February 27, 2018

The Corporation of the Municipality of Huron East
72 Main St. S
P.O. Box 610
Seaforth, ON
N0K 1W0

Attention: Brad Knight, Administrator, Clerk-Treasurer

RE: Brussels Well Supply System
2017 Annual Report

Dear Brad**,**

Please find attached the 2017 Annual Operations Report for the Brussels Water System, in accordance with Section 11(1) of O. Reg. 170/03. This report covers the period from January 1 to December 31 and meets the requirement of being prepared by February 28 of this year.

Please ensure that a copy of this report is given, without charge, to every person who requests a copy. In addition, please make certain that effective steps are taken to advise residents that copies of the report are available, and of how a copy can be obtained.

As per Schedule 22 of O. Reg. 170/03, please ensure that at least a copy of the Summary Report is given to the members of municipal council no later than March 31, 2018.

Finally, please ensure that a letter is sent to OMI Canada Inc verifying that this report has been received and accepted by Council.

If you have any questions regarding the report, we would be pleased to address them and you should contact the undersigned accordingly.

Sincerely,

OMI Canada Inc.

Joe Arnold
Project Manager
Huron East
Project
519 490 5586

cc. B. Mills, Municipality of Huron East;

2017 ANNUAL REPORT FOR WATER SYSTEMS

Part 1 – ANNUAL REPORT (as required by O. Reg. 170/03, Section 11)

Drinking-Water System Number:	220001487
Drinking-Water System Name:	Brussels Well Supply System
Drinking-Water System Owner:	The Corporation of the Municipality of Huron East
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1-December 31, 2017

Complete if your Category is Large Municipal Residential or Small Municipal Residential	**Complete for all other Categories**
Does your Drinking-Water System serve more than 10,000 people? ☐ Yes ☒ No	Number of Designated Facilities served:
Is your annual report available to the public at no charge on a web site on the Internet? ☒ Yes ☐ No	Did you provide a copy of your annual report to all Designated Facilities you serve? ☐Yes ☐No
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection. **Town Office** **72 Main St. S.** **Seaforth, ON**	Number of Designated Facilities served:
	Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? ☐Yes ☐No

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	**Drinking Water System Number**

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Indicate how you notified system users that your annual report is available, and is free of charge.

☒ Public access/notice via the web	☒ Public access/notice via Government Office	☐ Public access/notice via a newspaper
☐ Public access/notice via Public Request	☐ Public access/notice via a Public Library	☐ Public access/notice via a Public Library

Describe your Drinking Water System

Water Distribution System Class 2 including 2 wells and one underground reservoir.
Brussels Well #1 pump house located at 66 McCutcheon Street Brussels contains a 60 m deep, 250 mm dia. steel casing well with a submersible pump rated for 12.6 L/s. After chlorination by sodium hypochlorite injection this well discharges to a single cell reservoir with a capacity of 568 m^3.
Distribution pumps include an electric centrifugal rated at 12.6 L/s and a fire duty electric pump rated at

63L/s at 21.3 m TDH. Brussels Well #2 pump house located at 238 Turnberry Street Brussels contains a 60 m deep, 250 mm dia. steel casing well with a vertical line shaft pump rated for 12.7 L/s. Primary disinfection is accomplished by an ultraviolet reactor, secondary disinfection by sodium hypochlorite injection. This well discharges directly to the distribution system.

List all water treatment chemicals used over this reporting period

12% Sodium hypochlorite solution

Please provide a brief description and a breakdown of monetary expenses incurred

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Units	Corrective Action	Corrective Action Date
August 29,	Total Coliform	1	CFU/100mL	Re-sample	August 31, 2017

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period

	Number of Samples	Range of E.Coli Results (min #) - (max #)	Range of Total Coliform Results (min #) - (max #)	Number of HPC Samples	Range of HPC Results (min #) - (max #)
Raw (well #1)	52	0	0	0	n/a
Raw (well #2)	52	0	0	0	n/a
Treated (well #1)	52	0	0	52	<10-20
Treated (well #2)	52	0	0	52	<10-50
Distribution	156	0	0	52	<10

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report

Well #1	Number of Grab Samples	Range of Results (min #) – (max #)	Units
Turbidity (raw)	30	0.17-0.89	NTU
Chlorine (treated)	8760	0.60-2.00	mg/L
Well #2			
Turbidity (raw)	50	0.24-0.89	NTU
Chlorine (treated)	8760	0.34-2.00	mg/L

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument
None during this period

