



MUNICIPALITY OF

PORT HOPE

WORKS & ENGINEERING

DRINKING WATER SYSTEM



**2023 Annual
and Summary
Report**





TOWN HALL
56 Queen Street
Port Hope, ON L1A 3Z9

t: 905.885.4544
f: 905.885.7698

adminporthope.ca
www.porthope.ca

January 30, 2024

Municipality of Port Hope
56 Queen Street
Port Hope, ON
L1A 3Z9

RE: 2023 Annual and Summary Report – Port Hope Drinking Water System No. 260058006

Dear Mrs. Candice White:

We are pleased to provide the 2023 Annual and Summary Report for the Municipality of Port Hope's Drinking Water System, as outlined in Section 11 and Schedule 22 of Ontario Regulation 170/03, made under the *Safe Drinking Water Act 2002*.

This report includes information from January 1, 2023, to December 31, 2023.

Sincerely,

Mike Stewart
Manager, Water
Municipality of Port Hope

Contents

2023 Annual Drinking Water System Report.....	5
System Information	5
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 during this Reporting Period:	10
Microbiological Testing completed under Schedule 10, 11, or 12 of Regulation 170/03 during this Reporting Period:	11
Operational Testing completed under Schedule 7, 8, or 9 of Regulation 170/03 during the Reporting Period covered by this Annual Report:.....	12
2023 Summary Report to Council	16
Acts, Regulations, and Prescribed Instruments applicable to the Port Hope Drinking Water System (DWS).....	16
Compliance with Prescribed Instruments, Acts and Regulations	16
Safe Drinking Water Act.....	16
Permit to Take Water	18
Raw Water Flow Rates	18
Drinking Water Works Permit/Municipal Drinking Water Licence	19
Summary of Water Quantities and Flow Rates	19
Membrane Instantaneous Flow Rates.....	19
Treated Water Flow Rates	20
Wastewater Flow Rates	21
Historical Flow Comparison	22
Sampling Analytical Results	23
Microbiological	23
Turbidity	23
Disinfection	24
Primary and Post Chlorination Disinfection Chlorine Residuals	24
Secondary Disinfection Chlorine Residuals – Distribution System.....	24

2023 Annual & Summary Report

Supernatant Total Suspended Solids.....	25
Other Parameters.....	26
Abnormal or Emergency Drinking Water System Operating Conditions	26
APPENDIX A.....	27
Ontario Ministry of the Environment, Conservation and Parks Compliance Inspection Results	27

Tables

Table 1 - Descriptions of Chemical Feed Systems at the Port Hope WTP.....	8
Table 2 - Summary of Annual Chemical Usage at Port Hope WTP	9
Table 3 - Summary of Reportable Incidents	11
Table 4 - Microbiological Testing Summary	11
Table 5 - Operational Testing Summary.....	12
Table 6 - Summary of additional testing and sampling carried out in accordance with the requirement of an Approval, Order, or other Legal Instrument.....	12
Table 7 - Summary of Inorganic parameters tested during this Reporting Period or the most recent Sample Results	13
Table 8 - Summary of Lead Testing under Schedule 15.1 during this Reporting Period.....	13
Table 9 - Summary of Organic parameters sampled during this Reporting Period:	14
Table 10 - Inorganic or Organic parameter(s) that have exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards	15
Table 11 - Monthly Summary of Net Daily Raw Water Volumes	18
Table 12 - Monthly Summary of Combined Instantaneous Flowrate from Membranes	19
Table 13 - Monthly Summary of Treated Water Flows	20
Table 14 - Monthly Summary of Wastewater Flows	21
Table 15 - Analysis of Permeate Water Turbidity Data.....	23

Table 16 - Summary of Primary and Post Chlorination Disinfection Free Chlorine Residuals 24

Table 17 - Summary of Distribution Free Chlorine Residuals..... 25

Table 18 - Supernatant Discharge Total Suspended Solids..... 25

Table 19 - Deviations from ODWSOG..... 26

Figures

Figure 1 - Historical Flow Comparison 22

2023 Annual Drinking Water System Report

System Information

Drinking-Water System Number:	260058006
Drinking-Water System Name:	Port Hope Drinking Water System
Drinking-Water System Owner:	The Corporation of the Municipality of Port Hope
Drinking-Water System Category:	Large Municipal Residential System
Reporting Period:	January 1, 2023 to December 31, 2023

Does your Drinking-Water System serve more than 10,000 people?

