

ANNUAL REPORT

Drinking Water System Number:	220002903
Drinking Water System Name:	Petrolia Drinking Water System
Drinking Water System Owner:	Corporation of the Town of Petrolia
Drinking Water System Category:	Large Municipal Residential
Period being reported:	January 1 st , 2021 to December 31 st , 2021

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking Water System serve more than 10,000 people? Yes [] No [X]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Town of Petrolia 411 Greenfield Street, P.O Box 1270 Petrolia, ON N0N 1R0</p> </div>	<p><u>Complete for all other Categories</u></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; padding: 2px; width: 100px; text-align: center;">n/a</div> </p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; padding: 2px; width: 100px; text-align: center;">n/a</div> </p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added, or an appendix may be attached to the report

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

Drinking Water System Name	Drinking Water System Number
Town of Enniskillen	220004377

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 drinking water? Yes [X] No []

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

The Petrolia Drinking Water System consists of a water treatment plant and a distribution system. The Petrolia Brights Grove Water Treatment Plant is a membrane filtration surface water treatment facility with a total design capacity of 12,000 m³/day, located in Brights Grove Ontario. It is owned by the Town of Petrolia and operated by the Ontario Clean Water Agency along with the distribution system.

The water treatment facility consists of an intake system, a treatment system and distribution pumping system that supplies water to the Town of Petrolia, Town of Enniskillen, Town of Oil Springs and Dawn-Euphemia.

Intake

The Petrolia Brights Grove WTP draws raw water from Lake Huron through 400mm cast iron intake pipe that extends approximately 365 m into the lake.

Treatment Plant

Filtration: At the water plant the in pre-filtered by two automatic strainers to protect the filter membranes from coarser particles in the raw water.

After the water has been strained it enters the membrane filtration system which removes fine particles, sediment, algae, protozoa and bacteria.

Disinfection: Primary disinfection is achieved by the addition of chlorine gas solution at the membrane filtrate effluent header with contact time achieved in the contact tanks and clearwells. Pre-chlorination and post-chlorination application points are located at the low lift discharge header and after the clearwell.

Hydrofluorosilicic acid is injected into the membrane filtrate upstream of the point where filtrate is introduced in the chlorine contact tanks.

Process Drain Water: Membrane filter backwash, strainer and naturalization tank wastewater is all discharged into a settling tank. Supernatant from the settling tank overflows back into Lake Huron. Sludge is removed from the settling as required.

Monitoring and Control: The treatment plant and distribution components are controlled by a Supervisory Control and Data Acquisition (SCADA) computer system and monitored by certified operators.

Standby Power: A generator is onsite to ensure the plant can remain in operation should there be a power supply interruption.

Distribution

Four high lift pumps at the water plant provide water to customers along the 350mm transmission main to the 7,000 m³ Mandaumin Booster Station. Water is pumped from the booster station to a 2,290 m³ elevated tank located in the Town of Petrolia.

List all water treatment chemicals used over this reporting period

Chlorine Gas
 Sodium Hypochlorite 12% *
 Hydrofluorosilicic Acid
 Citric Acid 50%*
 Sodium Hydroxide*
 Calcium Thiosulphate*
 *used in the cleaning process of the membranes

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

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

- Fluoride dosing system upgrades
- Booster pump rebuild
- Lowlift pump motor replaced
- Fire flow testing
- Compressor repairs
- Watermain repairs
- Hydrant repairs
- Valve Repairs
- Continued SCADA upgrades

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	Unit of Measure	Corrective Action	Corrective Action Date
n/a	n/a	n/a	n/a	n/a	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	52	0-10 cfu/100 mL	0-120 cfu/100 mL	n/a	n/a
Treated	52	0-0 cfu/100 mL	0- 0 cfu/100 mL	52	<10-<10
Distribution	261	0-0 cfu/100 mL	0-0 cfu/100 mL	157	<10- 810cfu/mL

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 #)	Unit of Measure
Turbidity (Rack 1)	8760	0.0-1.0*	NTU
Turbidity (Rack 2)	8760	0.0-1.0*	NTU
Turbidity (Rack 3)	8760	0.0-1.0*	NTU
Fluoride AIT 5102	8760	0.02-1.23	mg/L
Free Chlorine (Primary Disinfection) AIT 5109 –Contact Tank 1	8760	0.59-4.55	mg/L
Free Chlorine (Primary Disinfection) AIT 5110 Contact Tank 2	8760	0.75-4.30	mg/L
Free Chlorine (Secondary Disinfection) AIT 5101	8760	0.98-3.25	mg/L
Free Chlorine Distribution-Grab	364	0.65-2.35	mg/L

NOTE: For continuous monitors use 8760 as the number of samples

*Note – no AWQI, brief spike, less than 5 minutes

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
2021-05-24	Residuals Management – Suspended Solids	Jan 29, 2021	23	mg/L
		Apr 26, 2021	7	
		May 25, 2021	16	
		Jun 22, 2021	10	
		Jul 7, 2021	18	
		Aug 10, 2021	7	
		Sept 7, 2021	7	
		Oct 12, 2021	16	
		Nov 3, 2021	27	
		Dec 17, 2021	5	
		Annual Average	13.6	
		2021-05-24	Residuals Management –Total Chlorine	
Jun 22, 2021	0.00			
Jul 7, 2021	0.00			
Aug 10, 2021	0.00			
Sept 7, 2021	0.01			
Oct 12, 2021	0.00			
Nov 3, 2021	0.01			
Dec 17, 2021	0.01			
Annual Average	0.01			