Summary of Inorganic parameters tested during this reporting period or the most recent sample results. NOTE: Schedule 23/24 sampling for Well #2 was completed on January 26, 2016.							
Parameter	**Sample Date**	**Result Value Well #1**	**Unit of Measure**	**Exceedance**	**Result Value Well #2**	**Unit of Measure**	**Exceedance**
Antimony	Apr-13-15	0.16	ug/L	No	0.02	ug/L	No
Arsenic	Apr-13-15	<MDL	ug/L	No	0.2	ug/L	No
Barium	Apr-13-15	20.0	ug/L	No	189	ug/L	No
Boron	Apr-13-15	36.4	ug/L	No	15	ug/L	No
Cadmium	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Chromium	Apr-13-15	0.03	ug/L	No	<MDL	ug/L	No
Lead-sampling conducted by Municipality							
Mercury	Apr-13-15	0.02	ug/L	No	<MDL	ug/L	No
Selenium	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Sodium	Oct-21-13	16.7	mg/L	No	6.23	mg/L	No
Uranium	Apr-13-15	0.335	ug/L	No	0.523	ug/L	No
Fluoride	Oct-21-13	2.12	mg/L	YES	1.30	mg/L	No
Nitrite	Jan-16-17	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	Jan-16-17	<0.006	ug/L	No	<0.006	ug/L	No
Nitrite	Apr-11-17	<0.029	ug/L	No	<0.011	ug/L	No
Nitrate	Apr-11-17	<0.006	ug/L	No	<0.006	ug/L	No
Nitrite	July-25-17	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	July-25-17	<0.006	ug/L	No	<0.006	ug/L	No
Nitrite	Oct-3-17	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	Oct-3-17	<0.006	ug/L	No	<0.006	ug/L	No

Summary of Lead Results* Sampled by Municipal Staff				
Sampling Period	Range of Results (µg/L)	Non-residential	Distribution	Adverse Incidents?
Dec-15-16-Apr-15-17	0.01-0.06	N/A	2	No
Jun-15-17-Oct-15-17	0.13-0.56	N/A	2	No

Summary of Organic parameters tested during this reporting period or the most recent sample results							
Parameter	**Sample Date**	**Result Value Well #1**	**Unit of Measure**	**Exceedance**	**Result Value Well #2**	**Unit of Measure**	**Exceedance**
Alachlor	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Aldicarb *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Aldrin + Dieldrin *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Atrazine + N-dealkylated metobolites	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Azinphos-methyl	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Bendiocarb *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Benzene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Benzo(a)pyrene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Bromoxynil	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Carbaryl	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Carbofuran	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Carbon Tetrachloride	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Chlordane (Total) *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Chlorpyrifos	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Cyanazine *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Diazinon	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Dicamba	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
1,2-Dichlorobenzene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
1,4-Dichlorobenzene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
1,2-Dichloroethane	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Dichloromethane	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
2-4 Dichlorophenol	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Diclofop-methyl	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Dimethoate	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Dinoseb *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Diquat	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Diuron	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Glyphosate	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Heptachlor + Heptachlor Epoxide *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Lindane (Total) *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Malathion	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Methoxychlor *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Metolachlor	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Metribuzin	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Monochlorobenzene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No

Paraquat	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Parathion *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Pentachlorophenol	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Phorate	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Picloram	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Prometryne	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Simazine	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
THM (NOTE: show latest annual average)	2017	16.3 µg/L (No)					
Temephos *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Terbufos	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Tetrachloroethylene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Triallate	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Trichloroethylene	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
2,4,6-Trichlorophenol	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (^{2,4,5}-T) *	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Trifluralin	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No
Vinyl Chloride	Apr-13-15	<MDL	ug/L	No	<MDL	ug/L	No

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Sample Date	Result Value	Unit of Measure	ODWS Criteria

Part 2 – SUMMARY REPORT (as required by O. Reg. 170/03, Schedule 22)

Non-Compliance with Legislations, Regulations, Approvals & Orders		
During this period, the Facility was operated in full compliance with the Act, the regulations and the Facility's approval, save and except for the following		
Requirement	**Duration of Failure**	**Measures to Correct the Failure**
Not all treatment equipment was accurately reflected in the Permit.	Inspection period	The Municipality is to contact MOE approvals branch to correct the issue.
The UV reactor is to be checked against a UV Reference Sensor to ensure proper calibration.	Inspection period	No further action required as CH2M ordered and began the calibration check with the proper sensor and notified the MOE prior to the inspection report being submitted to the Municipality.

System Capability Assessment

Comparison of Flow Rates (m^3/d):

Month	Avg. Flow Well 1	Max. Flow Well 1	Avg. Flow Well 2	Max. Flow Well 2	Combined Max Flow Rate
January	441	666	1	7	666
February	421	645	1	5	645
March	416	495	1	8	495
April	460	796	1	3	796
May	411	733	13	402	733
June	459	625	13	401	625
July	437	503	1	6	515
August	431	550	1	4	550
September	422	482	1	5	482
October	532	892	1	4	892
November	402	474	1	4	474
December	390	449	1	4	449
AVERAGE	**435**	663	**5.1**	71	611
MAXIMUM	532	**892**	28	**402**	**892**
Total Rated CAPACITY	**1097**	**1097**	**1087**	**1087**	**1515**
%CAPACITY	**39.6**	**81.3**	**0.5**	**36.9**	**58.9**
Total Annual:	**Well 1**	**158 732 m3**	**Well 2**	**1 671 m3**	**-**