Yes

Is your annual report available to the public at no charge on a web site on the Internet?

Yes – please visit www.porthope.ca

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Port Hope Municipal Town Hall
56 Queen Street
Port Hope, ON L1A 3Z9

*Also available at the Municipal Libraries (Mary J Benson Branch and The Hub in Canton) and the Water Treatment Plant.

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

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:

Description of the Drinking Water System

Port Hope Drinking Water System is classified as Large Municipal Residential System and consists of the Water Treatment Plant (WTP) and the Distribution System. The WTP provides ultrafiltration water treatment for the water system. The WTP is located at 35 Marsh St in the Municipality of Port Hope, County of Northumberland, Ontario. The Municipality is the Owner and Operator of the Port Hope Drinking Water System that serves the community of Port Hope with a population of approximately 16,800.

Drinking Water Quality Management System

Port Hope Drinking Water System is operated by an accredited Operating Authority and in accordance with the Municipal Drinking Water Licence # 146-101, the Drinking Water Works Permit # 146-201 and the Municipality's Drinking Water Quality Management System Operational Plan # 146-401.

The following describes the components of the Port Hope Drinking Water System:

Raw Water Source

The water supply for Port Hope WTP is obtained from Lake Ontario. Lake Ontario water is of good quality and can be described as a large body of clear-coloured water with low turbidity. The Lake water's temperature ranges from 0°C (winter) to approximately 25°C (summer). The raw water source is classified as surface water, which means that it is considered to be an unprotected source. Raw water requires full treatment at Port Hope's WTP to make it drinkable or potable.

Intake Structure

Raw water is taken into a 750 mm diameter intake pipe through the intake structure. The existing intake structure and 750 mm intake piping was retrofitted to include a 900 mm on shore addition. The intake is utilized to draw water from Lake Ontario to the low lift pumping station. The low lift pumping station is where water undergoes coarse screening.

Raw Water Pumping

The raw water pumping station consists of several raw water chambers, one (1) raw water travelling screen, two (2) manually cleaned screens (i.e., for standby purposes), and three (3) low lift pumps (with provision for a fourth). Raw water is dosed as required with chlorine

2023 Annual & Summary Report

for Zebra Mussel control prior to the ultrafiltration process. The raw water quality is monitored by Operations staff at the WTP.

Water Treatment

Facility Type	Facility Name	Class	Certificate No.	Issue Date
Water Treatment Plant	Port Hope Water Treatment Plant	II	WT No. 3552	July 25, 2005

Raw water is treated by passing through the ultrafiltration system. The ultrafiltration process removes organics and solids as well as safeguards against giardia and cryptosporidium contamination. The water treatment facilities consist of a Zenon ZeeWeed 1000 membrane ultrafiltration system which includes four (4) membrane tanks (each tank contains two (2) filtration cassettes with a total capacity for four cassettes) and associated cleaning and backwashing equipment. Following ultrafiltration, filtered water is disinfected by using a chlorine gas system (primary disinfection). The post-chlorination is used to maintain a fixed chlorine residual level in the water leaving the WTP. Following the disinfection process, the water is pumped to the distribution system. Five (5) high lift pumps (with provision for a sixth) pump treated water to the distribution system. The WTP has a rated capacity of 20,300 m³/day. It is expected that this capacity will provide potable water to the Municipality of Port Hope for a period greater than the 20-year planning period.

Process Wastewater System

The WTP provides process residue management consisting of equalization storage and solids separation. Two (2) equalization tanks precede two (2) parallel tube settling units. Settled solids at the base of each wastewater clarifier are pumped via a sewage pumping station (located outside the WTP) to the sanitary sewer. The wastewater supernatant is continuously analyzed for total chlorine residual and dechlorinated prior to a discharge to Lake Ontario.

