



# **South Huron Wastewater Collection System and Exeter Wastewater Treatment Facility**

**2017 Annual Report to Council**

March 19, 2018

## **TABLE OF CONTENTS**

- I.** Description of Exeter Wastewater Treatment Facility and South Huron Wastewater Collection System
- II.** MOE Inspection, Orders and Compliance issues
- III.** Summary of Wastewater Quantities, Flows & Capacity
- IV.** Summary of Effluent Quality Analytical Data
- V.** Operating Problems and Corrective Actions
- VI.** Summary of Major Maintenance, Upgrades and Alterations
- VII.** Summary of Effluent Quality Assurance Taken
- VIII.** Summary of Calibration of Monitoring Equipment
- IX.** Summary of Effluent Quality Objectives Results
- X.** Sludge Generation and Sludge Handling
- XI.** Summary of Complaints and Actions Taken
- XII.** Summary of By-passes, Overflows and Spills
- XIII.** Notices submitted to MOE under Schedule 'A' of the ECA
- XIV.** Modifications completed under Schedule 'A' of the ECA
- XV.** Federal Wastewater Systems Effluent Regulation

## **APPENDICIES**

- A.** Owner's reporting requirements set out in the Exeter Wastewater Treatment Facility Environmental Compliance Approval
- B.** Regulations pertaining to the Operation of Wastewater Systems
- C.** Exeter Wastewater Treatment Facility Environmental Compliance Approval No. 2395-9QDPQW
- D.** 2017 Exeter Sewage Lagoons Annual Performance Assessment Report to the MOECC

## **I. DESCRIPTION OF EXETER WASTEWATER TREATMENT FACILITY AND SOUTH HURON WASTEWATER COLLECTION SYSTEM**

### **System Overview**

The Exeter wastewater treatment facility and South Huron wastewater collection system provides service to approximately 5,000 residents in Crediton, Centralia, Huron Park and Exeter. The Grand Bend area is serviced by a wastewater collection system and two sanitary pumping stations. Wastewater in Grand Bend is treated at the jointly owned Grand Bend Area Wastewater Treatment Facility operated by CH2MHill and administered by Lambton Shores on behalf of the Grand Bend Area Joint Sewage board.

The Exeter wastewater treatment facility is an aerated sewage lagoon with intermittent sand filters. The wastewater collection system consists of sanitary sewers, forcemains and four sanitary pumping stations that convey wastewater to a wastewater treatment facility in Exeter. The system is continuously monitored by a computerized Supervisory, Control and Data Acquisition system. The receiving water course for the wastewater treatment facility is the Ausable River.

### **Detailed System Description**

#### **Exeter Wastewater Treatment Facility**

The Exeter Wastewater Treatment Facility is located in the northwest area of Exeter at 71042 Airport Line. The facility is a sewage lagoon, with an aeration system, intermittent sand filters and has a rated capacity of 2,573,718m<sup>3</sup> per year.

Raw sewage is collected at the William Street and Snider Crescent Sanitary Sewage Pumping Stations in Exeter; at the Huron Park and Crediton Sanitary Sewage Pumping Stations; then pumped to the Wastewater Treatment Facility (WWTF) in Exeter. Treatment at the WWTF consists of a 3-cell lagoon system with phosphorus removal. Raw sewage flows into the first cell with assisted aeration and an effective storage volume of 313,000m<sup>3</sup>. The second cell is for additional storage (pre or post treatment) with an effective volume of 343,500m<sup>3</sup>. The third "L-shaped" cell has a total storage volume of 751,000m<sup>3</sup>. Effluent from this third cell is directed to a 4-bed, intermittent sand filtration system with an average hydraulic loading rate of 475 L/s. Continuous liquid aluminum sulfate (alum) is used for phosphorus removal. Effluent can be discharged directly from the lagoon system to the receiving water course during winter months to a maximum volume of 283,200m<sup>3</sup> when the receiving river temperature is less than 5 degrees Celsius; or via one of the four the sand filters to the receiving water course during the summer months when the receiving river temperature is above 5 degrees Celsius for a maximum volume of 2,290,518m<sup>3</sup>.

#### **South Huron Wastewater Collection System**

The South Huron wastewater collection system consists of approximately 67 km of sanitary sewers and forcemains conveying wastewater from Crediton, Centralia, Huron Park and Exeter to the South Huron wastewater treatment facility. Sewers and

forcemains range in size from 100mm to 600mm diameter. The pipe material consists of concrete, asbestos-cement, polyethylene and polyvinylchloride (PVC).

Prior to 1960 some of the older areas of Exeter were serviced by combined sewers that discharged directly to the Ausable River. A sanitary pumping station located at the intersection of John and Marlborough Streets pumped combined sewage to the Ausable River via the William Street sewer. The majority of Exeter was serviced by private on-site septic systems and cess pools until the early 1960s. The current municipal wastewater collection system in Exeter was commissioned in 1963 and consisted of sanitary sewers, the William Street Sanitary Pumping Station, a forcemain, and a 2-cell oxidation pond on the current lagoon site. Combined sewers were gradually separated over the years and the wastewater collection system was expanded to serve new subdivisions in the 1970s and 1980s. The Snider Crescent Sanitary Sewage Pumping Station was constructed in 1991 to serve growth in the southwest area of Exeter. The John Street Sanitary Sewage Pumping Station became redundant and was decommissioned after the construction of the Snider Crescent Sanitary Sewage Pumping Station.

Huron Park is the oldest wastewater collection system in the Municipality. It was constructed in the early 1940's by the RCAF as part of the Airforce Station Centralia. The Base closed in 1967 and the ownership of the system was transferred to the former Stephen Township in 1983. The Huron Park Wastewater Treatment Facility was decommissioned in 2000 and sewage pumped to Exeter via a forcemain that approximately follows the Goderich-Exeter Railway line. The entire wastewater collection system in the Huron Park Residential Area was replaced in 2006 and the wastewater collection on Canada Avenue in the Industrial area was replaced in 2010.

A municipal wastewater collection system was installed in CREDITON and CENTRALIA in 2008. A Sanitary Sewage Pumping Station was constructed at the east end of CREDITON near the Ausable River and sewage is pumped via a forcemain to Exeter. The CENTRALIA wastewater collection system is connected by gravity to the Huron Park residential area wastewater collection system, sewage then flows through a trunk sewer to the Industrial area where it is pumped to Exeter via an upgraded Huron Park Sanitary Sewage Pumping Station.

## **Sanitary Sewage Pumping Stations**

### **William Street Sanitary Sewage Pumping Station**

The William Street SPS was originally constructed in 1962 and was upgraded in 1999 when the pumps and emergency generator were replaced. It is located in the William Street R.O.W. north of Church Street and south of the Ausable River; it is a wetwell/drywell type sewage lift station with all process equipment housed in an above grade structure on top of the wetwell. The pump arrangement is a wetwell/drywell configuration with one motor directly coupled to pump #1 and two other motors coupled to pumps #2 and pump #3 via shaft extensions. The pumps are driven by variable frequency drives and discharge into a common 250 mm diameter header. Flow is measured by a magnetic flow meter before exiting the station and entering the 350 mm forcemain to the South Huron WWTF. The pumping

station is equipped with a 175 kW standby diesel generator set, power distribution equipment and control and monitoring devices.

#### **Snider Crescent Sanitary Sewage Pumping Station**

The Snider Crescent SPS was constructed in 1992. It is located at 31 Snider Crescent; it is a wetwell/drywell type sewage lift station with all process equipment housed in an above grade structure. The wetwell is a separate structure outside the generator/control building. The three sewage pumps are fixed speed submersible units discharging into a common header in the lower level of the generator/control building. The generator/control building also houses a 125 kW diesel generator set, power distribution equipment, and control and monitoring devices.

The 300 mm diameter forcemain is approximately 1480 m long and follows a 6.1 m wide easement to the WWTF. The rate of flow is measured by a magnetic flow meter in the meter chamber at the treatment facility.

#### **Huron Park Sanitary Sewage Pumping Station**

The Huron Park SPS was constructed in 1999 and upgraded in 2007 with new VFD's and controls as part of the expansion of the wastewater collection system to service Centralia. It is located at 389 Canada Avenue in the Huron Park Industrial Area; it is a wetwell/drywell type sewage lift station with all process equipment housed in an above grade structure. The wetwell is a separate structure outside the generator/control building. The two sewage pumps are submersible units, driven by variable frequency drives, discharging into a common header in the lower level of the generator/control building. The generator/control building also houses a 150 kW diesel generator set, power distribution equipment, and control and monitoring devices.

The 300mm diameter forcemain from the Huron Park SPS follows an easement to Airport Line, north on Airport Line to the Crediton Road; east on Crediton Road to the Goderich-Exeter Railway line, then along the GEXTR right of way to the South Huron WWTF. The rate of flow is measured by a magnetic flow meter in the meter chamber at the treatment facility.

#### **Crediton Sanitary Sewage Pumping Station**

The Crediton SPS was constructed in 2007. It is located at 250 Victoria Street East, Crediton; it is a wetwell/drywell type sewage lift station with all process equipment housed in an above grade structure. The wetwell is a separate structure outside the Generator Building. The two sewage pumps are fixed speed submersible units discharging into a common header in the lower level of the Generator Building. The Generator Building also houses a 160 kW diesel generator set, power distribution equipment, and control and monitoring devices.

The 200mm diameter forcemain from the Crediton SPS is located in the Crediton Road right of way and is connected to the 300mm forcemain from Huron Park at the intersection of Crediton Road and Airport Line. The rate of flow is measured by a magnetic flow meter in the meter chamber at the treatment facility.

### **Grand Bend Wastewater Area Collection System**

The Grand Bend wastewater collection system was originally constructed in 1980 to service the Village of Grand Bend (now Lambton Shores) and Grand Cove Estates and Green Forest Estates in the former Stephen Township (now South Huron). In 1980 the Huron Country Playhouse septic system failed and approval was obtained from the MOE to connect directly to the newly constructed Grand Bend Area Sewage Lagoon. The Playhouse has a private sewage pumping station discharging to a 100mm forcemain on B-Line, Grand Bend Line and Mollard Line to the Grand Bend Area Sewage Lagoons.

