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: Seaforth Well Supply System
2022 Annual Report

Dear Brad**,**

Please find attached the 2022 Annual Operations Report for the Seaforth 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.)

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:	220001511
Drinking-Water System Name:	Seaforth 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? ☐ Yes ☒ 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? ☒ 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: N/A
	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**
N/A	

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.

☒ 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 other method

Describe your Drinking Water System

As of mid-April 2009, the town of Seaforth draws it water supply from three groundwater wells. All wells are located at 40 Welsh St. The Welsh Street facility consists of a above ground pump house with three groundwater wells each located north of the pump house. TW1(Test Well #1; but is to be considered to be a production well) is a 150mm diameter, 85m deep groundwater well located at 48m northwest of the new pump house. It is equipped with a submersible turbine pump

at 6.4L/s. PW 1 (Production Well #1) is a 300mm diameter, 105m deep drilled groundwater well located 43m northwest of the pump house. It is equipped with a variable speed submersible turbine pump rated at 35/Ls. PW 2 (Production Well #2) has the same dimensions as PW1 and is located 18m northwest of the pump house. It contains a variable speed submersible turbine pump rated at 40/Ls. Three vertical turbine high lift pumps (one rated at 26L/s and two rated at 44L/s at 48m TDH) convey the water to the distribution system. There is a 670 m3 underground reservoir located on site that provides contact time for the treated water. It also serves as backup emergency storage and fire protection if the water tower is offline. This facility is equipped with a 175 kW generator and automatic transfer switch to provide back up power.

Treatment for the Welsh St. wells consists of a chlorination system that includes two sodium hypochlorite metering pumps (one main and one backup) and one 200 L day tank for sodium hypochlorite. Sodium Silicate is also added to the system (three pumps available, 1 dedicated to each well) as well as a 200L day tank. A continuous online chlorine analyzer equipped with alarms monitor the chlorine residual in the treated water just prior to the point of entry into the distribution system.

Water in excess of demand in the distribution system is pumped to the elevated storage tank (water tower). When a predetermined level in the tower is reached, the distribution pump(s) shut down.

The 1930 m3 elevated storage tank was constructed in 1998 and is located at 85 Daly Street. The elevated tank water level cycles based on demand and provides emergency storage, fire protection and peak demand storage for the Seaforth water supply system.

The distribution system supplies water to the entire Town of Seaforth and the Village of Egmondville. The system is composed of cast iron, ductile iron and PVC watermain with 129 hydrants. There is 1 automatic blow-off, 9 manual blow-offs and 3 sample stations are connected throughout the distribution system. The elevated storage tank and the underground reservoir are used as a supplementary supply for emergencies.

Jacobs operates and maintains these drinking water facilities and water treatment processes while the Municipality of Huron East operates and maintains the distribution system with the exception of fire hydrant flushing, which is contracted to Jacobs.

List all water treatment chemicals used over this reporting period

12% Sodium hypochlorite solution
Sodium silicate

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

-Installed new well pump in production well #3 (TW 1).

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 (TW1)	50	0	0-1	N/A	-
Raw (PW1)	52	0	0	N/A	-
Raw (PW2)	52	0	0	N/A	-
Treated (40 Welsh)	52	0	0	52	<10-30
Distribution	208	0	0	104	<10-100

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report			
	Number of Grab Samples	**Range of Results** (min #) – (max #)	**Units**
Turbidity (TW1)	46	0.31-0.99	NTU
Turbidity (PW1)	46	0.24-0.87	NTU
Turbidity (PW2)	46	0.26-0.78	NTU
Chlorine (Tower)	8760	0.44-1.74	mg/L
Chlorine (40 Welsh)	8760	0.59-1.96	mg/L
Fluoride (If the DWS provides fluoridation)	n/a		

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument				
Date of legal instrument issued	**Parameter**	**Date Sampled**	**Result**	**Unit of Measure**
N/A				

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**	**Unit of Measure**	**Exceedance**
Antimony	April 13/21	0.9	ug/L	No
Arsenic	April 13/21	0.5	ug/L	No
Barium	April 13/21	33.1	ug/L	No
Boron	April 13/21	151	ug/L	No
Cadmium	April 13/21	0.037	ug/L	No
Chromium	April 13/21	0.24	ug/L	No
Haloacetic Acids (HAA) *Running Annual Average*	Q1 – Q4 2022	5.4	ug/L	No
Lead-sampling conducted by the Municipality of Huron East; see summary below				
Mercury	April 13/21	<MDL	ug/L	No
Selenium	April 13/21	0.07	ug/L	No
Sodium	April 2/19	43.7	mg/L	Yes
Uranium	April 13/21	8.15	ug/L	No
Fluoride	April 2/19	1.70	mg/L	Yes
Nitrite & Nitrate sampling required Quarterly				
Nitrite	Jan 18/22	0.003	mg/L	No
Nitrate	Jan 18/22	0.025	mg/L	No
Nitrite	April 5/22	0.003	mg/L	No
Nitrate	April 5/22	0.023	mg/L	No
Nitrite	July 12/22	0.003	mg/L	No
Nitrate	July 12/22	0.034	mg/L	No
Nitrite	Oct 4/22	0.003	mg/L	No
Nitrate	Oct 4/22	0.024	mg/L	No

