations

        a. Alter pumping capacity by adding or replacing equipment where new equipment is located within an existing sewage pumping station site, provided that the modifications do not result in an increase of the pumping station's Rated Capacity and the existing flow process and/or treatment train are maintained, as applicable.

        b. Forcemain relining and replacement with similar pipe size where the nominal diameter is not greater than 1,200 millimetres.

    2. Pilot Systems

        1. Installation of pilot systems for new or existing technologies provided that:

            a. any effluent from the pilot system is discharged to the inlet of the sewage pumping station or hauled off-site for proper disposal;

            b. any effluent from the pilot system discharged to the inlet of the sewage pumping station or sewage conveyance system does not significantly alter the composition/concentration of the influent sewage to be treated in the downstream process; and that it does not add any inhibiting substances to the downstream process; and

            c. the pilot system's duration does not exceed a maximum of two (2) years; and a report with results is submitted to the *Director* and *Water Supervisor* three (3) months after the completion of the pilot project.

2. Sewage works that are exempt from section 53 of the *OWRA* by O. Reg. 525/98 continue to be exempt and are not required to follow the notification process under this *Limited Operational Flexibility* .

3. Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with *Equivalent Equipment* , are considered pre-approved.

4. The modifications noted in section (3) above are not required to follow the notification protocols under *Limited Operational Flexibility* , provided that the number of pieces and description of the equipment as described in the *Approval* does not change.

Ontario
Ministry of
the Environment

Notice of Modification to Sewage Works

RETAIN COPY OF COMPLETED FORM AS PART OF THE ECA AND SEND A COPY TO THE WATER SUPERVISOR (FOR MUNICIPAL) OR DISTRICT MANAGER (FOR NON-MUNICIPAL SYSTEMS)

Part 1 – Environmental Compliance Approval (ECA) with Limited Operational Flexibility
(Insert the ECA's owner, number, issuance date and notice number, which should start with "01" and consecutive numbers thereafter)

ECA Number	Issuance Date (mm/dd/yy)	Notice number (if applicable)

ECA Owner	Municipality

Part 2: Description of the modifications as part of the Limited Operational Flexibility
(Attach a detailed description of the sewage works)

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

Part 3 – Declaration by Professional Engineer

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

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

Name (Print)	PEO License Number

Signature	Date (mm/dd/yy)

Name of Employer

Part 4 – Declaration by Owner

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

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

Name of Owner Representative (Print)	Owner representative's title (Print)

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

Schedule C

Table 1 - Monitoring during a Sewage Pumping Station Overflow Event
(Samples to be collected from the Sewage Pumping Station Overflow stream)

Sample Type	Grab
Frequency	One sample at the beginning of the Event and the second sample approximately near the end of the Event
Parameters	BOD5, Total Suspended Solids, Total Phosphorus, Total Ammonia Nitrogen, E. coli(Note 1 see below), and pH

Note 1: Sampling and analysis shall be performed only for Events that occur between April 1 and October 31 inclusive

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

1. Condition 1 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. This condition is also included to emphasize the precedence of conditions in the Approval and the practice that the Approval is based on the most current document, if several conflicting documents are submitted for review.

2. Condition 2 is included to ensure that, when the Works are constructed, the Works will meet the standards that apply 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 approved 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.

4. Condition 4 is included to 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.

5. Condition 5 is included to indicate that Sewage Pumping Station Overflows are prohibited, except in circumstances where the failure to overflow could result in greater injury to the public interest than the Sewage Pumping Station Overflow itself. The notification and documentation requirements allow the Ministry to take action in an informed manner and ensure that the Owner is aware of the extent and frequency of Events.

6. Condition 6 is included to ensure that the Works are 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. The Condition also ensures that 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 is 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, proper plant operation, and identification and planning for contingencies during abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the operation of the Works.

7. Condition 7 is included to provide additional details on the monitoring of Sewage Pumping Station Overflows.

8. Condition 8 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 Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.

9. Condition 9 is included to ensure that the Works are operated in accordance with the application and supporting documentation submitted by the Owner, and not in a manner which the Director has not been asked to consider. These conditions are also included to ensure that a Professional Engineer has reviewed the proposed modifications and attests that the modifications are in line with that of Limited Operational Flexibility, and provide assurance that the proposed modifications comply with the Ministry's requirements stipulated in the terms and conditions of this Approval, Ministry policies, guidelines, and industry engineering standards and best management practices.

Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s). 2-0000-00-700262 issued on December 4, 1970.

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.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

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 and Climate Change
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 14th day of November, 2017