In 1992, an annexation agreement was made between the Village of Grand Bend, Stephen Township and Bosanquet Township regarding adjustments to their boundaries. As part of the annexation negotiations there was an understanding amongst the municipalities regarding rights to access the Sewage Treatment Facility in Grand Bend; however, this did not form part of the Annexation Agreement. A subsequent agreement between the three municipalities included a clause to *"continue inter-municipal cooperation through the functioning of the Tri-Municipal Committee to provide joint servicing arrangements to the people of the Greater Grand Bend Area."*

Accordingly, in 1994 the former Stephen Township obtained approval to expand the Grand Bend wastewater collection system to include Oakwood Inn, remaining lands in Grand Cove Estates, Grand Bend Airport property (proposed Industrial subdivision, Motorplex and POG). In 2000 the Provincial Government transferred jointly to Village of Grand Bend (now Lambton Shores) and Stephen Township (now South Huron) the Grand Bend Sewage Lagoons, Main Pumping Station and forcemain between these facilities. The Grand Bend wastewater collection system was further expanded in 2006 to provide service to Oakwood Links Condominiums.

In 2014 the Grand Bend Area Joint Sewage Board was created to provide Ownership oversight for the jointly owned wastewater assets and the expansion/upgrade of the Wastewater Treatment Facility. Construction of a new mechanical wastewater treatment facility and upgrades to the Main pumping station in Grand Bend were completed and became fully operational on March 31, 2016.

### **Sanitary Sewage Pumping Stations in the South Huron Grand Bend System**

#### **Oakwood Area Sanitary Sewage Pumping Station**

The Oakwood Area SPS was constructed in 2006. It is located at 70773 Bluewater Highway; it's a wetwell/drywell type sewage lift station with all process equipment housed in an above grade structure. The wetwell is a separate structure outside the Generator Building. The two sewage pumps are submersible units, driven by variable frequency drives, discharging into a common header in the lower level of the Generator Building. The Generator Building also houses a 25 kW diesel generator set, power distribution equipment, and control and monitoring devices.

The 100mm diameter forcemain from the Oakwood Area SPS is located in an easement on private property along the west side of the Bluewater Highway (MTO Hwy #21) right of way. This forcemain is connected to the Lambton Shores gravity

wastewater collection system on Ontario Street North and eventually flows to the Main Pumping Station in Grand Bend. Wastewater is conveyed to the Grand Bend Area Wastewater Treatment Facility via a 350mm forcemain on Main Street East and Mollard Line. The rate of flow is measured by a magnetic flow meter in a meter chamber at the municipal boundary.

#### **POG Sanitary Sewage Pumping Station**

The POG SPS was constructed in 1999. It is located at 70244 Grand Bend Line; it's a wetwell type sewage lift station with all process equipment housed in above grade pole mounted enclosures. The two sewage pumps are fixed speed submersible units discharging into a common header. There is no emergency generator and no flow metering at this pumping station.

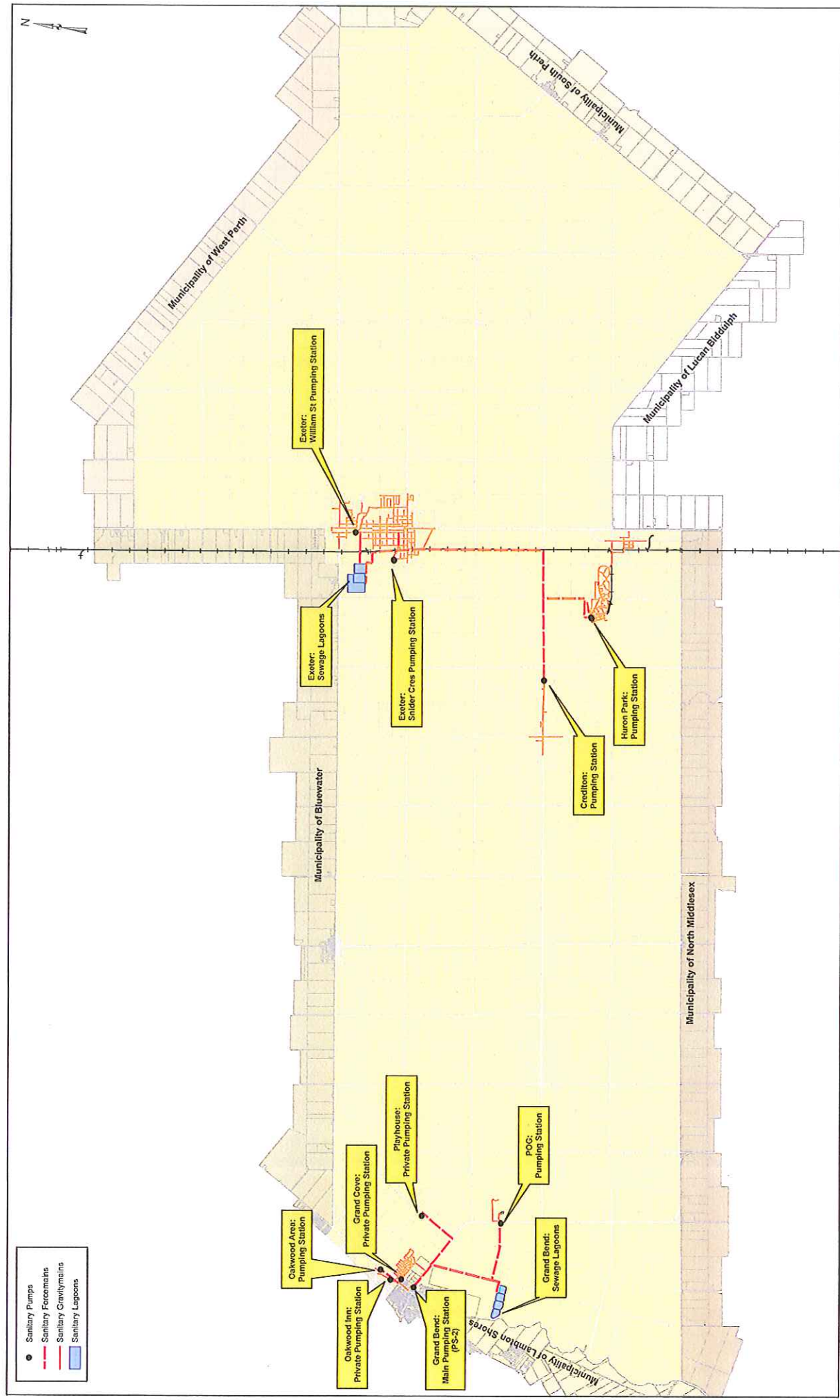
The 100mm diameter forcemain from the POG SPS is located in an easement across private property directly west of the pumping station, then south in the Mollard Line right-of-way to the Grand Bend Area Sewage Treatment Facility.

#### **Control System**

The South Huron Wastewater Collection system is controlled by a PLC based Supervisory, Control and Data Acquisition system (SCADA) located at the Water/Sewer Operations Centre, 82 Nelson Street, Exeter. Remote processing units (RPUs) are located at the William Street SPS, Snider Crescent SPS, Huron Park SPS, Crediton SPS, Ausable River Stream Gauge Building, in the Blower Building and Filter Building at the Exeter Wastewater Treatment Facility. The PLC's communicate with the central SCADA PC at the Environmental Services Operations Centre and this allows monitoring of all operational parameters, annunciating and forwarding of alarms, control of set points, duty sequences, and other operating parameters, and recording and print out of alarms and data collected from the remote sites.

In the South Huron Grand Bend wastewater system, only the Oakwood Area SPS is fully monitored and controlled by the SCADA system. This system communicates wirelessly through the Hay Communications system back to Exeter, where it is monitored and controlled at the Environmental Services Operations Centre, 82 Nelson Street. There is very limited SCADA capabilities at the POG SPS with monitoring of pump run times and wetwell levels only.

The new Grand Bend Area Sewage Treatment Facility and upgraded Main Pumping Station have SCADA control systems monitoring all parameters. These SCADA systems are maintained and operated by the Lambton Shores contract operator CH2MHill.



# Municipality of South Huron - Wastewater System



## **II. M. O. E. INSPECTION, ORDERS AND COMPLIANCE ISSUES**

### ***MOE Inspection***

There was no MOE inspection of the South Huron Sewage Treatment Facility in 2017. The previous MOE inspection was carried out on February 21, 2012 and the Sewage Treatment Facility was in full regulatory compliance at that time.

### ***Compliance issues and Orders***

There were no Ministry Orders issued for the South Huron Wastewater Treatment Facility or Wastewater Collection System in 2017. There was one effluent quality exceedance (E-coli) during the winter discharge that was reported to the MOECC Sarnia and Windsor District Office. No corrective action was required. There were a total of four (4) raw sewage by-passes at sewage pumping stations in 2017. At the William Street Sanitary Pumping Station there were (2) wet weather sewage bypasses. At the Huron Park Sanitary Sewage Pumping Station there was one (1) wet weather sewage bypass. At the Snider Crescent Sanitary Pumping Station there was one (1) wet weather sewage bypass.

All by-pass events were reported to the Spills Action Centre and to the MOECC Sarnia and Windsor District Office.

## **III SUMMARY OF WASTEWATER QUANTITIES, FLOWS AND CAPACITY**

The South Huron Wastewater Treatment Facility has a design capacity of an average daily flow (ADF) of 7,051m<sup>3</sup>/day; a maximum annual discharge of 2,573,718m<sup>3</sup>, including an allowable winter discharge of 283,200 m<sup>3</sup>. In 2017 the average daily effluent flow was 7,362m<sup>3</sup>/day. The 2017 summer effluent discharge was 1,217,320m<sup>3</sup> or 53% of the allowable summer discharge. The 2017 winter effluent discharge was 203,524m<sup>3</sup> or 72% of the allowable winter discharge. The 2017 total annual discharge was 1,420,844m<sup>3</sup> or 55% of the total allowable discharge.

A review of the 2017 flow data indicates that there may be inflow and infiltration issues in the wastewater collection system. Staff will continue to address inflow and infiltration by implementing mitigation measures, such as capping abandoned sewers in the Huron Park Industrial area. In Exeter, sanitary sewers continue to be replaced in conjunction with street reconstruction projects as part of an overall asset management program and to reduce inflow and infiltration. Staff continue to investigate and undertake measures and initiatives to identify, quantify, and reduce inflow/infiltration in the wastewater collection system.

