Ontario

Drinking Water Systems Regulation O. Reg. 170/03

ANNUAL REPORT 2022

Drinking Water System Number:	260019630
Drinking Water System Name:	Varna Drinking Water System
Drinking Water System Owner:	Corporation of the Municipality of Bluewater
Drinking Water System Category:	Small Municipal Residential System
Period being reported:	January 1, 2022 – 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 [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** Municipality of Bluewater 14 Mill Ave. Zurich, Ontario N0M 2T0	**Number of Designated Facilities served:** n/a **Did you provide a copy of your annual report to all Designated Facilities you serve?** n/a **Number of Interested Authorities you report to:** n/a **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** n/a

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

Drinking Water System Name	Drinking Water System Number
Not applicable	

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?
Not applicable

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

- **[X] Public access/notice via the web**
- **[X] Public access/notice via Government Office**
- **[ ] Public access/notice via a newspaper**
- **[X] Public access/notice via Public Request**
- **[ ] Public access/notice via a Public Library**
- **[ ] Public access/notice via other method_____**

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Describe your Drinking Water System

The Varna Drinking Water System serves the community of Varna located in the Municipality of Bluewater; approximate population served is 154.

Water is sourced from a 73 m deep well; the well has a 15.2 cm diameter casing installed to a depth of 57.3 m and extends above grade approximately 33 cm. The well has a 100 mm diameter sleeve installed from 57.3 m to 73 m. The well is equipped with a 1.6 L/s submersible pump. The well pump was installed at a depth of 65.8 m with 32 mm diameter galvanized steel discharge piping.

There are 3 - 450 L chlorine contact tanks in the existing pump house. A 12 kW standby propane generator provides backup power to the system. Other equipment includes: 3 pressure tanks, a 60 L chlorine storage tank, two chlorine pumps, and various other pressure gauges, meters, and sample taps.

The normal operating pressure in the system is set by the pressure switch in the well house to be between 275 and 415 kPa; typical operating pressures in this system are in the range of 250 to 450 kPa.

All 50 mm diameter watermain is Series 200 conforming to CSA B137.1 and AWWA C901; fittings meet AWWA C906.

Flushing devices (50 mm dia. blow-offs) are provided at each dead-end. There are no fire hydrants on the Varna Drinking Water System.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite

Were any significant expenses incurred to?

[X**]** Install required equipment
[X**]** Repair required equipment
[X**]** Replace required equipment

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

- New blow off at 38808 Vienna St.
- Replacement of chlorine sensor membrane for analyzer
- Spare parts for the drinking water system
- Watermain repairs

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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
2022-01-21	Free Residual Chlorine Continuous Monitoring Equipment Failure	n/a	n/a	Equipment failed for 32.5hrs starting on Jan 20, 2022; Technician repaired monitoring equipment; operator collected manual FRC grab samples for analysis from time failure discovered to operations restored.	2022-01-21
2022-02-09	Free Chlorine Continuous Monitoring Equipment Failure	n/a	n/a	Equipment failure Feb. 09, 2022 resulted in the loss of FRC online monitoring for 1hr and 50 minutes. Technician called on site; unit could not be repaired, temporary replacement unit installed. Operator collected manual FRC grab samples for analysis from time failure discovered until replacement unit installed.	2022-02-09
2022-07-06	Primary disinfection requirement	0.25	mg/L	Chlorine pump failed, treated water free residual chlorine in system failed to meet primary disinfection requirements. Switched chlorine pumps, restored system free chlorine residual, flushed system and collected bacti samples of treated and distribution water. Samples collected were compliant. AWQI # 159019	2022-07-11

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	12	0 – 0	0 – 0	-	-
Distribution	53	0 – 0	0 – 0	53	< 10 - 160

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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	12	0.22 – 0.48	NTU
Chlorine: Treated Water	8760	0.25 – 1.96	mg/L
Chlorine: Distribution	104	0.80 – 1.75	mg/L

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

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

n/a

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	2022/11/01	0.6 <MDL	ug/L	No
Arsenic	2022/11/01	1.5	ug/L	No
Barium	2022/11/01	123	ug/L	No
Boron	2022/11/01	69	ug/L	No
Cadmium	2022/11/01	0.005	ug/L	No
Chromium	2022/11/01	0.08 <MDL	ug/L	No
Mercury	2022/11/01	0.01 <MDL	ug/L	No
Selenium	2022/11/01	0.11	ug/L	No
Sodium	2022/11/01	10.6	mg/L	No
Uranium	2022/11/01	1.11	ug/L	No
Fluoride	2022/11/01	1.15	mg/L	No
Nitrite	2022/01/11	0.003 <MDL	mg/L	No
Nitrite	2022/04/05	0.003 <MDL	mg/L	No
Nitrite	2022/07/12	0.003 <MDL	mg/L	No
Nitrite	2022/10/04	0.003 <MDL	mg/L	No
Nitrate	2022/01/11	0.006 <MDL	mg/L	No
Nitrate	2022/04/05	0.006 <MDL	mg/L	No
Nitrate	2022/07/12	0.006 <MDL	mg/L	No
Nitrate	2022/10/04	0.006 <MDL	mg/L	No