C. Labarge

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

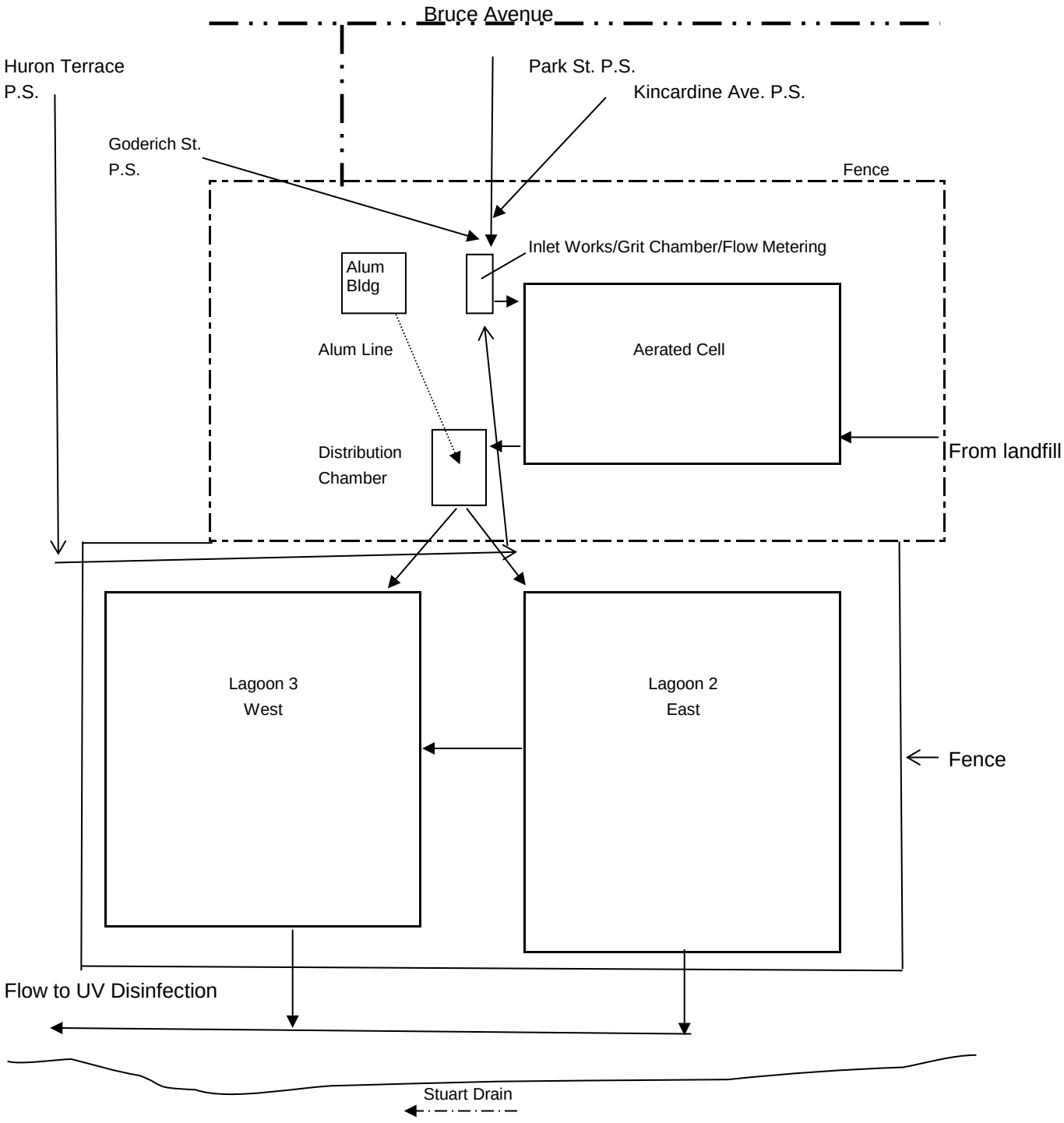
LW/
c: DWMD Supervisor, MOECC Owen Sound
Ryan Steckly, P.Eng., B.M. Ross and Associates Limited

Agenda	Council		File No. E01
_____	Consent		Kincardine Sanitary Sewers
	Direction	Copied	Other:
CAO	☐	☐	
Clerk	☐	☐	
Treasury	☐	☐	
Public Works	☑	☐	
Building/Planning	☐	☐	
Recreation	☐	☐	
Emergency Services	☐	☐	Scanner:
Police Services	☐	☐	
Tourism/Comm.Serv.	☐	☐	RECEIVED NOV 2 1 2017
Other:_____	☐	☐	

APPENDIX B

Schematic of the Wastewater Treatment Facility

SCHEMATIC DIAGRAM OF THE WASTEWATER TREATMENT FACILITY



APPENDIX C

Average Monthly Analytical Results Spreadsheet

AVERAGE MONTHLY ANALYTICAL RESULTS

Kincardine Wastewater Treatment Plant

2020	INFLUENT FLOWS			RAW INFLUENT							FINAL EFFLUENT												
				Monthly Average							Monthly Average												
Month	Total Flow m3	Max Flow m3/day	Avg. Flows m3/Day	BOD5 mg/L	TSS mg/L	TKN mg/L	Total P mg/L	pH	Alkalinity CaCO3 mg/L	Conduct-ivity uS/cm	CBOD5 mg/L	TSS mg/L	TKN mg/L	Total P mg/L	Alkalinity CaCO3 mg/L	Nitrite NO2 mg/L	Nitrate NO3 mg/L	Ammonia+ Ammonium NH3+NH4 mg/L	E-Coli /100 mL (Geomean)	pH	Temper-ature C	Conduct-ivity uS/cm	Unionized Ammonia ug/L
January	135630	8272	4375.2	120	101	29.6	2.42	8.00	293	945	13.5	14.0	19.9	0.16	209	0.07	0.63	17.2	2	7.75	3.3	940	0.106
February	102557	4378	3536.4	113	98	29.4	2.85	7.65	292	1005	11.5	12.0	20.0	0.14	227	0.08	0.44	17.9	2	7.75	6.8	925	0.196
March	139728	9250	4507.4	160	219	29.8	3.12	7.95	268	930	14.0	25.5	19.8	0.29	216	0.06	0.56	18.0	5	7.60	8.7	945	0.204
April	107223	4533	3574.1	88	127	24.0	1.93	8.10	292	--	14.0	19.0	18.0	0.21	226	0.09	0.84	15.4	2	8.15	9.8	945	0.586
May	103536	5398	3339.9	83	99	37.2	3.29	7.92	315	--	7.5	24.5	21.0	0.26	216	0.18	0.64	18.6	2	7.62	14.5	955	0.213
June	91514	4388	3050.5	133	297	33.8	3.23	7.40	285	--	9.0	16.0	20.3	0.18	193	0.57	0.43	18.6	2	8.14	19.4	489	1.895
July	92775	3699	2992.8	339	393	53.8	6.57	7.56	321	--	18.0	29.0	19.5	0.15	179	0.18	0.21	17.4	2	7.62	25.1	626	0.412
August	126184	9034	4070.5	126	168	16.6	1.68	7.99	248	--	20.0	34.5	11.3	0.12	124	0.26	0.48	11.6	10	8.27	23.4	745	0.973
September	115484	6780	3849.5	126	190	36.8	2.79	7.12	282	--	18.5	37.0	14.4	0.19	134	0.26	0.59	8.8	5	8.42	18.1	720	0.766
October	112642	5405	3633.6	72	75	31.9	2.28	8.24	281	--	24.5	34.5	15.7	0.25	160	0.17	0.75	12.7	5	8.44	14.3	750	0.893
November	108079	5177	3602.6	61	80	14.9	1.12	8.46	256	--	20.0	25.5	17.5	0.23	178	0.07	0.55	15.5	5	8.66	7.3	825	1.009
December	137336	7061	4430.2	129	120	26.1	2.42	7.57	322	--	11.7	18.7	20.6	0.20	206	0.05	0.48	18.0	3	7.65	7.3	--	0.124
Annual	1372688	9250	3746.9	129	164	30.3	2.81	7.83	288	960	15.2	24.2	18.2	0.20	189	0.17	0.55	15.8	3	8.00	13.2	806	1