In summary all flows to the South Huron Wastewater Treatment Facility in 2017 were within the design capacities in the Environmental Compliance Approval (ECA). The total annual effluent discharge in 2017 of 55% of the rated capacity is confirmation of sufficient sewage treatment capacity in the Exeter Wastewater Treatment Facility.

## 2017 Annual Wastewater Systems Report to Council

The following chart is a summary of the monthly wastewater flows:

### EXETER WASTEWATER TREATMENT FACILITY 2017 MONTHLY FLOWS

MONTH	INFLOW (M3)	EFFLUENT (M3)	A/B
JAN	180,296		
FEB	128,584	203,524	
MAR	133,492		(B)
APR	153,285	177,992	
MAY	170,583	207,662	(A)
JUN	72,114	188,108	(A)
JUL	59,913	214,983	(A)
AUG	51,600	243,450	(A)
SEP	55,110	185,125	
OCT	60,791		
NOV	114,499		
DEC	84,694		
TOTAL	1,264,961	1,420,844	
(A) TOTALS		1,217,320	
(B) TOTALS		203,524	
ADF	3,466 ( 365 days )	7,362 ( 193 days )	

C of A	ALLOWABLE DISCHARGE (M3)	ACTUAL DISCHARGE (m3)	PERCENTAGE DISCHARGED
(A)	2,290,518	1,217,320	53%
(B)	283,200	203,524	72%
TOTAL	2,573,718	1,420,844	55%

(A) Filtered Discharge when river temperatures are greater than 5 degrees Celsius.  
(B) Unfiltered Winter Discharge when river temperatures are less than or equal to 5 degrees Celsius.

INFLOW	DISCHARGE	DIFFERENCE	% of INFLOW
1,264,961	1,420,844	155,883	112 %

### ***Opinion of Available Sewage Treatment Capacity***

In March 2014 BM Ross Engineers evaluated the capacity of the South Huron Wastewater Treatment Facility and the following is a summary of their opinion of the estimated life expectancy of the WWTF:

*MOE Procedure D-5-1 suggests using a 3 to 5 year average as a basis to determine the current available capacity. Using the slightly higher 3 year average of 3,360m<sup>3</sup>/d the total current reserve capacity is 3,691m<sup>3</sup>/d (ie. 7,051m<sup>3</sup>/d - 3,360m<sup>3</sup>/d).*

*A projected annual growth rate of 0.5% would generate an annual increase of approximately 17m<sup>3</sup>/d. At this growth rate the available reserve capacity would be adequate for over 200 years. (ie. 3,691m<sup>3</sup>/d ÷ 17m<sup>3</sup>/d).*

*The Exeter WWTP is, with the exception of only random, occasional events, meeting required treatment levels. It is currently operating at approximately 48% of its rated hydraulic capacity. At a projected growth rate of 0.5% per year there is adequate total reserve capacity for more than 200 years.*

In October 2017 GMBLuePlan Engineers reviewed the Intermittent Sand Filters after declining performance in recent years. GMBLuePlan confirmed that rehabilitation of the sand filters was required to restore their original design flows and to maintain treatment capacity. Rehabilitation of the sand filters will ensure that the rate of summer discharge and winter storage are sufficient to meet future growth and development demands.

#### IV. SUMMARY OF EFFLUENT QUALITY ANALYTICAL DATA

The Exeter Wastewater Treatment Facility Effluent Limits for discharges are set out in the Environmental Compliance Approval (ECA) and are based on the stream temperature of the receiving water course. Discharges can be made during the summer months (through the sand filters) if the river temperatures are greater than 5° C and during the winter months (directly to the receiving water course) if river temperatures are less than or equal to 5° C. These parameters are also limited by Annual Average loading. The following chart is a summary of the effluent quality criteria:

##### **EXETER WASTEWATER TREATMENT FACILITY** **ENVIRONMENTAL COMPLIANCE APPROVAL FINAL EFFLUENT QUALITY** **LIMITS**

	MONTHLY AVERAGE CONCENTRATION (mg/L)	ANNUAL AVERAGE LOADING
<b>CBOD<sub>5</sub> (a)</b>	10.0	22,905
<b>CBOD<sub>5</sub> (b)</b>	25.0	7,080
<b>Suspended Solids (a)</b>	10.0	22,905
<b>Suspended Solids (b)</b>	25.0	7,080
<b>Total Phosphorus (a)</b>	0.60	1,374
<b>Total Phosphorus (b)</b>	1.0	283
<b>Total Ammonia Nitrogen (a)</b>	4.0	9,162
<b>Unionized Ammonia (a)</b>	0.10 (IN STREAM)	28.3
<b>Unionized Ammonia (b)</b>	0.15 (IN STREAM)	-
<b>Dissolved Oxygen (a)(b)</b>	5.0	-
<b>E. Coli (monthly geometric mean density)</b>	200/100mL	-

(a) Filtered Discharge when river temperatures are greater than 5 degrees Celsius.

(b) Unfiltered Winter Discharge when river temperatures are less than or equal to 5 degrees Celsius.

## 2017 Annual Wastewater Systems Report to Council

EXETER WASTEWATER TREATMENT FACILITY 2017 MONTHLY EFFLUENT SUMMARY										
MONTH / Days of Effluent Discharge	CBOD (MG/L)	LOADING	SS	LOADING	TP	LOADING	ANNUAL AMMONIA	LOADING	DO	E COLI GM.
	mg/L	kg/d	mg/L	kg/d	mg/L	kg/d	mg/L	kg/d	(mg/l)	gm/100mL
JAN										
FEB / 22 (B)	7.5	69.38	6.3	58.28	.24	2.22	0.02	0.21	9.36	458
MAR										
ANNUAL AVERAGE (B)		1318.22		1107.32		42.18		4.07	9.36	458
Winter Effluent : Monthly Average Concentration / Annual Average Limit	25	7,080	25	7,080	1	283	0.1 IN STREAM	28.3 IN STREAM	5>	200/100ml
% IN COMPLIANCE	100%	100%	100%	100%	100%	100%	100%	100%	100%	REPORTED
APRIL / 19 (A)	4	37.47	2.0	18.74	0.40	3.74	0.13	1.21	9.49	2.88
MAY / 31 (A)	4	26.79	2.0	13.39	0.28	1.87	0.10	0.67	8.55	3.17
JUNE / 30 (A)	4	25.08	2.0	12.54	0.24	1.50	0.10	0.62	7.75	6.07
JULY / 31 (A)	4	27.74	2.5	17.33	0.28	2.01	0.10	0.69	7.25	2.63
AUG / 31 (A)	4	31.41	2	15.70	0.27	2.12	0.18	1.41	6.06	35.93
SEPT / 29 (A)	4	25.53	2	12.34	0.25	1.54	0.58	3.58	5.76	44.60
OCT										
NOV										
DEC										
ANNUAL AVERAGE		4598.84		2529.14		346.72		231.28	7.48	79.04
Summer Effluent : Monthly Average Concentration / Annual Average Limit	10	22,905	10	22,905	0.6	1,374	4	9,162	5>	200/100 ml
% IN COMPLIANCE	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
(A) = FILTERED DISCHARGE +5 FEGREES CELSIUS RIVER TEMPERATURE										
(B) = UNFILTERED WINTER DISCHARGE -5 DEGREES CELSIUS RIVER TEMPERATURE										
Note**- Winter and Summer Criteria is based on a monthly average concentration for effluent parameter and an annual average for loading										

A review of the actual 2017 effluent quality analytical data confirmed that the Exeter Wastewater Treatment Facility met all effluent quality parameters for summer discharge. All winter discharge met the effluent quality parameters, except for the E-coli

## 2017 Annual Wastewater Systems Report to Council

geometric mean; which exceeded the ECA limit. This exceedance was reported to the MOE Sarnia and Windsor District Office and no follow up action was required.

This review confirmed that the wastewater treatment process was adequate for the influent treated at this facility. The Exeter Sewage Treatment Facility has consistently achieved the effluent quality requirements in the Environmental Compliance Approval (ECA), especially the summer discharge through the sand filters.

### V. OPERATING PROBLEMS AND CORRECTIVE ACTIONS

The most common operating issue encountered in 2017 was clogged sewage pumps. The corrective action was to remove the pump from service and manually unclog the pump. The longer term corrective action is to improve/upgrade the pumping station influent screens.

The following is a summary of operating issues and corrective action taken:

2017 Operating Issues and Correction Actions			
Date	Location	Description	Corrective action
Feb 13	William St Pumping Station	Pump #2 Volute damaged	Pump taken out of service & repaired
Feb 27	William St Pumping Station	Pump #2 Clogged	Removed obstruction
Apr 3	William St Pumping Station	Pump # 2 Clogged	Removed obstruction
Apr 6	POG	Pump # 1 relay failure	Replaced relay
Apr 11	William St Pumping Station	Pump # 2 Clogged	Removed obstruction
Apr 12	Crediton SPS	Pump # 2 Rebuild	New Impeller and / Volute
Apr 20	William St Pumping Station	Pump # 2 Clogged	Removed obstruction
May 2	William St Pumping Station	Pump # 1 Airlock	Removed Air
May 4	William St Pumping Station	Pump # 1 Electrical box	Repaired exposed wires
May 26	William St Pumping Station	Pump # 2 Clogged	Removed obstruction
May 30	William St Pumping Station	Pump # 3 Driveshaft damaged	Replaced bearing on Pump #3 Driveshaft
June 14	William St Pumping Station	Pump # 2 Driveshaft damaged	Replaced bearing on Pump #2 Driveshaft
July 6	William St Pumping Station	Pump # 1 Check Valve broken	Replaced Check Valve
July13	William St Pumping Station	Pump 2 & 3 Plugged	Removed obstructions
Nov 16	William St Pumping Station	Pump # 3 Clogged	Removed obstruction
Dec12	Blower Building WWTP	Blower 2&3 seized	Oiled and rotated blowers

### VI. SUMMARY OF MAJOR MAINTENANCE, UPGRADES AND ALTERATIONS

The following is a summary of all maintenance carried out in 2017 on any major structure, equipment, apparatus, mechanism or thing forming a part of the works:

## 2017 Annual Wastewater Systems Report to Council

1. Sanitary Sewer replacement on Simcoe Street (Main to Andrew Street, Exeter).
2. Sanitary Sewer replacement on James Street (Main to Albert Street, Exeter).
3. Lagoon Aeration System Upgrade.
4. Engineering for future replacement/rehabilitation options for Lagoon Sand Filters.
5. Engineering for future sewer replacement on Huron Street (Edward to town limit).
6. Engineering for replacement/upgrade William Street Sanitary Pumping Station

The following is a summary of alterations, extensions or replacements in the process or operation of the works which are considered for implementation over the next reporting period (2018 to 2022), which require approval under the Ontario Water Resources Act:

### 2018

1. Sanitary sewer replacement on Huron Street East (Edward to East town limit).
2. William Street Sanitary Pumping Station replacement/upgrade.
3. Upgrades to 350mm forcemain on Mollard Line
4. Engineering for future sewer replacement on Waterloo Street (Main to RR)
5. Engineering for rehabilitation Lagoon Sand Filters

### 2019

1. Rehabilitation of cell#1 of Lagoon Sand Filters
2. Snider Crescent Sewage Pumping Station Upgrades (Phase 1)
3. Engineering for future sewer replacement on Sherwood Crescent.
4. Engineering for future sewer replacement on William St (Anne to Sanders)
5. Engineering for future sewer replacement on William St (Nelson to Church)
6. Engineering for future sewer replacement on Thomas St (Marlborough to Carling)

### 2020

1. Sanitary sewer replacement on Waterloo Street (Main to RR)
2. Rehabilitation of cell#2 of Lagoon Sand Filters
3. Snider Crescent Sewage Pumping Station Upgrades (Phase 2)
4. Engineering for future sewer replacement on Victoria St E (Main to Arena)

### 2021

1. Sanitary sewer replacement on Sherwood Crescent.
2. Sanitary sewer replacement on William St (Anne to Sanders)
3. Sanitary sewer replacement on William St (Nelson to Church)
4. Sanitary sewer replacement on Thomas St (Marlborough to Carling)
5. Rehabilitation of cell#3 of Lagoon Sand Filters
6. Engineering for future sanitary sewer replacement on Kingscourt Crescent

### 2022

1. Sanitary sewer replacement on Victoria St E (Main to Arena)
2. Sanitary sewer replacement on Kingscourt Crescent (Pryde to end).
3. Rehabilitation of cell#4 of Lagoon Sand Filters
4. Sludge removal from Exeter Sewage Lagoons.
5. Engineering for future sewer replacement on Church St (William to Main).

## VII. SUMMARY OF EFFLUENT QUALITY ASSURANCE TAKEN

There were no additional effluent quality assurance or control measures undertaken in 2017, other than flow monitoring and effluent quality sampling already noted.

## VIII. SUMMARY of CALIBRATION

All meters that measure sewage flows in the wastewater collection system are maintained as recommended by the manufacturer and calibrated by a third party on an annual basis. Date of last calibration of the effluent flow meters was April 25, 2018. Flows are measured at each pumping station and the lagoon discharge. Flows to the filter building are measured by a v-notch weir. The Snider Crescent SPS and Huron Park SPS magmeters are located in the blower building. Calibrations are also performed at the stream gauge building located at the Ausable River and Airport Line.

The Stream Gauge was fully operational for this reporting year and all data is stored on the main server at the Municipal Offices, 322 Main Street South, Exeter. The data at the Stream Gauge Building is taken continuously and spot stream flow measurements are taken annually to verify the calibration curve of the selected gauge.

## IX. SUMMARY OF EFFLUENT QUALITY OBJECTIVES RESULTS

The Exeter Wastewater Treatment Facility Effluent Quality Objectives for discharges are set out in the Environmental Compliance Approval (ECA) and are based on the stream temperature of the receiving water course. Summer discharges are through the sand filters when river temperature is greater than 5° C and winter discharges are directly to the receiving water course when river temperature is less than or equal to 5° C. The following chart is a summary of the effluent quality objectives:

### EXETER WASTEWATER TREATMENT FACILITY ENVIRONMENTAL COMPLIANCE APPROVAL EFFLUENT QUALITY OBJECTIVES

Effluent Parameter	Concentration Objective (mg/L)
CBOD <sub>5</sub> (a)	5.0
CBOD <sub>5</sub> (b)	15.0
Suspended Solids (a)	5.0
Suspended Solids (b)	15.0
Total Phosphorus (a)	0.50
Total Phosphorus (b)	0.80
Total Ammonia Nitrogen (a)(*)	1.0
Unionized Ammonia (a)	>5:1 dilution
Dissolved Oxygen (a)(b)	5.0
E. Coli (monthly geometric mean density)	<150 organisms/100mL

(a) Filtered Summer Discharge when river temperatures are greater than 5 degrees Celsius.

(b) Unfiltered Winter Discharge when river temperatures are less than or equal to 5 degrees Celsius.

The sand filter beds were tilled several times in 2017 to ensure that final filtering of the effluent discharged, achieved the effluent quality objectives. Blowers were operated continuously throughout the year to ensure that the effluent quality objectives for Dissolved Oxygen were achieved. Blowers were

A review of the actual 2017 effluent quality analytical data confirmed that the Exeter Wastewater Treatment Facility met all effluent quality objectives for summer and winter discharge, except for one winter discharge parameter in March. The E-coli geometric mean for March exceeded the winter discharge effluent quality objective of <150 organisms/100mL.

The historically good effluent quality results are an indication that the Exeter Wastewater Treatment Facility is providing adequate level of wastewater treatment.

## **X. SLUDGE GENERATION AND SLUDGE HANDLING**

Sludge was removed from the South Huron Wastewater Treatment Facility as part of the 1999 upgrade. The sludge removed in 1999 was stock piled on site at the west end of the Lagoon property to compost. The sludge has been tested and found to have composted to the point where it can be used as future topsoil cover at the South Huron landfill site. The composted sludge will be used for this purpose until fully exhausted.

During the summer of 2012 lagoon Cell #3 was drained and allowed to dry, so that an assessment of the accumulated sludge could be carried out. The following is a summary of the BM Ross Engineers report (Dated September 7, 2012):

### ***“Sludge Accumulation in Cell 3:***

*The depth of sludge varies considerably over the cell bottom. In some locations, particularly near the cell inlet at the southwest corner, the top of sludge was well above the water level in other areas of the cell, and some of the static diffusers were completely covered with sludge. Toward the north/northeast area of the cell, the sludge depth in places was almost negligible. The volume of accumulated sludge within Cell 3 is approximately 25,000 m<sup>3</sup> or the equivalent of 4,500 tonnes of dry weight.*

### ***Sludge Removal Options:***

- Plastics observed in the sludge can complicate land application and may require the sludge to be partially dried and screened on site prior to land application.*
- Sludge removal will require temporary removal of at least the fine pore aeration equipment. The static aerators and laterals could likely remain in place.*
- Sludge around the cell perimeter could be removed by an excavator because of the relatively high solids content in the sludge. Following removal of this material, sludge within the cell could be pushed onto the cell berms and allowed to naturally dewater.*

## 2017 Annual Wastewater Systems Report to Council

- *If Cell 3 could be drained each year for 2 or 3 consecutive years, sludge removal work could be carried out incrementally. This would allow the costs to be spread of over a longer period.*

*Land application of sludge is one of the more economical options for disposal. Area farmers are generally willing to accept sludge material for agricultural purposes. There are a number of variables; however, the probable cost for sludge removal from Cell 3 and off-site disposal in 2012 is in the order of \$600,000 to \$800,000.*

*The potential to stockpile/compost the removed sludge on site was reviewed and not recommended. The previous practice of stockpiling sludge at the WWTP site was somewhat reluctantly approved by the MOE as an emergency measure. The sludge is relatively inert, therefore stockpiling and allowing it to compost may provide little benefit. Double handling of the sludge would be more expensive than hauling directly from the lagoons to the final disposal site."*

In a follow up memo B.M. Ross clarified that removal of sludge was not an immediate issue. In their opinion the work could be deferred for 3 to 4 years, with periodic inspections to confirm conditions are not getting worse. The alternative is to consider removing sludge in phases as budgets permit.

The aeration system upgrade work is currently proposed with no offsite sludge removal. Sludge accumulation will be monitored annually and off site planned beyond five years.

### **XI. SUMMARY OF COMPLAINTS AND ACTIONS TAKEN**

The following is a summary of all wastewater related complaints received in 2016 and the steps taken to address the complaints:

<b>2017 Customer Complaints and Action Taken</b>			
<b>Date</b>	<b>Location</b>	<b>Description</b>	<b>Action Taken</b>
August 10, 2017	322 Eastern Ave, Exeter	PDC backup	CCTV drain, confirmed no blockage in PDC, customers' plumber corrected plumbing issue.
August 11, 2017	457 William Street, Exeter	PDC concern	CCTV drain, confirmed no blockage in PDC but pipe in poor condition. Recommended replacement of PDC
Sept 13, 2017	217 Victoria Ave East, Crediton	PDC backup	CCTV drain, confirmed roots at cleanout. Excavated, removed roots and repaired PDC.
Sept 13, 2017	141 Sanders Street East, Exeter	PDC backup	CCTV drain, confirmed blockage is private & recommended customer contact a plumber to repair
Sept 19, 2017	418 William Street, Exeter	PDC backup	Unable to CCTV drain
Sept 21, 2017	442 Albert Street, Exeter	PDC backup	CCTV drain, confirmed blockage is private & recommended customer contact a plumber to repair
Oct 13, 2017	Huron Street East, Exeter	PDC concern	CCTV drain, confirmed no blockage in PDC

## 2017 Annual Wastewater Systems Report to Council

Nov 21, 2017	36 William Street, Exeter	PDC backup	CCTV drain, confirmed no blockage in PDC, customer's plumber corrected plumbing issue.
--------------	---------------------------	------------	--

### **XII. SUMMARY of BY-PASSES, OVERFLOWS and SPILLS**

In 2017 there were four (4) sewage by-pass events; one (1) at the Huron Park Sanitary Pumping Station; two (2) at the William Street Sanitary Pumping; and one (1) at the Snider Crescent Sanitary Pumping Station. There were no by-passes in 2017 at the Crediton Sanitary Pumping Station. There were no spills at the Exeter Wastewater Treatment Facility or at any sanitary sewage pumping station in 2017.

