



February 22, 2023

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

Attention: Brad McRoberts, CAO

**RE: Brussels Well Supply System
2022 Annual Report**

Dear Brad,

Please find attached the 2022 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, 2023.

Finally, please ensure that a letter is sent to Jacobs 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,

Jacobs (OMI Canada Inc.)

A handwritten signature in blue ink, appearing to read "Lucas Egli".

Lucas Egli
Project Manager/Overall Responsible Operator (ORO)
Huron East Project
519 955 2746

cc. B. Mills, Municipality of Huron East;

2022 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, 2022

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? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Number of Designated Facilities served: N/A
Is your annual report available to the public at no charge on a web site on the Internet? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Did you provide a copy of your annual report to all Designated Facilities you serve? <input type="checkbox"/> Yes <input type="checkbox"/> 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: N/A Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? <input type="checkbox"/> Yes <input type="checkbox"/> 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?

N/A

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

<input checked="" type="checkbox"/> Public access/notice via the web	<input checked="" type="checkbox"/> Public access/notice via Government Office	<input type="checkbox"/> Public access/notice via a newspaper
<input type="checkbox"/> Public access/notice via Public Request	<input type="checkbox"/> Public access/notice via a Public Library	<input type="checkbox"/> Public access/notice via other method

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 m³.
 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. The well house is equipped with a 100 kW generator and automatic transfer switch to provide back-up power. Brussels Well #2 pump house located at 238 Turnberry Street Brussels contains a 60 m deep, 250 mm diameter steel casing well with a variable frequency drive (VFD) submersible 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

- Install new PLC and HMI at Well 1 & Well 2
- Upgrade communications system from radio to fiber optics at Well 1 & Well 2
- Install new chlorine analyzer at Well 1
- Install new chlorine injection pump at Well 2

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
N/A					

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	N/A	N/A
Raw (well #2)	52	0	0	N/A	N/A
Treated (well #1)	52	0	0	52	<10-30
Treated (well #2)	52	0	0	52	<10-10
Distribution	156	0	0	49	<10-70

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)	51	0.26-0.85	NTU
Chlorine (treated)	8760	0.52-2.36	mg/L
Well #2			
Turbidity (raw)	51	0.31-0.96	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. (<MDL: Below Minimum Detection Limit) Note: Sodium + Fluoride sampling required every 60 months. Inorganic sampling required every 36 months.

Parameter	Sample Date	Result Value Well #1	Unit of Measure	Exceedance	Result Value Well #2	Unit of Measure	Exceedance
Antimony	Apr 13/21	0.9	ug/L	No	0.9	ug/L	No
Arsenic	Apr 13/21	<0.2	ug/L	No	0.3	ug/L	No
Barium	Apr 13/21	20.2	ug/L	No	214	ug/L	No
Boron	Apr 13/21	49	ug/L	No	9	ug/L	No
Cadmium	Apr 13/21	<MDL	ug/L	No	0.006	ug/L	No
Chromium	Apr 13/21	0.18	ug/L	No	0.28	ug/L	No
Haloacetic Acids (HAA)(Running Annual Ave)	Q1 – Q4 2022 (Distribution)	11.1		Ug/L		No	
Lead-sampling conducted by Municipality							
Mercury	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Selenium	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Sodium	Oct 2/18	16.1	mg/L	No	11.1	mg/L	No
Uranium	Apr 13/21	0.363	ug/L	No	0.756	ug/L	No
Fluoride	Oct 2/18	2.11	mg/L	YES	1.07	mg/L	No
Nitrite & Nitrate sampling required Quarterly							
Nitrite	Jan 18/22	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	Jan 18/22	<0.006	ug/L	No	<0.006	ug/L	No
Nitrite	Apr 5/22	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	Apr 5/22	<0.006	ug/L	No	<0.006	ug/L	No
Nitrite	July 12/22	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	July 12/22	<0.006	ug/L	No	<0.006	ug/L	No
Nitrite	Oct 11/22	<0.003	ug/L	No	<0.003	ug/L	No
Nitrate	Oct 11/22	<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?
Dec-15-21-Apr-15-22	0.07,0.07	N/A	2	No
Jun-15-22-Oct-15-22	0.04,0.05	N/A	2	No

Summary of Organic parameters tested during this reporting period or the most recent sample results.
 (<MDL: Below Minimum Detection Limit) Note: Sampling required every 36 months.

Parameter	Sample Date	Result Value Well #1	Unit of Measure	Exceedance	Result Value Well #2	Unit of Measure	Exceedance
Alachlor	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Atrazine + N-dealkylated metabolites	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Atrazine	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Azinphos-methyl	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Benzene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Benzo(a)pyrene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Bromoxynil	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Carbaryl	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Carbofuran	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Carbon Tetrachloride	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Chlorpyrifos	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Desethyl atrazine	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Diazinon	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Dicamba	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
1,2-Dichlorobenzene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
1,4-Dichlorobenzene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
1,2-Dichloroethane	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Dichloromethane	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
2,4 Dichlorophenol	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Diclofop-methyl	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Dimethoate	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Diquat	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Diuron	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Glyphosate	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Malathion	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
MCPA	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Metolachlor	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Metribuzin	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Monochlorobenzene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No

Paraquat	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Pentachlorophenol	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Phorate	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Picloram	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Polychlorinated Biphenyls(PCB's)	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Prometryne	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Simazine	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Trihalomethanes (THM's) <i>Running Annual Average</i>	2022	12.5 µg/L					
Terbufos	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Tetrachloroethylene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Triallate	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Trichloroethylene	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
2,4,6-Trichlorophenol	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Trifluralin	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No
Vinyl Chloride	Apr 13/21	<MDL	ug/L	No	<MDL	ug/L	No

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWQS Criteria
Fluoride	Oct 2, 2018	2.11	mg/L	1.5

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
N/A (Received a 100% inspection rating).		

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	416	468	1	10	468
February	421	525	1	9	525
March	420	458	1.4	10	458
April	448	738	1.4	15	738
May	460	651	1.3	16	651
June	529	753	25.7	618	753
July	487	720	2.2	22	720
August	509	585	2.2	16	585
September	530	907	1.4	14	907
October	517	792	1.7	23	792
November	473	682	1.7	23	682
December	440	489	1.0	10	489
AVERAGE	471	647	3.5	65.5	647
MAXIMUM	530	907	25.7	618	907
Total Rated CAPACITY	1097	1097	1087	1087	1515
%CAPACITY	42.9	82.7	0.32	56.9	59.9
Total Annual:	Well 1	171 939 m3	Well 2	1 367 m3	-