refers to <

APPENDIX D

Final Effluent Semi-Annual Results

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

28-April-2020

Mun of Kincardine (WWTP)
Attn : Donna Hardman

155 Durham St.
Kincardine, ON
N2Z 1A4, Canada

Phone: 519-396-4660
Fax:

Date Rec. : 22 April 2020
LR Report: **CA12980-APR20**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Final Effluent
Sample Date & Time					21-Apr-20 11:30
Temperature Upon Receipt [°C]	---	---	---	---	9.0
Field pH [no unit]	---	---	---	---	7.7
Field Temperature [celcius]	---	---	---	---	9.8
Chloride [mg/L]	24-Apr-20	22:01	27-Apr-20	13:36	110
Chemical Oxygen Demand [mg/L]	23-Apr-20	07:48	23-Apr-20	19:37	59
Dissolved Organic Carbon [mg/L]	22-Apr-20	21:09	23-Apr-20	20:38	8
4AAP-Phenolics [mg/L]	24-Apr-20	13:00	24-Apr-20	18:41	0.004
Hardness [mg/L as CaCO3]	23-Apr-20	13:37	24-Apr-20	10:55	251
Silver (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	< 0.00005
Aluminum (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	1.12
Arsenic (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.0003
Barium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.0116
Beryllium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	< 0.000007
Boron (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.093
Bismuth (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.000070
Calcium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	72.9
Cadmium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.000007
Cobalt (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.000205
Chromium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00032
Copper (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.0027
Iron (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.127
Potassium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	10.0
Lithium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.0032
Magnesium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	16.6
Manganese (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.0341
Molybdenum (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00088
Sodium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	73.3
Nickel (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.0013
Phosphorus (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.450

OnLine LIMS

0002103424

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA12980-APR20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Final Effluent
Lead (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00002
Antimony (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	< 0.0009
Selenium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00029
Silicon (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	1.99
Tin (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00026
Strontium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.622
Titanium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00105
Thallium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	< 0.000005
Uranium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.000416
Vanadium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00037
Tungsten (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.00002
Yttrium (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.000028
Zinc (total) [mg/L]	23-Apr-20	13:37	24-Apr-20	10:55	0.009
Benzene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Bromodichloromethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Bromoform [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Bromomethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Carbon tetrachloride [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.2
Chlorobenzene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Chloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 5
Chloroform [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Chloromethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 5
Dibromochloromethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,2-Dichlorobenzene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,3-Dichlorobenzene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,4-Dichlorobenzene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,1-Dichloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,2-Dichloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,1-Dichloroethylene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,2-Dichloropropane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
trans-1,2-Dichloroethene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
cis-1,2-Dichloroethene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
cis-1,3-Dichloropropene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
trans-1,3-Dichloropropene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Ethylbenzene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Ethylenedibromide [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.2
Dichloromethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Styrene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,1,2,2-Tetrachloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Tetrachloroethene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Toluene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Trichloroethylene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Vinyl Chloride [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.2
Trichlorofluoromethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 5

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA12980-APR20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Final Effluent
1,1,1-Trichloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
1,1,2-Trichloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
Xylene (total) [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
o-xylene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
m/p-xylene [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5
2-Chloroethylvinylether [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 5
1,1,1,2-Tetrachloroethane [ug/L]	26-Apr-20	05:41	27-Apr-20	18:38	< 0.5

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002103424

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

02-November-2020

Mun of Kincardine (WWTP)
Attn : Donna Hardman

155 Durham St.
Kincardine, ON
N2Z 1A4, Canada

Phone: 519-396-4660
Fax:

Date Rec. : 21 October 2020
LR Report: **CA13647-OCT20**

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Final Effluent
Sample Date & Time					20-Oct-20 08:40
Temperature Upon Receipt [°C]	---	---	---	---	7.0
Chloride [mg/L]	30-Oct-20	16:24	02-Nov-20	10:09	83
Chemical Oxygen Demand [mg/L]	23-Oct-20	08:25	23-Oct-20	14:36	84
Dissolved Organic Carbon [mg/L]	22-Oct-20	12:03	23-Oct-20	07:54	9
4AAP-Phenolics [mg/L]	22-Oct-20	06:58	23-Oct-20	09:36	0.003
Hardness [mg/L as CaCO3]	24-Oct-20	16:50	26-Oct-20	17:08	188
Silver (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	< 0.00005
Aluminum (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.690
Arsenic (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.0006
Barium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00921
Beryllium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	< 0.000007
Boron (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.130
Bismuth (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.000031
Calcium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	53.6
Cadmium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.000004
Cobalt (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.000175
Chromium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00017
Copper (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.0014
Iron (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.087
Potassium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	11.4
Lithium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.0025
Magnesium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	13.2
Manganese (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.0263
Molybdenum (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00101
Sodium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	49.9
Nickel (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.0019
Phosphorus (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.658
Lead (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00009
Antimony (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	< 0.0009