At the William Street Sanitary Pumping Station there were (2) wet weather sewage bypasses. At the Huron Park Sanitary Sewage Pumping Station there was one (1) wet weather sewage bypass. At the Snider Crescent Sanitary Pumping Station there was one (1) wet weather sewage bypass.

Wet weather by-passes may be an indication of inflow and infiltration issues within the wastewater collection system. In Exeter there are a number of roof water leaders and foundation drains connected to the sanitary sewage system. In the Huron Park Industrial Area there is a number of demolished buildings, old and abandoned sewers on private property and private roads. Inflow and infiltration impacts the wastewater collection system ability to convey sewage and WWTF to treat wastewater. This may also result in untreated wastewater discharges to the open environment.

Records are kept of all bypasses at sanitary pumping stations. A "Sewage By-pass Reporting Record" includes the following information:

- (a) the date of the Event
- (b) the measured or estimated volume of the Event
- (c) the duration of the Event
- (d) the location of the Event
- (e) the reason for the Event
- (f) the level of treatment the Bypass received and disinfection status of same.
- (g) the time of the bypass Event
- (h) the name/time of the call to SAC, HCHU, MOE and name of person contacted
- (i) the date/time of follow up call to HCHU, MOE, and name of person contacted
- (j) the date when sample results were sent.

A "Monthly By-pass Report" includes the facility name, date of the by-pass event, type of pumping station, duration, volume, reason for the by-pass and the sample results. Best efforts are used to take at least two grab sample of every by-pass event and sampled for BOD<sub>5</sub>, suspended solids, total phosphorus and E-coli.

At the William Street, Snider Crescent and Crediton Sanitary Pumping Stations the volume of any by-pass event is measured by a sewage meter. By-passes are estimated at the Huron Park Sanitary Pumping Station. The following mitigative measures were taken in 2017:

## 2017 Annual Wastewater Systems Report to Council

1. Work continued on the wastewater collection system in Huron Park Industrial area to reduce inflow and infiltration.
2. Completed sanitary sewer replacement on James Street (Main to Albert), Simcoe Street (Main to Andrew) and William Street (Huron to Anne).
3. Engineering for future sewer replacement on Huron Street (Edward to town limit).

Sanitary sewers will continue to be replaced as part of an overall asset management program, to reduce inflow and infiltration. When urban road reconstruction projects are planned, the wastewater collection system will be evaluated by CCTV inspection. Sanitary sewers will be replaced as necessary and any cross-connections removed. Although there is sufficient capacity to treat excess flows during heavy rainfall or snow melt events, the sanitary pumping stations are vulnerable to by-passes. Efforts will continue to investigate and undertake measures and initiatives to identify, quantify and reduce by-pass overflows at sanitary pumping stations.

The following is a summary of 2017 wastewater by-pass events:

### **SOUTH HURON WASTEWATER TREATMENT FACILITY** **SUMMARY of 2017 BYPASSES, AND/OR OVERFLOWS**

<u>Sanitary Pumping Station Overflow</u>	
Total number of events.	4
Total duration of events. (Hours)	9.08
Of the total number of events, how many are dry-weather events.	0
Total quantity with no treatment. (1000 m3)	1.204
Total quantity with only disinfection. (1000 m3)	0
Total quantity with other treatment. (1000 m3)	0
Are any overflow(s) at combined sewer locations (Yes/No)	No
What is the reason for event	Heavy Precipitation & snow melt
What is the name of the receiving water	Ausable River
Name the most important type of sensitive receptor.	receiving water
What is the approximate distance to the sensitive receptor (km)	0.1

## 2017 Annual Wastewater Systems Report to Council

Date	Location	Type P/S	Start Time	Duration (hrs)	Volume 1,000m <sup>3</sup>	Disinfect Y/N/U	Reason Code	SAMPLE RESULTS			
								BOD mg/l	SS mg/l	TP mg/l	E Coli /100ml
Jan 12	Huron Park	P	00:43	3hrs 55mins	493	N	1&2	18	77	0.28	160,000
Jan 12	William	P	00:54	3hrs 40mins	348	N	1&2	17	52	0.29	170,000
Jan 12	Snider	P	00:43	N/A	226	N	1&2	12	27	0.26	79,000
May 1	William	P	12:20	1hr 30 mins	137	N	1	<40	55	0.30	360,000

P= PRIMARY  
S= SECONDARY

### REASON CODES

- 1 - HEAVY PRECIPITATION
- 2 - SNOW MELT
- 3 - EQUIPMENT FAILURE
- 4 - EQUIPMENT MAINTENANCE
- 5 - SEWER PROBLEMS
- 6 - POWER FAILURE
- 7 - EXCEED DESIGN CAPACITY

### **XIII. Notices submitted to MOECC under Schedule 'A' of the ECA**

Under the new Environmental Compliance Approval, certain modifications/upgrades to the existing treatment facility, pumping stations and collection system piping are approved under "Limited Operational Flexibility". However, a "Notice of Modifications to Sewage Works" form is required to be completed for any work under Schedule 'A' with a declaration by a Professional Engineer and the Owner.

No "Notice of Modifications to Sewage Works" forms were submitted to the MOECC in 2017.

### **XIV. Modifications completed under Schedule 'A' of the ECA**

No modifications were made to sewage works in 2017 using the Limited Operational Flexibility provision of the ECA.

### **XV. Federal Wastewater Systems Effluent Regulation**

The following is information regarding the mandatory reporting under the Federal (Environment Canada) Wastewater Systems Effluent Regulations SOR/2012-139. This reporting is in addition to the effluent quality and reporting requirements of the ECA.

## 2017 Annual Wastewater Systems Report to Council

The Exeter Wastewater Treatment Facility is registered with Environment Canada, as a continuous discharge type sewage lagoon and the following are the applicable Effluent Quality Standards.

CBOD	SS	TRC	NH <sub>3</sub>
Average	Average	Average	Maximum
≤ 25 mg/L	≤ 25 mg/L	≤ 0.02 mg/L	< 1.25 mg/L

### Sampling Requirements for Continuous Systems with HRT ≥ 5 days

Annual Average Daily Volume (m <sup>3</sup> )	Type of Sample	Minimum Sampling Frequency	Averaging Period	Monitoring Report Frequency
> 2500 and ≤ 17500	Grab or composite	Every 2 weeks but at least 7 days after any other sample	Quarterly	Quarterly

### Acute Lethality Testing

ADV for Previous Calendar Year	Minimum Sampling Frequency	Reduced Sampling Frequency
> 2500 to ≤ 50000 m <sup>3</sup>	Quarterly	Yearly (if samples for 4 consecutive quarters are not acutely lethal)

As a result of good sampling results, quarterly Acute Lethality testing has been reduced to annual sampling. This was a result of four consecutive quarters where the effluent samples tested were determined not to be acutely lethal. Accordingly, acute lethality testing has been reduced to yearly. But at least six months after any other sample. However, if a future sample is determined to be acutely lethal, sampling is required twice monthly to determine the cause. If three consecutive samples are determined not to be acutely lethal, sampling returns to quarterly.

All quarterly effluent reports were submitted prior to the regulatory deadline of within 45 days after the end of the quarter. In 2017 the Exeter Wastewater Treatment Facility was in compliance with the Federal (Environment Canada) Wastewater Systems Effluent Regulations.

The following are the 2017 results for the Exeter Wastewater Treatment Facility:

# 2017 Annual Wastewater Systems Report to Council

MUNICIPALITY OF SOUTH HURON						
2017 Environment Canada Effluent Regulatory Reporting (ERRIS)						
Location: Exeter Sewage Lagoons						
FIRST QUARTER REPORTING						
Reporting Period	Number of days that effluent was discharged	Total volume of effluent discharged (m³)	Date Sampled	Average CBOD (mg/L)	Average concentration of suspended solids (mg/l)	Acute Lethality Test Results
Jan - March	22	203,524		6.75	6	
JANUARY	0	0				
FEBRUARY	22	203,524	02/02/2017	9.00	5.00	Not Required
			07/02/2017	4.00	4.00	
			14/02/2017	6.00	7.00	
			21/02/2017	8.00	9.00	
MARCH	0	0				
SECOND QUARTER REPORTING						
Reporting Period	Number of days that effluent was discharged	Total volume of effluent discharged (m³)	Date Sampled	Average CBOD (mg/L)	Average concentration of suspended solids (mg/l)	Acute Lethality Test Results
April - June	79	573,762		<4	<2	
APRIL	19	177,992	18/04/2017	<4	<2	Not Lethal
			20/04/2017	<4	<2	
			27/04/2017	<4	<2	
MAY	30	207,662	04/05/2017	<4	<2	
			11/05/2017	<4	<2	
			18/05/2017	<4	<2	
			26/05/2017	<4	<2	
JUNE	30	188,108	08/06/2017	<4	<2	
			15/06/2017	<4	<2	
			22/06/2017	<4	<2	
			29/06/2017	<4	<2	
THIRD QUARTER REPORTING						
Reporting Period	Number of days that effluent was discharged	Total volume of effluent discharged (m³)	Date Sampled	Average CBOD (mg/L)	Average concentration of suspended solids (mg/l)	Acute Lethality Test Results
July - Sept	92	643,558		<4	2.40	
JULY	31	214,983	06/07/2017	<4	<2	Not Required
			11/07/2017	<4	<2	
			18/07/2017	<4	4.00	
			25/07/2017	<4	<2	
AUGUST	31	243,450	02/08/2017	<4	2.00	
			08/08/2017	<4	<2	
			15/08/2017	<4	<2	
			22/08/2017	<4	<2	
			29/08/2017	<4	<2	
SEPTEMBER	30	185,125	05/09/2017	<4	2.00	
			12/09/2017	<4	<2	
			19/09/2017	<4	2.00	
			27/09/2017	<4	2.00	
FOURTH QUARTER REPORTING						
Reporting Period	Number of days that effluent was discharged	Total volume of effluent discharged (m³)	Date Sampled	Average CBOD (mg/L)	Average concentration of suspended solids (mg/l)	Acute Lethality Test Results
Oct - Dec	0	0		0	0.00	
OCTOBER	0	0				
NOVEMBER	0	0				
DECEMBER	0	0				
	TOTAL NUMBER OF DAYS DISCHARGING	TOTAL AMOUNT OF DISCHARGE				
	193	1,420,844				

## **APPENDIX “A”**

## **APPENDIX "A"**

### **Reporting requirements set out in the Exeter Wastewater Treatment Facility Environmental Compliance Approval (ECA – No. 2395-9QDPQWECA)**

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 and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;
- (b) a description of any operating problems encountered and corrective actions taken;
- (c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;
- (d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;
- (e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- (f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6.
- (g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
- (h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
- (i) a summary of all Bypass, spill or abnormal discharge events;
- (j) a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule 'A', Section 1, with a status report on the implementation of each modification;
- (k) a report summarizing all modifications completed as a result of Schedule 'A', Section 3; and
- (l) any other information the Water Supervisor requires from time to time.