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	Jan 18, 2021	0.9 <MDL	ug/L	No
Arsenic	Jan 18, 2021	0.5	ug/L	No
Barium	Jan 18, 2021	13.7	ug/L	No
Boron	Jan 18, 2021	14	ug/L	No

Cadmium	Jan 18, 2021	0.004	ug/L	No
Chromium	Jan 18, 2021	0.27	ug/L	No
Mercury	Jan 18, 2021	0.01 <MDL	ug/L	No
Selenium	Jan 18, 2021	0.13	ug/L	No
Sodium	Jan 20, 2020	4.72	ug/L	No
Uranium	Jan 18, 2021	0.351	ug/L	No
Nitrite	Jan 4, 2021	0.003 <MDL	mg/L	No
	Apr 6, 2021	0.003 <MDL		
	Jul 5, 2021	0.003 <MDL		
	Oct 4, 2021	0.003 <MDL		
Nitrate	Jan 4, 2021	0.499	mg/L	No
	Apr 6, 2021	0.677		
	Jul 5, 2021	0.363		
	Oct 4, 2021	0.474		

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Distribution	6	0.01-0.68	ug/L	0

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	Jan 18, 2021	0.02 <MDL	ug/L	No
Atrazine + N-dealkylated metabolites	Jan 18, 2021	0.03	ug/L	No
Azinphos-methyl	Jan 18, 2021	0.05 <MDL	ug/L	No
Benzene	Jan 18, 2021	0.32 <MDL	ug/L	No
Benzo(a)pyrene	Jan 18, 2021	0.004 <MDL	ug/L	No
Bromoxynil	Jan 18, 2021	0.33 <MDL	ug/L	No
Carbaryl	Jan 18, 2021	0.05 <MDL	ug/L	No
Carbofuran	Jan 18, 2021	0.01 <MDL	ug/L	No
Carbon Tetrachloride	Jan 18, 2021	0.17 <MDL	ug/L	No
Chlorpyrifos	Jan 18, 2021	0.02 <MDL	ug/L	No
Diazinon	Jan 18, 2021	0.02 <MDL	ug/L	No
Dicamba	Jan 18, 2021	0.20 <MDL	ug/L	No
1,2-Dichlorobenzene	Jan 18, 2021	0.41 <MDL	ug/L	No
1,4-Dichlorobenzene	Jan 18, 2021	0.36 <MDL	ug/L	No
1,2-Dichloroethane	Jan 18, 2021	0.35 <MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	Jan 18, 2021	0.33 <MDL	ug/L	No
Dichloromethane	Jan 18, 2021	0.35 <MDL	ug/L	No
2-4 Dichlorophenol	Jan 18, 2021	0.15 <MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Jan 18, 2021	0.19 <MDL	ug/L	No
Diclofop-methyl	Jan 18, 2021	0.40 <MDL	ug/L	No
Dimethoate	Jan 18, 2021	0.06 <MDL	ug/L	No
Diquat	Jan 18, 2021	1 <MDL	ug/L	No

Diuron	Jan 18, 2021	0.03 <MDL	ug/L	No
Glyphosate	Jan 18, 2021	1 <MDL	ug/L	No
HAA's (Note: show latest running annual average)	2021	21.5	ug/L	No
Lindane (Total)	Jan 18, 2021		ug/L	No
Malathion	Jan 18, 2021	0.02 <MDL	ug/L	No
Metolachlor	Jan 18, 2021	0.01 <MDL	ug/L	No
Metribuzin	Jan 18, 2021	0.02 <MDL	ug/L	No
Monochlorobenzene	Jan 18, 2021	0.3 <MDL	ug/L	No
Paraquat	Jan 18, 2021	1 <MDL	ug/L	No
Pentachlorophenol	Jan 18, 2021	0.15 <MDL	ug/L	No
Phorate	Jan 18, 2021	0.01	ug/L	No
Picloram	Jan 18, 2021	1 <MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	Jan 18, 2021	0.04 <MDL	ug/L	No
Prometryne	Jan 18, 2021	0.03 <MDL	ug/L	No
Simazine	Jan 18, 2021	0.01 <MDL	ug/L	No
Terbufos	Jan 18, 2021	0.01 <MDL	ug/L	No
Tetrachloroethylene (perchloroethylene)	Jan 18, 2021	0.35 <MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	Jan 18, 2021	0.20 <MDL	ug/L	No
THMs (Note: show latest running annual average)	2021	36.25	ug/L	No
Triallate	Jan 18, 2021	0.01 <MDL	ug/L	No
Trichloroethylene	Jan 18, 2021	0.44 <MDL	ug/L	No
2,4,6-Trichlorophenol	Jan 18, 2021	0.25 <MDL	ug/L	No
Trifluralin	Jan 18, 2021	0.02 <MDL	ug/L	No
Vinyl Chloride	Jan 18, 2021	0.17 <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	Result Value	Unit of Measure	Date of Sample
n/a	n/a	n/a	n/a