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	4	0.15 - 4.83	ug/L	0

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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	2022/11/01	0.02 <MDL	ug/L	No
Atrazine + N-dealkylated metobolites	2022/11/01	0.01 <MDL	ug/L	No
Azinphos-methyl	2022/11/01	0.05 <MDL	ug/L	No
Benzene	2022/11/01	0.32 <MDL	ug/L	No
Benzo(a)pyrene	2022/11/01	0.004 <MDL	ug/L	No
Bromoxynil	2022/11/01	0.33 <MDL	ug/L	No
Carbaryl	2022/11/01	0.05 <MDL	ug/L	No
Carbofuran	2022/11/01	0.01 <MDL	ug/L	No
Carbon Tetrachloride	2022/11/01	0.17 <MDL	ug/L	No
Chlorpyrifos	2022/11/01	0.02 <MDL	ug/L	No
Diazinon	2022/11/01	0.02 <MDL	ug/L	No
Dicamba	2022/11/01	0.20 <MDL	ug/L	No
1,2-Dichlorobenzene	2022/11/01	0.41 <MDL	ug/L	No
1,4-Dichlorobenzene	2022/11/01	0.36 <MDL	ug/L	No
1,2-Dichloroethane	2022/11/01	0.35 <MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	2022/11/01	0.33 <MDL	ug/L	No
Dichloromethane	2022/11/01	0.35 <MDL	ug/L	No
2-4 Dichlorophenol	2022/11/01	0.15 <MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2022/11/01	0.19 <MDL	ug/L	No
Diclofop-methyl	2022/11/01	0.40 <MDL	ug/L	No
Dimethoate	2022/11/01	0.06 <MDL	ug/L	No
Diquat	2022/11/01	1 <MDL	ug/L	No
Diuron	2022/11/01	0.03 <MDL	ug/L	No
Glyphosate	2022/11/01	1 <MDL	ug/L	No
HAAs (running annual average**)**	2022	5.3	ug/L	No
Malathion	2022/11/01	0.02 <MDL	ug/L	No
Metolachlor	2022/11/01	0.01 <MDL	ug/L	No
Metribuzin	2022/11/01	0.02 <MDL	ug/L	No
Monochlorobenzene	2022/11/01	0.3 <MDL	ug/L	No
Paraquat	2022/11/01	1 <MDL	ug/L	No
Pentachlorophenol	2022/11/01	0.15 <MDL	ug/L	No
Phorate	2022/11/01	0.01 <MDL	ug/L	No
Picloram	2022/11/01	1 <MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	2022/11/01	0.04 <MDL	ug/L	No
Prometryne	2022/11/01	0.03 <MDL	ug/L	No
Simazine	2022/11/01	0.01 <MDL	ug/L	No
Terbufos	2022/11/01	0.01 <MDL	ug/L	No
Tetrachloroethylene (perchloroethylene)	2022/11/01	0.35 <MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	2022/11/01	0.20 <MDL	ug/L	No

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THMs (running annual average**)**	2022	1.8	ug/L	No
Triallate	2022/11/01	0.01 <MDL	ug/L	No
Trichloroethylene	2022/11/01	0.44 <MDL	ug/L	No
2,4,6-Trichlorophenol	2022/11/01	0.25 <MDL	ug/L	No
Trifluralin	2022/11/01	0.02 <MDL	ug/L	No
Vinyl Chloride	2022/11/01	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

n/a

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

2022 Summary Report

Varna Drinking Water System

Prepared for the Municipality of Bluewater

By the Ontario Clean Water Agency

SECTION 1 - Overview

This report is a summary of water quantity and quality information for the Varna Drinking Water System and published in accordance with Schedule 22 of Ontario's Safe Drinking Water Act, Ontario Regulation 170/03 for the reporting period of January 1, 2022 to December 31, 2022. The Varna Drinking Water System is categorized as a Small Municipal Residential Drinking Water System.

SECTION 2 – Compliance with Regulations

The Varna Drinking Water System was operated and maintained in such a manner that the water supplied to the consumers serviced by the system satisfied all the requirements in the Safe Drinking Water Act, the Regulations, the Drinking Water Works Permit Number: 045-206, Issue Number: 2, the Municipal Drinking Water License Number: 045-106, Issue Number 3 and the Permit to Take Water 0266-AE9NRG; with the exceptions identified below.

A Ministry of the Environment, Conservation and Parks (MECP) inspection occurred on December 02, 2022; the inspection report was received on February 16, 2023. Two non compliance issues were identified in the inspection report; the inspection report rating has not been received to date. Refer to Section 3 for details on the non-compliances.