OnLine LIMS

0002307585

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA13647-OCT20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Final Effluent
Selenium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00028
Silicon (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	1.53
Tin (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00009
Strontium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.659
Titanium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00073
Thallium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	< 0.000005
Uranium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.000323
Vanadium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.00045
Tungsten (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	< 0.00002
Yttrium (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.000032
Zinc (total) [mg/L]	24-Oct-20	16:50	26-Oct-20	17:08	0.007
Benzene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Bromodichloromethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Bromoform [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Bromomethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Carbon tetrachloride [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.2
Chlorobenzene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Chloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 5
Chloroform [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Chloromethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 5
Dibromochloromethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,2-Dichlorobenzene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,3-Dichlorobenzene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,4-Dichlorobenzene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,1-Dichloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,2-Dichloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,1-Dichloroethylene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,2-Dichloropropane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
trans-1,2-Dichloroethene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
cis-1,2-Dichloroethene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
cis-1,3-Dichloropropene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
trans-1,3-Dichloropropene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Ethylbenzene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Ethylenedibromide [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.2
Dichloromethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Styrene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,1,2,2-Tetrachloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Tetrachloroethene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Toluene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Trichloroethylene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
Vinyl Chloride [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.2
Trichlorofluoromethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 5
1,1,1-Trichloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
1,1,2-Trichloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA13647-OCT20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Final Effluent
Xylene (total) [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
o-xylene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
m/p-xylene [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5
2-Chloroethylvinylether [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 5
1,1,1,2-Tetrachloroethane [ug/L]	21-Oct-20	18:11	26-Oct-20	12:05	< 0.5

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

00023075B5

APPENDIX E

Leachate Semi-Annual Results

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

10-February-2020

Mun of Kincardine (WWTP)
Attn : Donna Hardman

155 Durham St.
Kincardine, ON
N2Z 1A4, Canada

Phone: 519-396-4660
Fax:pdf

Date Rec. : 15 January 2020
LR Report: **CA12303-JAN20**

Copy: #2

CERTIFICATE OF ANALYSIS

Final Report - Revised

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Lechate
Sample Date & Time					14-Jan-20 08:30
Temperature Upon Receipt [°C]	---	---	---	---	6.0
Field pH [no unit]	---	---	---	---	7.30
Field Temperature [celcius]	---	---	---	---	11.7
Field Conductivity [uS/cm]	---	---	---	---	1930
Biochemical Oxygen Demand (BOD5) [mg/L]	15-Jan-20	17:12	20-Jan-20	14:24	15
Alkalinity [mg/L as CaCO3]	16-Jan-20	08:28	17-Jan-20	14:57	839
Total Suspended Solids [mg/L]	16-Jan-20	11:25	17-Jan-20	14:56	23
Chemical Oxygen Demand [mg/L]	17-Jan-20	11:05	20-Jan-20	14:24	49
Dissolved Organic Carbon [mg/L]	16-Jan-20	13:00	17-Jan-20	09:38	15
Chloride [mg/L]	22-Jan-20	09:41	22-Jan-20	15:26	62
Nitrite (as N) [mg/L]	16-Jan-20	21:20	21-Jan-20	16:00	0.06
Nitrate (as N) [mg/L]	16-Jan-20	21:20	21-Jan-20	16:00	0.70
Nitrate + Nitrite (as N) [mg/L]	16-Jan-20	21:20	21-Jan-20	16:00	0.76
4AAP-Phenolics [mg/L]	16-Jan-20	10:00	17-Jan-20	09:25	0.005
Total Kjeldahl Nitrogen [as N mg/L]	16-Jan-20	07:13	21-Jan-20	10:55	26.4
Ammonia+Ammonium (N) [as N mg/L]	16-Jan-20	17:00	17-Jan-20	15:17	24.6
Mercury (total) [mg/L]	16-Jan-20	12:09	16-Jan-20	16:11	< 0.00001
Arsenic (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.0016
Barium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.113
Boron (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.365
Calcium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	225
Cadmium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.000016
Chromium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.00185
Copper (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.0019
Iron (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	5.21
Potassium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	31.2
Magnesium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	72.1
Manganese (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.865
Sodium (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	61.9
Phosphorus (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.237
Lead (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.00049

OnLine LIMS

0002034917

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA12303-JAN20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Lechate
Antimony (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	< 0.0009
Selenium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.00022
Silicon (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	10.9
Tin (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.00020
Strontium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	1.30
Titanium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.00508
Thallium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	< 0.000005
Uranium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.00158
Vanadium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.00137
Tungsten (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.00012
Yttrium (total) [mg/L]	16-Jan-20	12:04	10-Feb-20	16:09	0.000188
Zinc (total) [mg/L]	16-Jan-20	12:04	21-Jan-20	16:42	0.054
Benzene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Bromodichloromethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Bromoform [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Bromomethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Carbon tetrachloride [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.2
Chlorobenzene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Chloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 5
Chloroform [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Chloromethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 5
Dibromochloromethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,2-Dichlorobenzene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,3-Dichlorobenzene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,4-Dichlorobenzene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,1-Dichloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,2-Dichloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,1-Dichloroethylene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,2-Dichloropropane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
trans-1,2-Dichloroethene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
cis-1,2-Dichloroethene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
cis-1,3-Dichloropropene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
trans-1,3-Dichloropropene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Ethylbenzene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Ethylenedibromide [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.2
Dichloromethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Styrene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,1,2,2-Tetrachloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Tetrachloroethene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Toluene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Trichloroethylene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Vinyl Chloride [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.2
Trichlorofluoromethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 5
1,1,1-Trichloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
1,1,2-Trichloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5
Xylene (total) [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	0.8
o-xylene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA12303-JAN20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Lechate
m/p-xylene [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	0.6
2-Chloroethylvinylether [ug/L]	---	---	---	---	NDQU
1,1,1,2-Tetrachloroethane [ug/L]	21-Jan-20	11:34	22-Jan-20	13:30	< 0.5

NDQC - No Data: Quality Controls Unacceptable - Client was notified.

*Report revised to include additional metals as required.