Water Distribution System

Facility Type	Facility Name	Class	Certificate No.	Issue Date
Distribution System	Port Hope Water Distribution	III	WD No. 719	April 22, 2007

Due to Port Hope's hilly terrain, the community has been divided into two pressure zones. Zone 1 is located in the lower elevation areas (east end) of the community, whereas Zone

2 is located in the higher elevation areas (west end). Zone 2 pressure and flows are maintained via a booster pumping station, elevated water tower and an in-ground reservoir/ pumping station. Zone 1 pressure and flows are maintained via the WTP pumping station and standpipe.

Water Storage Facilities

At the WTP, potable water storage consists of twined reservoirs that have a total rated capacity of 4943 m³. Off-site storage facility in Zone 1 includes a standpipe with a rated capacity of 1,080 m³. Storage facilities in Zone 2 include an in-ground reservoir with a rated capacity of 2,270 m³ and an elevated tank that can hold up to 3,000 m³ of water.

Supervisory Control and Data Acquisition (SCADA)

The SCADA system consists of numerous PLC and computer systems that controls and monitors the drinking water system, while always tracking the water quality. Operational staff monitor and control these systems to ensure their proper operation and water quality. All Operational Staff for Port Hope Drinking Water System are fully certified by the Ministry of the Environment, Conservation and Parks (MECP).

List all water treatment chemicals used over this reporting period:

Chemical Systems

All chemicals and materials used in the operation of the Port Hope Drinking Water System which came into contact with drinking water, met the AWWA and the ANSI safety criteria standards NSF/60 and NSF/61.

Table 1 - Descriptions of Chemical Feed Systems at the Port Hope WTP

Treatment System	Chemical	Purpose	Chemical Concentration (%)
Membrane Filtration	Sodium Hypochlorite	Membrane cleaning (CEB & high pH CIP)	12
Membrane Filtration	Citric Acid	Membrane cleaning (low pH CIP)	50
Membrane Filtration	Hydrochloric Acid	Membrane cleaning (low pH CIP)	30 - 40
Membrane Filtration	Sodium Bisulphite	Dechlorination of membrane cleaning wastewater	38
Membrane Filtration	Sodium Hydroxide	Membrane wastewater pH control	50

2023 Annual & Summary Report

Treatment System	Chemical	Purpose	Chemical Concentration (%)
Membrane Filtration	Polyaluminum Chloride	Membrane Pre-treatment	N/A
Waste Residual Management System	Sodium Bisulphite	Dechlorination of wastewater supernatant from clarifier/thickeners	38
Disinfection Systems	Chlorine gas	<ul style="list-style-type: none"> Zebra mussel control Primary disinfection at inlet of chlorine contact chambers Secondary disinfection at high lift chambers 	100

Table 2 - Summary of Annual Chemical Usage at Port Hope WTP

Treatment System	Chemical	Volume (Litre) or Weight (kg)	Range of Monthly Quantities Used
Membrane Filtration	Sodium Hypochlorite	19,565 L	1,392 – 2,147 L
Membrane Filtration	Citric Acid	6,682 L	419 - 851 L
Membrane Filtration	Hydrochloric Acid	860 L	40 – 100 L
Membrane Filtration	Sodium Bisulphite	9,757 L	771 – 1,024 L
Membrane Filtration	Sodium Hydroxide	4,409 L	225 – 556 L
Membrane Filtration	Poly-aluminum Chloride	4,138 L	291 – 491 L
Waste Residual Management System	Sodium Bisulphite	-	Combined with membrane volumes
Disinfection Systems	Chlorine gas for Zebra mussel control	-	Volume included in Primary disinfection
Disinfection Systems	Chlorine gas for primary disinfection at inlet of chlorine contact chambers	4,905 kg	288 – 558 kg
Disinfection Systems	Chlorine gas for secondary disinfection at high lift chambers	320 kg	7 – 75 kg

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:

Preventative maintenance activities for equipment are scheduled and completed routinely along with other lifecycle replacement needs. In addition to the PM activities, the following capital expenditures were incurred throughout this Reporting Period.