## **APPENDIX “B”**

**APPENDIX “B”**

**REGULATIONS PERTAINING TO THE OPERATION OF A WASTEWATER SYSTEM**

1. Federal (Environment Canada) Wastewater Systems Effluent Regulations  
SOR/2012-139

2. Ontario Water Resources Act, R.S.O. 1990, c. O.40

Related regulations made under the Ontario Water Resources Act:

- O. Reg. 223/07 - Environmental Penalties
- O. Reg. 525/98 - Approval Exemptions
- O. Reg. 155/98 – Transitional Provisions Related to the Repeal of Part VIII of the Environmental Protection Act.
- O. Reg. 129/04 - Licensing of Sewage Works Operators

3. Ontario Environmental Protection Act, R.S.O. 1990, c. E.19

4. Ontario Environmental Assessment Act, R.S.O. 1990, c. E.18

5. Ontario Planning Act R.S.O. 1990, c. P.13

6. Ontario Nutrient Management Act, 2002, S.O. 2002, c. 4

7. Ontario Environmental Bill of Rights Act, S.O. 1993, c. 28

8. Ontario Clean Water Act, 2006, S.O. 2006, c. 22

9. Ontario Regulation 453/07 - Financial Plans Regulation made under the Safe Drinking Water Act, 2002, S.O. 2002, c. 32

10. Ontario Building Code Act S.O. 1992, c. 23

[www.ene.gov.on.ca](http://www.ene.gov.on.ca)  
Last Modified: 09/03/2018

## **APPENDIX “C”**



**AMENDED ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER 2395-9QDPQW  
Issue Date: November 25, 2014

The Corporation of the Municipality of South Huron  
322 Main St S  
Post Office Box, No. 759  
Exeter, Ontario, N0M 1S6

Site Location: Exeter Wastewater Treatment Plant  
71042 Airport Line RR # 1, Exeter  
South Huron Municipality, County of Huron, N0M 1S6

*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:*

Upgrading of the existing Town of Exeter Sewage Treatment Facility for the collection, transmission, treatment and disposal of domestic sewage from the Town of Exeter, located at the above site location, rated at the capacities mentioned below and consisting of the following Works:

Exeter Sewage Treatment Facility (Rated Capacity)	
Annual Total Sewage Volume	2,573,718 m <sup>3</sup> /y
Average Daily Flow	7,051 m <sup>3</sup> /d

**PROPOSED WORKS**

- Installation of two (2) new positive displacement blowers, to replace two of the existing blowers, each sized to provide 100% of the air flow required to operate the lagoon system, thus capable of delivering a minimum of 435 L/s.

## **PREVIOUS WORKS**

### **Treatment Plant**

#### **Sewage Lagoons**

- Aerated Cell No. 3, approximate dimensions 330 m x 260 m x 4.15 m water depth, and effective storage volume of approximately 343,500 m<sup>3</sup>;
- Cell No. 4, constructed in an “L” shape, with one section of approximate dimensions 270 m x 550 m, and the other section of approximate dimensions 250 m x 160 m, both sections with 4.3 m water depth, and effective storage volume of approximately 751,000 m<sup>3</sup>; and
- Cell No. 1, approximate dimensions 340 m x 260 m x 3.7 m water depth, and effective storage volume of approximately 313,000 m<sup>3</sup>.

#### **Inlet and Transfer Structures**

- Aerated Cell No. 3, approximate dimensions 330 m x 260 m x 4.15 m water depth, and effective storage volume of approximately 343,500 m<sup>3</sup>;
- Inlet structure to sewage lagoon Cells No. 3 and 4;
- Interconnecting structure between sewage lagoon Cells No. 3 and 4;
- Interconnecting structure between sewage lagoon Cells No. 1 and 3; and
- Outlet structure from sewage lagoon Cells No. 1 and 4.

#### **Aeration Equipment**

- Submerged air diffuser system within lagoon Cell No. 3; and
- Three (3) positive displacement blowers, each rated at 800 L/s, housed within a blower building (two of the existing blowers to be replaced by the two new blowers as per Proposed Works and one to remain in place as a back up stand-by).

#### **Filter Pumping Station**

- Inground filter pumping station, consisting of two (2) submersible sewage pumps, each with a rated capacity of 237 L/s @ 13.5 m TDH, complete with valves and piping, alarms, etc., capable of pumping effluent from sewage lagoon Cell No. 3 or 4 to either the intermittent sand filter system or to sewage lagoon Cell No. 1.

### **Intermittent Sand Filter System**

- Intermittent sand filtration system comprising four (4) filter beds to typically operate on a cycle of two operating and two resting, each with a top surface area of approximately 102 m x 63 m, having a minimum usable surface area of 23,400 m<sup>2</sup>, together with distribution and underdrain collection piping, designed for an average hydraulic loading rate of 475 L/s.

### **Phosphorus Removal**

- Enclosed alum storage tank and alum feed system, including application points to the sewage lagoon Cell No. 3 and 4 inlet structure and the sewage lagoon Cell No. 3 and 4 interconnecting structure.

### **Effluent Structure & Outfall**

- Effluent flow control structure, complete with flow metering equipment; and
- Outfall piping to Ausable River.

### **William Street. Sewage Pumping Station**

- Three (3) sewage pumps, each with a rated capacity of 145 L/s @ 25.0 m TDH for single pump operation, complete with variable speed drives, pump controls, piping, discharge forcemain, etc.; and
- One (1) 175 kW standby diesel generator set.

and other controls, piping, valves, drains, and appurtenances essential for the proper operation of the aforementioned sewage works,

all in accordance with supporting documents listed in Schedule 'B'.

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

"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;

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

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

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

"Bypass" means diversion of sewage around one or more unit processes within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final effluent sampling location, and discharging to the environment through the Sewage Treatment Plant outfall;

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

- a) danger to the health or safety of any person; or,
- b) injury or damage to any property, or serious risk of injury or damage to any property; or
- c) treatment process biomass washout.

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

"Final Effluent" means sewage discharge via the Sewage Treatment Plant outfall after undergoing the full train of unit processes as listed in the Approval;

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

"Composite Sample" means a sample made up of at least 24 individual samples taken approximately one hour apart, collected over a time period of 24 consecutive hours;

"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;

"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;

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

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

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

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

"Grab Sample" means an individual sample of at least 1000 millilitres collected in the appropriate container at a randomly selected time over a period of time not exceeding 15 minutes;

"Limited Operational Flexibility" (LOF) means any modifications that the Owner is permitted to make

to the Works under this Approval;

"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;

"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;

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

"Owner" means the Corporation of the Municipality of South Huron and its successors and assignees;

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

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

"Plant Overflow" means a discharge to the environment from the Sewage Treatment Plant at a location other than the plant outfall or into the plant outfall downstream of the Final Effluent sampling location;

"Previous Works" means those portions of the sewage works previously constructed and approved under an Approval;

"Proposed Works" means the sewage works described in the Owner's application, this Approval, to the extent approved by this Approval;

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

"Sewage Treatment Plant" means the entire sewage treatment and effluent discharge facility;

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

"Water Supervisor" means the Water Supervisor or designate for the Sarnia and Windsor offices of the Ministry; and

"Works" means the sewage works described in the Owner's application and this Approval, including the Proposed Works, Previous Works 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 PROVISIONS**

(1) The Owner shall ensure that any person authorized to carry out work on or operate any aspect of the Works is notified of this Approval and the 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, the application for approval of the works and the submitted supporting documents and plans and specifications as listed in this Approval.

(3) Where there is a conflict between a provision of any submitted document 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 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 Approval are severable. If any requirement of this Approval, or the application of any requirement of this Approval to any circumstance, is held invalid or unenforceable, the application of such requirement to other circumstances and the remainder of this Approval shall not be affected thereby.

### **2. EXPIRY OF APPROVAL**

This Approval 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 Approval.

### **3. CHANGE OF OWNER**

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

- (a) change of Owner;
- (b) change of address of the Owner;
- (c) change of partners where the Owner is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, R.S.O. 1990, c.B17 shall be included

in the notification to the Water Supervisor;

- (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 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.

#### 4. UPON THE SUBSTANTIAL COMPLETION OF THE WORKS

(1) Within one (1) 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. BYPASSES AND PLANT OVERFLOWS

(1) Any Bypass or Plant Overflow is prohibited, except:

- (a) in an Emergency Situation;
- (b) where the approved design and operation of the Works provides for Bypasses / Plant Overflows to be triggered under certain flow conditions and those conditions have been met;
- (c) where the Bypass / Plant Overflow is a direct and unavoidable result of a planned maintenance procedure, the Owner notified the Director 15 days prior to the Bypass/Plant Overflow and the Director has given written consent of the Bypass/Plant Overflow; and
- (d) where the Bypass / Plant Overflow is planned for research or training purposes, the discharger notified the Director 15 days prior to the Bypass / Plant Overflow and the Director has given written consent of the Bypass / Plant Overflow.

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

- (a) the date, time, and duration of the Event;
- (b) the location of the Event;
- (c) the measured or estimated volume of the Event;
- (d) the reason for the Event; and
- (e) the level of treatment the Bypass(es) and/or Plant Overflow(s) received and disinfection status of same.