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002034917

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Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

04-August-2020

Mun of Kincardine (WWTP)
Attn : Donna Hardman

155 Durham St.
Kincardine, ON
N2Z 1A4, Canada

Phone: 519-396-4660
Fax:

Date Rec. : 22 July 2020
LR Report: **CA13475-JUL20**

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CERTIFICATE OF ANALYSIS

Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Leachate
Sample Date & Time					20-Jul-20 09:45
Temperature Upon Receipt [°C]	---	---	---	---	12.0
Field pH [no unit]	---	---	---	---	7.04
Field Temperature [celcius]	---	---	---	---	22.1
Field Conductivity [uS/cm]	---	---	---	---	2.4
Biochemical Oxygen Demand (BOD5) [mg/L]	23-Jul-20	17:50	28-Jul-20	10:57	13
Alkalinity [mg/L as CaCO3]	23-Jul-20	08:20	23-Jul-20	14:18	1120
Total Suspended Solids [mg/L]	23-Jul-20	10:46	24-Jul-20	08:07	72
Chemical Oxygen Demand [mg/L]	27-Jul-20	10:02	28-Jul-20	10:57	102
Dissolved Organic Carbon [mg/L]	23-Jul-20	21:24	27-Jul-20	03:45	32
Chloride [mg/L]	23-Jul-20	20:14	27-Jul-20	12:14	160
Nitrite (as N) [mg/L]	22-Jul-20	19:44	24-Jul-20	13:04	< 0.3
Nitrate (as N) [mg/L]	22-Jul-20	19:44	23-Jul-20	15:47	0.09
Nitrate + Nitrite (as N) [mg/L]	22-Jul-20	19:44	24-Jul-20	13:04	<0.3
4AAP-Phenolics [mg/L]	23-Jul-20	07:00	23-Jul-20	13:26	< 0.002
Total Kjeldahl Nitrogen [as N mg/L]	24-Jul-20	08:16	28-Jul-20	15:54	56.6
Ammonia+Ammonium (N) [as N mg/L]	22-Jul-20	19:24	23-Jul-20	15:02	50.8
Hardness [mg/L as CaCO3]	24-Jul-20	12:40	24-Jul-20	14:03	1010
Silver (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.08
Aluminum (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.25
Arsenic (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.01
Barium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.165
Beryllium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.0009
Boron (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.625
Bismuth (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.05
Calcium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	257
Cadmium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.002
Cobalt (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.005
Chromium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.002
Copper (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.008

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

Works #: 110000864

LR Report : **CA13475-JUL20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Leachate
Iron (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	20.8
Potassium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	43.4
Lithium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.1
Magnesium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	88.2
Manganese (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.818
Molybdenum (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.01
Sodium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	159
Nickel (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.008
Phosphorus (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.218
Lead (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.007
Antimony (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.07
Selenium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.02
Silicon (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	10.4
Tin (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.02
Strontium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	1.70
Titanium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.005
Thallium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.09
Uranium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.1
Vanadium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.003
Tungsten (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.01
Yttrium (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	< 0.0005
Zinc (total) [mg/L]	24-Jul-20	12:40	24-Jul-20	14:03	0.100
Benzene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Bromodichloromethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Bromoform [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Bromomethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Carbon tetrachloride [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.2
Chlorobenzene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Chloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 5
Chloroform [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Chloromethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 5
Dibromochloromethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,2-Dichlorobenzene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,3-Dichlorobenzene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,4-Dichlorobenzene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,1-Dichloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,2-Dichloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,1-Dichloroethylene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,2-Dichloropropane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
trans-1,2-Dichloroethene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
cis-1,2-Dichloroethene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
cis-1,3-Dichloropropene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
trans-1,3-Dichloropropene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Ethylbenzene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5

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Works #: 110000864

LR Report : **CA13475-JUL20**

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Leachate
Ethylenedibromide [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.2
Dichloromethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Styrene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,1,2,2-Tetrachloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Tetrachloroethene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Toluene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Trichloroethylene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Vinyl Chloride [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.2
Trichlorofluoromethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 5
1,1,1-Trichloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
1,1,2-Trichloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
Xylene (total) [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
o-xylene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
m/p-xylene [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5
2-Chloroethylvinylether [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 5
1,1,1,2-Tetrachloroethane [ug/L]	25-Jul-20	07:28	27-Jul-20	15:57	< 0.5

Carrie Greenlaw
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002205282

APPENDIX F

Flow Meter Calibration Records

151 Superior Blvd, Unit #13
Mississauga, ON, L5T 2L1.
www.Indus-Control.com

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

Customer Name:	Municipality of Kincardine	Site/Plant Address:	520, Bruce Avenue
Plant Name:	Kincardine WWTP		Kincardine, ON, N2Z 1A4

Device Information		Service Information	
Make:	Siemens	Date:	June 12, 2020
Model:	Miltronics OCM III	Report No:	CO1128-09
Tag:	WWTP Influent	Job No:	CO1128-2006

Flow Details	
Unit:	L/S
Flow Range:	0-400
Current Output:	4-20 mA
4 mA Set Point	0
20 mA Set Point	368.0669

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	34104 X 1000	34104 X 1000
FLOW (L/S)	30.12	30.68

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

Programming Parameter of Instrument

Parameter	Discription	Value	Parameter	Discription	Value
F0	Access Code	0	P7	Height of Max. Head	50.40
P1	Dimension Unit (cm)	0	P32	Totalizer Multiplier	1
P3	Exponential Device	0	P42	Head by OCM III	OCM
P4	Cal. Method -Ratiometric	1	P45	Low Flow Cut-off	0
P5	Flow Unit	0	P46	Range at Zero Head	111.199
P6	Max Flow rate	368.0669	P47	Blanking Distance	30.4999

Test Point Report

Reference Distance (cm)	Measured Distance (cm)/ UUT Display	Calculated Flow (L/S)	UUT Flow Display (L/S)	Calculated (mA)	Measured (mA)	Deviaiton Full Scale (%)
27.20	27.10	138.90	141.62	10.54	10.45	0.03
20.25	20.20	84.12	86.96	7.78	7.75	0.03