Description	Monetary Expenses
Zone 1 Floating Storage Detailed Design	\$132,211
Replacement of Air Compressors 91A & B	\$37,291
Watermain Reconstruction on Walton Street from Church Street to Pine Street	\$7,168
Upgrade Booster Station Pump P2503 and Additional Generator	\$40,537 in design work
WTP Roof and Drain Replacement	\$682,000
Drain Recirculation Pump Refurbishment	\$5,500
CIP Immersion Heater Replacement	\$9,753
High Lift Pump P4305 Inspection and Refurbishment	\$40,200
Neptune Water Meter Replacement Program	\$9,128
Cathodic Protection Croft Street	\$76,473
CIP Line Replacement of Corroded Section	\$6,983
Little Hope Street and Sullivan Street Upgrades	\$24,115

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 during this Reporting Period:

2023 Annual & Summary Report

Table 3 - Summary of Reportable Incidents

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Completed
June 29, 2023	Adverse Test Result E. Coli (EC) and Total Coliform (TC) at Lakeshore Road Sample Station	EC – 38 TC – 38	cfu/100mL	Affected area was isolated. Boil Water Advisory (BWA) issued by Health Unit (HU) for isolated area of concern (Lakeshore Road – Strachan Street to Shortt Street). Thoroughly flushed watermain and installed a bleeder line on the closest hydrant to dead end to provide continuous flow to maintain proper disinfection. Two (2) sets of bacteriological samples were taken, at least 24 hours apart. Results were negative for EC and TC. BWA was lifted by HU.	2023.07.01

Microbiological Testing completed under Schedule 10, 11, or 12 of Regulation 170/03 during this Reporting Period:

Table 4 - Microbiological Testing Summary

Type of Sample	Number of Samples	Range of E.Coli Or Fecal Results (min #) – (max #)	Range of Total Coliform Results (min #) – (max #)	Number of HPC Samples	Range of HPC Results (min #) – (max #)
Raw	52	0-NDOGT ¹	0-NDOGT ¹	N/A	N/A
Treated	52	0	0	52	0-2
Distribution	390	0 - 38	0 - 38	390	0-980

¹ NDOGT stands for No DATA: Overgrown with Target Bacteria. Prior, and subsequent data sets within normal range.

2023 Annual & Summary Report

Operational Testing completed under Schedule 7, 8, or 9 of Regulation 170/03 during the Reporting Period covered by this Annual Report:

Table 5 - Operational Testing Summary

Parameters	Number of Grab Samples ²	Range of Results (min #)-(max #)	Annual Average	Unit of Measure
Raw Turbidity	8760	0.00 – 100.00	2.24	NTU
Treated Turbidity	8760	0.00 – 2.00	0.05	NTU
Primary Chlorine	8760	0.69 – 4.37	1.36	mg/L
Post-Chlorination Chlorine	8760	0.52 – 3.39	1.59	mg/L
Distribution Chlorine (Grab Samples)	1419	0.62 – 2.20	1.41	mg/L
Distribution Chlorine (Reservoir)	8760	1.18 – 3.47	1.50	mg/L
Distribution Chlorine (Elevated Tank)	8760	1.03 – 3.17	1.49	mg/L
Fluoride (If the DWS provides Fluoridation)	N/A	N/A	N/A	N/A

Table 6 - 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 (min#) – (max #)	Unit of Measure
August 26, 2020 Municipal Drinking Water License 146-101	Process Wastewater, Total Chlorine Residual	Continuously	0.00 Annual Average	mg/L
August 26, 2020 Municipal Drinking Water License 146-101	Process Wastewater, Total suspended solids	Monthly	11.75 Annual Average	mg/L
August 26, 2020 Municipal Drinking Water License 146-101	Uranium (Treated Water)	Weekly	0.349-0.891	ug/L
August 26, 2020	Arsenic	Weekly	0.50-1.10	ug/L

² For continuous monitors, 8760 is used as the number of samples.