(3) The Owner shall submit Bypass and Plant Overflow Event Reports 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. Event Reports shall be in an electronic format specified by the Ministry. In each Event Report the Owner 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 Event(s);
- (e) the reason for the Event(s); and
- (f) the level of treatment the Bypass(es) and/or Plant Overflow(s) received and disinfection status of same.

(4) The Owner shall use best efforts to collect a representative sample consisting of a minimum of two (2) grab samples of the By-pass / Plant Overflow and have it analyzed for parameters outlined in Condition 7 using the protocols specified in Condition 9 (with BOD5 instead of CBOD5, preferably), one at the beginning of the Event and the second approximately near the end of the Event, to best reflect the effluent quality of such By-pass or Plant Overflow.

(5) The Owner shall maintain a logbook of all Plant Bypasses and Plant Overflows, which shall contain, at a minimum, the types of information set out in subsection 2(a) to 2(e) in respect of each Bypass and Plant Overflow.

## 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 - Final Effluent Objectives	
Effluent Parameter	Concentration Objective (milligrams per litre unless otherwise indicated)
CBOD <sub>5</sub> (a)	5.0
CBOD <sub>5</sub> (b)	15.0
Total Suspended Solids (a)	5.0
Total Suspended Solids (b)	15.0
Total Phosphorus (a)	0.50
Total Phosphorus (b)	0.80
Total Ammonia Nitrogen (a)(*)	1.0
Total Ammonia Nitrogen (b)(*)	>5:1 dilution (***)
Dissolved Oxygen (**)	5.0
<i>E. Coli</i>	<150 organisms/100 mL (monthly geometric mean density)

Note:

(a) Based on 2,290,518 cubic metres of filtered effluent and when stream temperatures are greater than 5 °C;

(b) Based on 283,200 cubic metres of unfiltered direct discharge and when stream temperatures are less or equal to 5 °C;

(\*) During the operation of the intermittent sand filters, the Total Ammonia Nitrogen concentrations are based

on assumed temperature and pH conditions which will result in 0.1 mg/L or less unionized ammonia concentration in the discharge.

(\*\*) The dissolved oxygen value shown is a minimum versus for the other variables the values are maximums.

(\*\*\*) > 5:1 dilution means 5 parts streamflow to 1 part sewage effluent flow.

(2) The Owner shall use best efforts to:

(a) operate the works within the Rated Capacity of the Works;

(b) ensure that the effluent from the Works is essentially free of floating and settleable solids and does not contain oil or any other substance in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

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

## 7. EFFLUENT LIMITS

(1) The Owner shall design, construct, 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 - Final Effluent Limits		
Final Effluent Parameter	Monthly Average Concentration (milligrams per litre unless otherwise indicated)	Annual Average Loading (kilograms per day unless otherwise indicated)
Column 1	Column 2	Column 3
CBOD <sub>5</sub> (a)	10.0	22,905
CBOD <sub>5</sub> (b)	25.0	7,080
Total Suspended Solids (a)	10.0	22,905
Total Suspended Solids (b)	25.0	7,080
Total Phosphorus (a)	0.60	1,374
Total Phosphorus (b)	1.0	283
Total Ammonia Nitrogen (a)(*)	4.0	9,162
Un-ionized Ammonia (b)	0.10	28.3
Un-ionized Ammonia (c)	0.15	-
Dissolved Oxygen (**)	5.0	-
<i>E. Coli</i>	200/100 mL (monthly geometric mean density)	-

Note:

(a) Based on 2,290,518 cubic metres of filtered effluent and when stream temperatures are greater than 5 °C;

(b) Based on 283,200 cubic metres of unfiltered direct discharge and when stream temperatures are less or equal to 5 °C;

- (c) During the winter lagoon portion in the discharge based on a maximum temperature of 5°C and a historical pH range of 7.5 to 8.5. Any exceedance of the 0.1 mg/L un-ionized ammonia criterion in Ausable River must be reported immediately to the Water Supervisor. The Water Supervisor may require that a benthic invertebrate organisms investigation be carried out and the findings submitted to the Water Supervisor within sixty (60) days to determine if aquatic life in the Ausable River has been impacted by this exceedance.
- (\*) During the operation of the intermittent sand filters, the Total Ammonia Nitrogen concentrations are based on assumed temperature and pH conditions which will result in 0.1 mg/L or less unionized ammonia concentration in the discharge.
- (\*\*) The dissolved oxygen value shown is a minimum versus for the other variables the values are maximums.

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

- (a) The Monthly Average Concentration of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum concentration set out in Column 2 of subsection (1).
- (b) The Annual Average Loading of a parameter named in Column 1 of subsection (1) shall not exceed the corresponding maximum waste loading set out in Column 3 of subsection (1).

(3) Notwithstanding subsection (1), the Owner shall operate and maintain the Works such that the effluent is 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.

(4) The unfiltered discharge (i.e when stream temperatures are less than or equal to 5 °C) shall be restricted to no more than 283,200 cubic metres in any one winter discharge season.

(5) Paragraphs (a) and (b) of subsection (2) shall apply upon the issuance of this Approval.

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

(7) Only those monitoring results collected during the corresponding time period shall be used in calculating the Monthly Average Concentration and Annual Average Loading for this Approval.

## 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 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 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 Ministry's local office; and
- (f) procedures for receiving, responding and recording public complaints, including recording any followup actions taken.

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

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

## 9. 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 a location characteristic of the quality and quantity of the effluent stream over the time period being monitored.

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

- (a) Daily means once each day;
- (b) Weekly means once every month;
- (c) Monthly means once every month;

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

<b>Table 3 - Raw Sewage Monitoring</b> (Samples to be collected at the head of the inlet works)		
<b>Parameters</b>	<b>Sample Type</b>	<b>Minimum Frequency</b>
BOD <sub>5</sub>	Grab Sample	Monthly
Total Suspended Solids	Grab Sample	Monthly
Total Kjeldahl Nitrogen	Grab Sample	Monthly
Total Phosphorus	Grab Sample	Monthly

<b>Table 4 - Final Effluent Monitoring</b> (Samples to be collected at the outlet of the storage lagoons and at the outlet of the sand filter unless otherwise indicated)		
Parameters	Sample Type	Frequency
CBOD <sub>5</sub>	Composite Sample	Weekly
Total Suspended Solids	Composite Sample	Weekly
Total Phosphorus	Composite Sample	Weekly
Ammonia + Ammonium Nitrogen	Composite Sample	Weekly
Nitrates	Composite Sample	Weekly
<i>E. Coli</i>	Grab	Weekly
Dissolved Oxygen	Grab/probe	Weekly
pH	Grab/Probe	Weekly
Temperature	Grab/Probe	Weekly

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

- (a) the Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works (Liquid Waste Streams Only)", as amended from time to time by more recently published editions;
- (b) the Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" (January 1999), ISBN 0-7778-1880-9, as amended from time to time by more recently published editions; and
- (c) the publication "Standard Methods for the Examination of Water and Wastewater" (20th edition), as amended from time to time by more recently published editions.

(5) The temperature and pH of the effluent from the Works shall be determined in the field at the time of sampling for Total Ammonia Nitrogen. The concentration of unionized 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 (unionized). For the purposes of determining concentration of unionized ammonia, single representative values of temperature and pH obtained through a probe shall be considered complementary to the 24-hour composite total ammonia nitrogen sample.

(6) The sampling locations in subsection (3) above may be changed or abandoned and new locations added if, in the opinion of the Water Supervisor, it is necessary to do so to ensure representative samples are being collected.

(7) The Owner shall install and maintain (a) continuous flow measuring device(s), to measure the flowrate through the Works with an accuracy to within plus or minus ten per cent (+/- 10%) of the actual flowrate for the entire design range of the flow measuring device, and record the flowrate at a daily frequency.

(8) The Owner shall, for the purpose of providing data for the calculation of loadings in effluent in accordance with Condition 7, measure, estimate or calculate and record the total volume of element

discharged on the sampling day.

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

10. REPORTING

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

(2) Ten (10) days prior to the date of a planned Bypass being conducted pursuant to Condition 5 and as soon as possible for an unplanned Bypass, the Owner shall notify the Water Supervisor (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 Bypass.

(3) The Owner shall report to the Water Supervisor, 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 Water Supervisor 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 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 and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;

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

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

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

- (e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment;
- (f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 6.
- (g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;
- (h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;
- (i) a summary of all Bypass, spill or abnormal discharge events;
- (j) a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule 'A', Section 1, with a status report on the implementation of each modification;
- (k) a report summarizing all modifications completed as a result of Schedule 'A', Section 3; and
- (l) any other information the Water Supervisor requires from time to time.

(6) The Owner shall, within thirty (30) calendar days of issuance of this Approval, submit a Municipal and Local Services Board Sewage Works 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.

#### 11. REVOCATION OF EXISTING APPROVALS

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

(2) Notwithstanding Condition 11(1) above, the original applications for approval, including design calculations, engineering drawings, and reports prepared in support of the existing Approvals whose descriptions of the approved works and conditions are now replaced pursuant to Condition 11(1) above, shall form part of this Approval.

(3) Where an existing Approval referred to in Condition 11(1) above applies to Works in addition to the Works approved by this Approval, it shall continue to apply to those additional Works.

12. 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 'A' 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'**

### **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.

#### **1.1 Sewage Pumping Stations**

- a. Alter pumping capacity by adding or replacing equipment where new equipment is located within an existing sewage treatment plant site or an existing sewage pumping station site, provided that the modifications do not result in an increase of the sewage treatment plant 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 1,200mm

#### **1.2 Sewage Treatment Process**

- a. Installing additional chemical dosage equipment including replacing with alternative chemicals for pH adjustment or coagulants (non-toxic polymers) provided that there are no modifications of treatment processes or other modifications that may alter the intent of operations and may have negative impacts on the effluent quantity and quality.
- b. Expanding the buffer zone between a sanitary sewage lagoon facility or land treatment area and adjacent uses provided that the buffer zone is entirely on the proponent's land.
- c. Optimizing existing sanitary sewage lagoons with the purpose to increase efficiency of treatment operations provided that existing sewage treatment plant rated capacity is not exceeded and where no land acquisition is required.
- d. Optimizing existing sewage treatment plant equipment with the purpose to increase the efficiency of the existing treatment operations, provided that there are no modifications to the works that result in an increase of the approved Rated Capacity, and may have adverse effects to the effluent quality or location of the discharge.
- e. Replacement, refurbishment of previously approved equipment in whole or in part with Equivalent Equipment, like-for-like of different make and model, provided that the firm capacity, reliability, performance standard, level of quality and redundancy of the group of equipment is kept the same or exceeded. For clarity purposes, the following equipment can be considered under this provision: pumps, screens, grit separators, blowers, aeration equipment, sludge thickeners, dewatering

equipment, UV systems, chlorine contact equipment, bio-disks, and sludge digester systems.