Calculations

Flow Calculations

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

Exp = 1.58 , Hence,

Q = 368.0669 (27.20/50.40)1.58

Q = 138.90

Instrument Test Information and Results

Input (%)	Calculated Flow(L/S)	Calculated Input (mA)	Flow on UUT (L/S)	UUT Measured Output (mA)	Deviation (mA)
0	0.00	4.00	N/A	4.01	0.01
25	92.02	8.00	N/A	7.96	-0.04
50	184.03	12.00	N/A	11.90	-0.10
75	276.05	16.00	N/A	15.96	-0.04
100	368.07	20.00	N/A	19.99	-0.01

Information of Tools used for Verification of the Instruments

Device Description:	Manufacturer	Model	
Electrical Multimeter	Fluke	179	

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Program parameters verified Single/Two Point Verification Done

Service Technician :	Dhaval Patel	Stamp/Signature	
Printed Date:	June 17, 2020		

End of Report

151 Superior Blvd, Unit #13
Mississauga, ON, L5T 2L1.
www.Indus-Control.com

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

Customer Name:	Municipality of Kincardine	Site/Plant Address:	169 Mahood - Johnson Dr
Plant Name:	Kincardine WWTP		Kincardine, ON, N2Z 1A4

Device Information		Service Information	
Make:	Siemens	Date:	June 12, 2020
Model:	Miltronics OCM III	Report No:	CO1128-10
Tag:	WWTP Effluent	Job No:	CO1128-2006

Flow Details	
Unit:	L/S
Flow Range:	0-400.5
Current Output:	4-20 mA
4 mA Set Point	0
20 mA Set Point	400.5

Inst. Reading	AS FOUND	AS LEFT
TOTALIZER (m3)	27912 x 1000	27912 x 1000
FLOW (L/S)	35.24	32.25

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

Programming Parameter of Instrument

Parameter	Discription	Value	Parameter	Discription	Value
F0	Access Code	0	P7	Height of Max. Head	61.00
P1	Dimension Unit (cm)	0	P32	Totalizer Multiplier	1
P3	Exponential Device	0	P42	Head by OCM III	OCM
P4	Cal. Method -Ratiometric	1	P45	Low Flow Cut-off	0
P5	Flow Unit	0	P46	Range at Zero Head	143.776
P6	Max Flow rate	400.5	P47	Blanking Distance	50

Test Point Report

Reference Distance (cm)	Measured Distance (cm)/ UUT Display	Calculated Flow (L/S)	UUT Flow Display (L/S)	Calculated (mA)	Measured (mA)	Deviaiton Full Scale (%)
25.60	25.50	45.69	43.32	5.80	5.75	-0.02
26.40	26.20	48.42	47.50	5.86	5.81	-0.01

Calculations

Flow Calculations

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

Exp = 2.5 , Hence,

$Q = 400.5 (25.60/61)^{2.5}$

Q = 45.69

Instrument Test Information and Results

Input (%)	Calculated Flow(L/S)	Calculated Input (mA)	Flow on UUT (L/S)	UUT Measured Output (mA)	Deviation (mA)
0	0.00	4.00	0.00	4.01	0.01
25	100.00	8.00	105.26	7.99	-0.01
50	200.00	12.00	209.80	11.99	-0.01
75	300.00	16.00	308.70	15.99	-0.01
100	400.00	20.00	412.66	19.99	-0.01

Information of Tools used for Verification of the Instruments

Device Description:	Manufacturer	Model	
Electrical Multimeter	Fluke	179	

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Program parameters verified Single/Two Point Verification Done

Service Technician :	Dhaval Patel	Stamp/Signature	
Printed Date:	June 17, 2020		

End of Report

151 Superior Blvd, Unit #13
Mississauga, ON, L5T 2L1.
www.Indus-Control.com

VERIFICATION REPORT- LEVEL MEASUREMENT
MULTIRANGER PLUS

Customer Name:	Municipality of Kincardine	Site/Plant Address:	139 Valentine Avenue
Plant Name:	Kincardine PS		Kincardine, ON, N2Z 2Y6

Device Information		Service Information	
Make:	Milltronics	Date:	June 12, 2020
Model:	Multiranger Plus	Report No:	CO1128-15
Order Code:	N/A	Job No:	CO1128-2006
Serial No.:	071890074-14		
Tag:	N/A		
Job Location:	Groundwater Lift		

Inst. Reading	AS FOUND	AS LEFT
Level (m)	1.69	1.67

Flow Details	
Unit:	Meter
Level Range:	0-1.8
Current Output:	4-20 mA
4 mA Set Point	0
20 mA Set Point	1.8

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

Programming Parameter of Instrument

Parameter	Discription	Value	Parameter	Discription	Value
F0	Access Code	0.00000	P40	Parshall Flume	N/A
P1	Dimension Unit (m)	1.000	P41	flow rate (per day)	4.00
P2	Mode	4	P42	OCM exponent	0.00
P3	Empty Distance	2.20	P43	Flume dimension	1
P4	Span	1.80	P45	Maximum head	1.80
P5	near blanking	0.4	P46	Maximum flow rate	1000.00

Test Point Report

Reference Distance (m)	Measured Distance (m)	UUT DISPLAY	Calculated (mA)	Measured (mA)	% Deviation
1.67	N/A	1.67	18.84	18.80	0.04
1.64	N/A	1.64	18.57	18.50	0.07

Instrument Test Information and Results

Input (%)	Calculated Distance (m)	Calculated Input (mA)	Level on UUT Display	UUT Measured Output (mA)	Deviation (mA)
0	0.00	4.00	N/A	4.00	0.00
25	0.45	8.00	N/A	7.98	-0.02
50	0.90	12.00	N/A	11.98	-0.02
75	1.35	16.00	N/A	15.96	-0.04
100	1.80	20.00	N/A	19.97	-0.03

Information of Tools used for Verification of the Instruments

Device Description:	Manufacturer	Model
Electrical Multimeter	Fluke	179

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Program parameters verified Single/Two Point Verification Done / Perform test of Relay (ON=1.0 m / OFF = 0.598 m) . Relay is working fine.