Summary of Lead Results* Sampled by Municipal Staff				
Sampling Period	Range of Results (µg/L)	Non-residential	Distribution	Adverse Incidents?
Dec-15-21-Apr-15-22	0.09-0.10	N/A	2	No
Jun-15-22-Oct-15-22	0.04-0.08	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: Organic sampling required every 36 months.				
Parameter	**Sample Date**	**Result Value**	**Unit of Measure**	**Exceedance**
Alachlor	April 13/21	<MDL	ug/L	No
Atrazine	April 13/21	<MDL	ug/L	No
Atrazine + N-dealkylated metobolites	April 13/21	<MDL	ug/L	No
Azinphos-methyl	April 13/21	<MDL	ug/L	No
Benzene	April 13/21	<MDL	ug/L	No
Benzo(a)pyrene	April 13/21	<MDL	ug/L	No
Bromoxynil	April 13/21	<MDL	ug/L	No
Carbaryl	April 13/21	<MDL	ug/L	No
Carbofuran	April 13/21	<MDL	ug/L	No
Carbon Tetrachloride	April 13/21	<MDL	ug/L	No
Chlorpyrifos	April 13/21	<MDL	ug/L	No

Summary of Organic parameters tested during this reporting period or the most recent sample results (<MDL: Below Minimum Detection Limit) Note: Organic sampling required every 36 months				
Diazinon	April 13/21	<MDL	ug/L	No
Dicamba	April 13/21	<MDL	ug/L	No
1,2-Dichlorobenzene	April 13/21	<MDL	ug/L	No
1,4-Dichlorobenzene	April 13/21	<MDL	ug/L	No
1,2-Dichloroethane	April 13/21	<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	April 13/21	<MDL	ug/L	No
Dichloromethane	April 13/21	<MDL	ug/L	No
2-4 Dichlorophenol	April 13/21	<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	April 13/21	<MDL	ug/L	No
Diclofop-methyl	April 13/21	<MDL	ug/L	No
Dimethoate	April 13/21	<MDL	ug/L	No
Diquat	April 13/21	<MDL	ug/L	No
Diuron	April 13/21	<MDL	ug/L	No
Glyphosate	April 13/21	<MDL	ug/L	No
Desethyl atrazine	April 13/21	<MDL	ug/L	No
Malathion	April 13/21	<MDL	ug/L	No
MCPA	April 13/21	<MDL	mg/L	No
Metolachlor	April 13/21	<MDL	ug/L	No
Metribuzin	April 13/21	<MDL	ug/L	No
Monochlorobenzene	April 13/21	<MDL	ug/L	No
Paraquat	April 13/21	<MDL	ug/L	No
Polychlorinated Biphenyls (PCBs)	April 13/21	<MDL	ug/L	No
Pentachlorophenol	April 13/21	<MDL	ug/L	No
Phorate	April 13/21	<MDL	ug/L	No
Picloram	April 13/21	<MDL	ug/L	No
Prometryne	April 13/21	<MDL	ug/L	No
Simazine	April 13/21	<MDL	ug/L	No
Trihalomethanes (THM's) *Running Annual Average*	Q1-Q4 2022	17.2	µg/L	No
Terbufos	April 13/21	<MDL	ug/L	No
Tetrachloroethylene	April 13/21	<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	April 13/21	<MDL	ug/L	No
Triallate	April 13/21	<MDL	ug/L	No
Trichloroethylene	April 13/21	<MDL	ug/L	No
2,4,6-Trichlorophenol	April 13/21	<MDL	ug/L	No
Trifluralin	April 13/21	<MDL	ug/L	No
Vinyl Chloride	April 13/21	<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 (ODWQS).				
Parameter	**Sample Date**	**Result Value**	**ODWQS Limit**	**Unit of Measure**
Sodium	April 2/19	43.7	20.0	mg/L
Fluoride	April 2/19	1.70	1.50	mg/L

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 100% Inspection Rating).		

System Capability Assessment

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

Month	**Avg. Flow TW1**	**Max. Flow TW1**	**Avg. Flow PW1**	**Max. Flow PW1**	**Avg. Flow PW2**	**Max. Flow PW2**	**Max Daily Total (PW1+PW2+TW1)**
January	34	117	424	506	517	692	1068
February	35	61	460	544	554	605	1098
March	33	72	455	557	554	650	1098
April	21	65	443	629	499	592	1127
May	13	90	625	945	700	1109	2155
June	22	93	597	1126	695	1124	2072
July	74	159	544	996	642	1159	2259
August	68	119	519	798	598	608	1845
September	70	92	432	547	532	586	1155
October	70	87	440	987	532	1070	1844
November	64	107	479	841	564	1005	1912
December	51	58	400	544	449	562	1171
AVERAGE	**46**	**-**	**485**	**-**	**570**	**-**	**-**
MAXIMUM	70	**159**	625	**1126**	700	**1159**	**2259**
Total Rated CAPACITY	**3139**	**3139**	**3139**	**3139**	**3139**	**3139**	**3139**
%CAPACITY	**1.46**	**5.06**	**15.4**	**35.9**	**18.2**	**36.9**	**71.9**
Total Annual Flow (TW1+PW1+PW2): 384 236 m3							