### 1.3 Sewage Treatment Plant Outfall

- a. Replacement of discharge pipe with similar pipe size or diffusers provided that the outfall location is not changed.

### 1.4 Sanitary Sewers

- a. Pipe relining and replacement with similar pipe size within the Sewage Treatment Plant site, where the nominal diameter is not greater than 1,200mm.

### 1.5 Pilot Systems

- a. Installation of pilot systems for new or existing technologies provided that:
  - i. any effluent from the pilot system is discharged to the inlet of the sewage treatment plant or hauled off-site for proper disposal,
  - ii. any effluent from the pilot system discharged to the inlet of the sewage treatment plant 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
  - iii. the pilot system's duration does not exceed a maximum of two years; and a report with results is submitted to the Director and Water Supervisor three months after 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.

### **SCHEDULE 'B'**

Environmental Compliance Approval (ECA) supporting documents:

1. Environmental Compliance Approval Application for Sewage Works dated September 27, 2013 signed by Don Gilbertson, and cover letter submitted by Andrew Garland, P.Eng., dated September 30, 2013;
2. A document entitled "Municipality of South Huron Exeter STP Blowers Design Brief and Notes", dated June 4, 2013 and Revised January 20, 2014;
3. Engineering Drawing No. M1 entitled "Municipality of South Huron – Exeter Wastewater Treatment Plant", dated September 27, 2013 and prepared by BMRoss, Consulting Engineers; and
4. Email dated January 20, 2014 from Andrew Garland, P.Eng. of B.M. Ross and Associates Limited to Youssouf Kalogo, P.Eng of the 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)

*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 Approval 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 Approval the existence of this Approval.
2. Condition 2 is included to ensure that the Works are constructed in a timely manner so that standards applicable at the time of Approval of the Works are still applicable at the time of construction, to ensure the ongoing protection of the environment.
3. Condition 3 is included to ensure that the Ministry records are kept accurate and current with respect to the approved works and to ensure that subsequent owners of the Works are made aware of the 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 maintained for future references.
5. Condition 5 is included to indicate that Bypass(es) is prohibited unless there is an emergency situation or the Owner has permission from the Water Supervisor to do so and the Bypass will not violate the approved effluent requirements. Condition 5 is also included to indicate that Plant Overflow of untreated and/or partially treated sewage to the environment is prohibited, save in certain limited circumstances where the failure to do so could result in greater injury to the public interest than the Plant Overflow itself, or where the Plant Overflow 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 Bypass / Plant Overflow Event(s).
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 receiver meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body.
8. Condition 8 is included to require that the Works be properly operated, maintained, funded, staffed and equipped such that the environment is protected and deterioration, loss, injury or damage to any person or property is prevented. As well, the inclusion of a comprehensive operations manual governing all significant areas of operation, maintenance and repair is prepared, implemented and kept up-to-date by

the owner and made available to the Ministry. Such a manual is an integral part of the operation of the Works. Its compilation and use should assist the Owner in staff training, in proper plant operation and in identifying and planning for contingencies during possible abnormal conditions. The manual will also act as a benchmark for Ministry staff when reviewing the Owner's operation of the work.

9. Condition 9 is included to enable the Owner to evaluate and demonstrate the performance of the Works, on a continual basis, so that the Works are properly operated and maintained at a level which is consistent with the design objectives and effluent limits specified in the Approval and that the Works does not cause any impairment to the receiving watercourse.
10. Condition 10 is included to provide a performance record for future references, to ensure that the Ministry is made aware of problems as they arise, and to provide a compliance record for all the terms and conditions outlined in this Approval, so that the Ministry can work with the Owner in resolving any problems in a timely manner.
11. Condition 11 is included to stipulate that this Approval replaces all previous approvals for the Works being the subject of this Approval, and that the existing approvals remain in force for the purpose of any Works which are not subject to this Approval.
12. Condition 12 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, MOE policies, guidelines, and industry engineering standards and best management practices.

**Upon issuance of the environmental compliance approval, I hereby revoke Approval No(s).  
6088-9FEREP issued on March 5, 2014.**

*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:*

1. 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;
2. 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:*

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. 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  
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) 212-6349, Fax: (416) 314-4506 or [www.ert.gov.on.ca](http://www.ert.gov.on.ca)

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

DATED AT TORONTO this 25th day of November, 2014



---

Edgardo Tovilla  
Director  
appointed for the purposes of Part II.1 of the  
*Environmental Protection Act*

HV/

c: DWMD Supervisor, MOECC Owen Sound District Office.  
The Corporation of the Municipality of South Huron.

## **APPENDIX “D”**

**MUNICIPALITY OF SOUTH HURON**  
**Performance Assessment Report - Wastewater Treatment Plant**

Project: Exeter Lagoons  
 Project Number: 110000221  
 Works Number: 7051  
 Description: Raw Flow Group Selected:

Month	Flows			Biochemical O2 Demand			Suspended Solids			Phosphorus			Nitrogen Series			<-E.Coli -> Geo. Mean per 100ml
	Total Flow m3	Avg Day m3	Max Day m3	Avg Raw BOD mg/L	Avg Eff BOD mg/L	Percent Removal	Avg Raw SS mg/L	Avg Eff SS mg/L	Percent Removal	Avg Raw Phos. mg/L	Avg Eff Phos. mg/L	Phos. Loading kg/d	Avg Eff NH3+NH4 mg/L	NH3+NH4 Loading kg/d	Avg Eff Nitrate mg/L	
JAN	180,296	7,839	54,144	52.7	74.3	94%	73.6	6.3	91%	2.7	0.24	2.22	8.13	75.21	0.59	0.07
FEB	128,584	4,592	8,781	116.3	132.0	95%	132.0	2.0	97%	1.9	0.40	3.74	0.13	1.21	5.75	0.06
MAR	133,492	4,603	15,907	87.7	68.3	93%	68.3	2.0	98%	0.5	0.28	1.87	0.10	0.67	6.56	0.03
APR	153,285	5,933	14,351	60.3	17.3	97%	17.3	2.0	98%	3.7	0.24	1.50	0.10	0.62	4.97	0.03
MAY	170,593	5,502	21,312	136.0	98.0	96%	98.0	2.5	94%	1.9	0.28	2.01	0.10	0.69	2.52	0.03
JUN	72,114	2,403	5,012	96.6	42.7	98%	42.7	2.0	99%	5.6	0.27	2.12	0.18	1.41	4.96	0.09
JUL	59,913	1,932	9,168	221.3	211.6	96%	211.6	2.0	98%	3.4	0.25	1.54	0.58	3.58	2.59	0.09
AUG	51,600	1,684	2,718	99.7	97.3	96%	97.3	2.0	98%	42.3						
SEP	55,110	1,837	5,520	48.0	285.7		285.7			2.2						
OCT	60,791	1,951	3,797	130.3	46.7		46.7			31.80	1.96	15.00	9.32	83.39	28	0.40
NOV	114,499	3,816	9,414	71.7	1,190.8		1,190.8	18.8	95%	2.65	0.28	2.14	1.33	11.91	3.99	0.06
DEC	84,694	2,732	6,206	1,246.3	34.77		34.77	2.7	99%	5.6	0.40	3.74	8.13	75.21	6.56	0.09
Total Annual:	1,264,961	44,814	156,330	103.66	243,450		243,450	6.3	98%							
AVG:	105,413	3,735	13,028	221.3	7.5		7.5	69.28	98%							
MAX:	180,296	7,839	54,144													
Criteria:																

NOTE: ECA Limit Exceedance Reported to MOECC  
 Winter Discharge from Feb 1 - Feb 22 2017  
 Summer Discharge from April 11 - Sept 29 2017  
 No Effluent discharge from WWTP

LEGEND:  
 Raw = Untreated raw sewage entering the lagoon  
 Total Flow = Total sewage flow in any given month  
 Avg Day = Total monthly sewage flow divided by the number of days in the month.  
 Max Day = Maximum sewage flow on any given day during the month.  
 Effluent = Treated sewage discharged from the lagoon  
 CBOD = Carbonaceous Biochemical Oxygen Demand is the amount of dissolved oxygen needed by aerobic biological organisms in wastewater, necessary to break down organic material.  
 Loading = Loading is the contribution of each wastewater constituent measured in units of mass per time (kg/day) and may be calculated as the product of flow times concentration.  
 SS = Suspended Solids is the total small particulate matter which remains in suspension in sewage.  
 Phos. = Phosphorus is an allotropic nonmetallic element occurring in phosphates and living matter. It is an essential constituent of protoplasm and is commonly used in fertilizers.  
 NH3 = Ammonia (NH3) is a compound of nitrogen and hydrogen.  
 NH4 = Ammonium (NH4) is derived from ammonia and found in a wide variety of organic and inorganic compounds.  
 Nitrate = Nitrate (NO3) is a nitrogen-oxygen chemical unit which combine with various organic and inorganic compounds. The most common use is for plant fertilizer.  
 Nitrite = Nitrite (NO2) is a nitrogen-oxygen chemical unit which combine with various organic and inorganic compounds. Once taken into the body, nitrites are converted to nitrites.  
 E.Coli = Escherichia coli. A bacterium that is commonly found in the lower intestine of warm-blooded organisms. Most are harmless but some strains can cause serious illness.  
 Geo. Mean = Geometric mean is a type of mean or average, which indicates the central tendency or typical value of a set of numbers by using the product of their values (as opposed to the Arithmetic mean which uses their sum).  
 mg/L = milligrams per litre  
 kg/d = kilograms per day