Service Technician :	Dhaval Patel	Stamp/Signature	
Printed Date:	June 17, 2020		

End of Report

151 Superior Blvd, Unit #13
Mississauga, ON, L5T 2L1.
www.Indus-Control.com

VERIFICATION REPORT- LEVEL MEASUREMENT
MULTIRANGER PLUS

Customer Name:	Municipality of Kincardine	Site/Plant Address:	139 Valentine Avenue
Plant Name:	Kincardine PS		Kincardine, ON, N2Z 2Y6

Device Information		Service Information	
Make:	Milltronics	Date:	June 12, 2020
Model:	Multiranger Plus	Report No:	CO1128-16
Order Code:	N/A	Job No:	CO1128-2006
Serial No.:	06-19-97 169MW		
Tag:	N/A		
Job Location:	Leachate Lift		

Inst. Reading	AS FOUND	AS LEFT
Level (m)	0.889	0.901

Flow Details	
Unit:	Meter
Level Range:	0-3.9
Current Output:	4-20 mA
4 mA Set Point	0
20 mA Set Point	3.9

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

Programming Parameter of Instrument

Parameter	Discription	Value	Parameter	Discription	Value
F0	Access Code	0.00000	P40	Parshall Flume	N/A
P1	Dimension Unit (m)	1.000	P41	flow rate (per day)	4.00
P2	Mode	4	P42	OCM exponent	1.55
P3	Empty Distance	4.20	P43	Flume dimension	1
P4	Span	3.90	P45	Maximum head	3.99
P5	near blanking	0.3	P46	Maximum flow rate	1000.00

Test Point Report

Reference Distance (m)	Measured Distance (m)	UUT DISPLAY	Calculated (mA)	Measured (mA)	% Deviation
0.88	N/A	0.88	7.61	7.55	0.06
0.91	N/A	0.91	7.73	7.65	0.08

Instrument Test Information and Results

Input (%)	Calculated Distance (m)	Calculated Input (mA)	Level on UUT Display	UUT Measured Output (mA)	Deviation (mA)
0	0.00	4.00	N/A	4.00	0.00
25	0.98	8.00	N/A	7.99	-0.01
50	1.95	12.00	N/A	11.99	-0.01
75	2.93	16.00	N/A	15.98	-0.02
100	3.90	20.00	N/A	19.98	-0.02

Information of Tools used for Verification of the Instruments

Device Description:	Manufacturer	Model
Electrical Multimeter	Fluke	179

* Refer Calibration Tools Certificates submittal for more Information

Verification Test Result:	☑ Passed	☐ Fail	☐ Not Verified

Overall Remarks:	Program parameters verified Single/Two Point Verification Done / Perform test of Relay . Relay is working fine.

Service Technician :	Dhaval Patel	Stamp/Signature	
Printed Date:	June 17, 2020		

End of Report

APPENDIX G

Annual By-pass and Leak Report

Kincardine Wastewater System
2020 Bypass Logbook
(as per C of A #4648-8DVSSR, Section 5(3)

Date	Time	Location	Duration	By-pass Quantity	Authority for By-pass*	Reason
August 16	13:25 - 14:30	Huron Terrace SPS	65 min	101 m3	1	Heavy precipitation

* Authority for the By-pass:

1) it is necessary to avoid loss of life, personal injury, danger to public health or severe property damage
2) the District Manager agrees that it is necessary for the purpose of carrying out essential maintenance and the District Manager has given prior written acknowledgement of the by-pass
3) the Regional Manager has given prior written acknowledgement of the by-pass

APPENDIX H

Complaints Summary

Complaints & Inspections	WorkOrderId	Description	Actual Finish	Shop	Address	Comments
1	1810	Sanitary Lateral CCTV Inspection	January 7, 2020	KINCARDINE WASTEWATER	#25 aberdeen estates	Inspected both sections with the home owner from #18 present. Found no issues.
2	4283	Sanitary Lateral Backup	October 4, 2020	KINCARDINE WASTEWATER	1030 PRINCES ST	checked up stream and down stream manholes, flowing fine. Showed homeowner same. advised him to find a plumber with a longer snake, once it is clear we will camera lateral if he would like
3	4895	Sanitary Lateral CCTV Inspection	October 27, 2020	KINCARDINE WASTEWATER	1030 PRINCES ST	Sewer lateral was unmarked as it came off mechanics and not princess so gasoline had gone through it. Kemptons in and repaired sewer lateral and rerouted underneath gas line
4	2051	Sanitary Lateral CCTV Inspection	February 18, 2020	KINCARDINE WASTEWATER	1058 QUEEN ST	Improper connection to the municipal lateral and to the homeowners cleanout. we will not be going back to camera for free until we know the homeowner has rectified the defects.
5	3229	Sanitary Lateral Backup	June 12, 2020	KINCARDINE WASTEWATER	1127 KNIGHT'S CT	Looked in both manholes and there was flow
6	1805	Sanitary Lateral Backup	January 6, 2020	KINCARDINE WASTEWATER	1138 SHEVCHENKO BLVD	Rob checked downstream manhole but didn't check upstream as neighbours came out and said they had no issue.
	1808	Sanitary Lateral CCTV Inspection	January 7, 2020	KINCARDINE WASTEWATER	1138 SHEVCHENKO BLVD	Inspected whole lateral from house (clean out below drey vent, exterior wall) to main. Measurement not possible, not working properly. Could not see any evident issues.
7	3520	Sanitary Lateral CCTV Inspection	July 22, 2020	KINCARDINE WASTEWATER	1143 SHAKESPEARE AVE	(Copied from Service Request 1298): "Blockage cleared a few weeks ago. Would like us to camera lateral"
8	3281	Sanitary Lateral CCTV Inspection	June 22, 2020	KINCARDINE WASTEWATER	13 Huron Ridge Crescent	Home owner had complained on the weekend about sewer gas smell in the house and was concerned it was from Aecon drilling outside, there was no issue with lateral, informed the owner the only way sewer gas will get into house is a dry P-trap
9	3362	Sanitary Lateral Backup	June 26, 2020	KINCARDINE WASTEWATER	15 Riggin Cres	Marlin camera'd the lateral and found roots on homeowner side.
10	4324	Sanitary Lateral Backup	November 25, 2020	KINCARDINE WASTEWATER	203 Bruce Ave	Owner never called to schedule appointment.
11	5459	Sanitary Lateral Backup	December 28, 2020	KINCARDINE WASTEWATER	23 MACGREGOR BEACH RD	Rodded sewermain on Dec 29 see WO 5425
	5462	Sanitary Lateral CCTV Inspection	December 29, 2020	KINCARDINE WASTEWATER	23 MACGREGOR BEACH RD	Used camera after cleaning main using vactor. From cleanout on property line to main everything looked good. Prior to cleaning the main the lateral was full of water and couldn't see anything on the camera.
	5463	Sanitary Main CCTV	December 29, 2020	KINCARDINE WASTEWATER	MacGregor Beach	Verified main was okay after having a backup on the line and flushing the main using vactor. All good.
	5424	Sanitary Main Flushing	December 29, 2020	KINCARDINE WASTEWATER	MacGregor Beach	Rodded sewer main from west manhole as 23 MacGregor Beach lateral was plugged at main. See WO 5459
12	5265	Sanitary Lateral CCTV Inspection	December 7, 2020	KINCARDINE WASTEWATER	270 ALICE ST	(Copied from Service Request 1785): "Has Parker Plumbing coming on Monday Dec 7 at 8:30am to remove the toilet and snake the line. We will camera the lateral afterwards at 1pm. "
13	4007	Sanitary Lateral New install	December 21, 2020	KINCARDINE WASTEWATER	340 Nelson St	
14	4894	Sanitary Lateral CCTV Inspection	November 12, 2020	KINCARDINE WASTEWATER	380 BROADWAY ST	Inspected lateral, found blockage at 21m aprox.
15	3272	Sanitary Lateral CCTV Inspection	June 24, 2020	KINCARDINE WASTEWATER	40 GOLF LINKS RD	Was hard to determine what the build up was in the spots may have been roots that have been decaying as they have taken the trees down on front lawn