SECTION 3 – Corrective Action

An adverse water quality incident (AWQI) was reported on July 06, 2022 for an observation of improperly disinfected water directed to water users. At approximately 11:30 a low chlorine alarm was received by the On Call Operator. The Operator arrived on site, restored disinfection by switching operating chlorine pumps and began flushing the system. The lowest treated water free chlorine residual value recorded was 0.25 mg/L which fails to meet primary disinfection requirements. The Huron Perth Public Health (HPPH), Public Health Inspector (PHI) was notified of this observation of improperly disinfected water directed to customers. The PHI recommended flushing then chlorine residuals and microbiological sample collections. The Spills Action Centre was also notified and AWQI # 159019 was issued. Sample results were compliant and AWQI 159019 2B Resolution was submitted on July 11, 2022; no further action was required. This adverse incident was also identified in the MECP Inspection Report, from the inspection that occurred on December 02, 2022. The inspection report identified the non-compliance issue and action required as follows:

> Non Compliance Issue:
> Records did not indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under O. Reg. 170/03 or a Drinking Water Works Permit and/ or Municipal Drinking Water License issued under Part V of the SDWA at all times that water was being supplied to consumers.
>
> Action Required:
> The Ministry is not requesting further action. The disruption to the primary disinfection process was promptly addressed by operators.

A non compliance issue was discovered and reported to the Sarnia MECP office on January 21, 2022; an equipment malfunction resulted in the loss of Free Residual Chlorine (FRC) continuous monitoring data for 32.5 hours. FRC continuous monitoring data is required every 5 minutes. A technician came on site to troubleshoot malfunction and restored monitoring equipment operations. Operators collected grab samples for FRC analysis from the time the malfunction was discovered until operations monitoring equipment was restored. A brief power

interruption is believed to be the cause of this equipment failure, the power interruption did not start the facility generator or signal an alarm.

A second non-compliance issue was discovered and reported to the Sarnia MECP office on February 11, 2022; an equipment malfunction resulted in the loss of Free Residual Chlorine (FRC) online monitoring data for 1 hour and 50 minutes. FRC online monitoring data is required every 5 minutes. A technician came on site to troubleshoot malfunction and discovered the continuous monitoring data logger unit could not be repaired. A temporary replacement unit was installed and FRC continuous monitoring was restored. Operators collected grab samples for FRC analysis from the time the equipment failure was discovered until the installation of a replacement unit was completed and operations of FRC monitoring was restored. Since this was the second failure, a capital upgrade recommendation was approved to provide reliable continuous monitoring of data for FRC.

These two non-compliances for loss of continuous monitoring equipment were also identified in the MECP Inspection Report, from the inspection that occurred on December 02, 2022. The inspection report identified the non-compliance issue and action required as follows:

> Non-Compliance Issue:
> Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was not preforming test for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and or was not recording data with the prescribed format.
>
> Action Required:
> The Ministry is not requesting further action. The disruption to the data recording was addressed in March 2022.

SECTION 4 – Flow Summary

The total flow for 2022 was 13,938.6 m³. This is a 73% increase from 2021 flows; the increase in flows is attributed to a water leak discovered and repaired in November, 2022. The average monthly treated flow in 2022 was 1,161.6 m³; the average daily treated flow was 38.19 m³/day. The maximum monthly flow for the reporting period of 1,558 m³ was recorded for June 2022. The maximum daily flow for 2022 was 65 m³/ day; this flow value was recorded on July 29th of 2022.

The Varna Drinking Water System, Municipal Drinking Water License (License Number: 045 - 106 Issue No. 3) identifies a system rated capacity of 144 m³/ day. There were no exceedances of the rated capacity. The maximum daily flow value for 2022 of 65 m³/ day recorded on July 29th, is 45.1 % of the rated capacity of the plant. The plant average daily flow in 2022 was 39.19 m³ /d; this is 26.5 % of the rated capacity of the plant. Refer to Appendix A for detailed flow summary.

APPENDIX A

Varna Drinking Water System 2022 Water Flows

Month	Total Raw Flow (m^3)	Total Treated Flow (m^3)	Monthly Treated Average (m^3/day)	Maximum Daily Treated Flow (m^3/day)	Rated Capacity approved in MDWL (m^3/d)
January	795	795	26	33	144
February	688	688	25	31	144
March	778	778	25	31	144
April	818	818	27	37	144
May	1,436	1,436	46	58	144
June	1,558	1,558	52	63	144
July	1,497	1,497	48	65	144
August	1,399	1,399	45	61	144
September	1,555	1,555	52	61	144
October	1,528	1,528	49	57	144
November	1,110	1,110	37	61	144
December	777	777	25	32	144
Total	13,939	13,939	-	-	-
Average	1,162	1,162	38	-	-

Note: This facility has one flow meter that records both the raw and treated flow.