16	5116	Sanitary Lateral CCTV Inspection	November 12, 2020	KINCARDINE WASTEWATER	405 MCCULLOUGH CR	Customer had water issues while excavating for new install of inground pool. Also sewage smell was detected. Inspection of lateral and water pressure test conducted. Found no issues.
17	3864	Sanitary Lateral CCTV Inspection	September 11, 2020	KINCARDINE WASTEWATER	430 NELSON ST	(Copied from Service Request 1438): "Had Mike small snake the line. She is not sure she is even on Municipal sewer. Should be looking at the map as sewer runs right by the house. No mapping to show lateral location. Possibly connected in with neigh
18	5268	Sanitary Lateral CCTV Inspection	December 2, 2020	KINCARDINE WASTEWATER	459 Highland Drive	Roots at 14 M and at 24 M unable to push though second root mass. Suggested to home owner to have it snaked agin with longer snake before he runs into more problems
19	3256	Sanitary Lateral CCTV Inspection	June 18, 2020	KINCARDINE WASTEWATER	472 HIGHLAND DR	(Copied from Service Request 1149): "Caller: ALLAN, SCOTT: Q: Is the backup inside your home? A: Yes Q: Have you called a plumber? A: Yes"
20	3584	Sanitary Lateral CCTV Inspection	July 27, 2020	KINCARDINE WASTEWATER	490 Huron Terrace	No issue with lateral, went from house clean out from west side of house, lateral goes around north side of house to road, could not push to clean out in lane but could see it, then went in clean out to main, under water just before main
21	3856	Sanitary Lateral Backup	August 20, 2020	KINCARDINE WASTEWATER	501 SCOTT ST	Inspected manholes and flow was good. She said a plumber will be by Friday evening to use snake. Let her know we can camera her lateral after it has been snaked. She will call to make an appt.
22	5464	Sanitary Lateral Repair	December 26, 2020	KINCARDINE WASTEWATER	592 QUEEN ST	Will have to check area in spring. Most likely will need grass seed.
23	5129	Sanitary Lateral Backup	December 8, 2020	KINCARDINE WASTEWATER	649 Abbey	Mike Small was snaking lateral, checked manhole it goes into that was ok, water drained out, will need to camera
	5142	Sanitary Lateral CCTV Inspection	November 17, 2020	KINCARDINE WASTEWATER	649 Abbey	
	5228	Sanitary Lateral CCTV Inspection	December 3, 2020	KINCARDINE WASTEWATER	649 Abbey Rd	Lateral was replaced on homeowner side on friday. Camera from cleanout to main to ensure no issues on municipal property.
24	2812	Sanitary Lateral CCTV Inspection	April 21, 2020	KINCARDINE WASTEWATER	654 SCOTT	Went in cleanout to main at 8.6m did not visually see any cause before Y to neighbours, slight bit of grease after Y, tried to record but it would lose signal
25	3845	Sanitary Lateral Backup	August 19, 2020	KINCARDINE WASTEWATER	750 MCPHERSON CR	There was earlier due to rainfall water coming up a floor drain into basement. I was told it did not smell and was clean, the tenants were thinking rain water. Talking to the tenant the water bubbling up in “manhole” was actually at the storm drain.
26	4934	Sanitary Lateral Backup	October 22, 2020	KINCARDINE WASTEWATER	750 McPherson cr	sewer main was clear, there had been heavy rain, there was wastewater looked to be on the floor but wasn’t continuously coming in when I was there, called ORO and he had been there about a month ago and it had been camerad and was clear on municipal
27	3279	Sanitary Lateral Backup	June 20, 2020	KINCARDINE WASTEWATER	750 queen street	Check upstream and downstream manhole, good flow on both
28	4125	Sanitary Lateral Backup	September 30, 2020	KINCARDINE WASTEWATER	896 BROWNELL DR	Verified flow in man holes.
	4145	Sanitary Lateral CCTV Inspection	September 28, 2020	KINCARDINE WASTEWATER	896 BROWNELL DR	Underwater from 1.75 m- 6.5m the rest was clear