2023 Annual & Summary Report

Municipal Drinking Water License 146-101	(Treated Water)			
--	-----------------	--	--	--

Table 7 - 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	August 9, 2023	0.6 <MDL	ug/L	No
Arsenic	August 9, 2023	1.0	ug/L	No
Barium	August 9, 2023	21.7	ug/L	No
Boron	August 9, 2023	20	ug/L	No
Cadmium	August 9, 2023	0.003<MDL	ug/L	No
Chromium	August 9, 2023	0.18	ug/L	No
Lead³	N/A			
Mercury	August 9, 2023	0.01 <MDL	ug/L	No
Selenium	August 9, 2023	0.26	ug/L	No
Sodium	August 9, 2023	14.2	mg/L	No
Uranium	August 9, 2023	0.395	ug/L	No
Fluoride	August 9, 2023	0.12	mg/L	No
Nitrite	April 4, 2023	0.003 <MDL	mg/L	No
Nitrate	April 4, 2023	0.539 (MAX for year)	mg/L	No

Table 8 - Summary of Lead Testing under Schedule 15.1 during this Reporting Period

Sampling Period	Location Type	Number of Samples	Range of Lead Results (ug/L), (min – max)	Number of Exceedances
Winter Sampling Period ⁴		0		

³ Only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems.

⁴ Winter Sampling Period runs from December 15 – April 15. The last lead sample collected in accordance with the Regulation was sampled on February 2, 2021.

Summer Sampling Period ⁵		0		
-------------------------------------	--	---	--	--

The Port Hope Drinking Water System is exempt from sampling in accordance with Section 15.1, 5(9) under Schedule 15 of O. Reg. 170/03. Sampling and testing for Lead is not required until the Winter 2023/2024 and Summer 2024 sampling periods.

Table 9 - Summary of Organic parameters sampled during this Reporting Period:

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	August 9, 2023	0.02 <MDL	ug/L	No
Atrazine + N-dealkylated metabolites	August 9, 2023	0.07	ug/L	No
Azinphos-methyl	August 9, 2023	0.05 <MDL	ug/L	No
Benzene	August 9, 2023	0.32 <MDL	ug/L	No
Benzo(a)pyrene	August 9, 2023	0.004 <MDL	ug/L	No
Bromoxynil	August 9, 2023	0.33 <MDL	ug/L	No
Carbaryl	August 9, 2023	0.05 <MDL	ug/L	No
Carbofuran	August 9, 2023	0.01 <MDL	ug/L	No
Carbon Tetrachloride	August 9, 2023	0.17 <MDL	ug/L	No
Chlorpyrifos	August 9, 2023	0.02 <MDL	ug/L	No
Diazinon	August 9, 2023	0.02 <MDL	ug/L	No
Dicamba	August 9, 2023	0.20 <MDL	ug/L	No
1,2-Dichlorobenzene	August 9, 2023	0.41 <MDL	ug/L	No
1,4-Dichlorobenzene	August 9, 2023	0.36 <MDL	ug/L	No
1,2-Dichloroethane	August 9, 2023	0.35 <MDL	ug/L	No
1,1-Dichloroethylene	August 9, 2023	0.33 <MDL	ug/L	No
Dichloromethane	August 9, 2023	0.35 <MDL	ug/L	No
2-4 Dichlorophenol	August 9, 2023	0.15 <MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	August 9, 2023	0.19 <MDL	ug/L	No
Diclofop-methyl	August 9, 2023	0.40 <MDL	ug/L	No
Dimethoate	August 9, 2023	0.06 <MDL	ug/L	No
Diquat	August 9, 2023	1 <MDL	ug/L	No
Diuron	August 9, 2023	0.03 <MDL	ug/L	No
Glyphosate	August 9, 2023	1 <MDL	ug/L	No
Malathion	August 9, 2023	0.02 <MDL	ug/L	No

⁵ Summer Sampling Period runs from June 15 – October 15. The last sample collected in accordance with the Regulation was sampled on September 8, 2021.

2023 Annual & Summary Report

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
MCPA	August 9, 2023	0.00012 <MDL	ug/L	No
Metolachlor	August 9, 2023	0.01	ug/L	No
Metribuzin	August 9, 2023	0.02 <MDL	ug/L	No
Monochlorobenzene	August 9, 2023	0.3 <MDL	ug/L	No
Paraquat	August 9, 2023	1 <MDL	ug/L	No
Pentachlorophenol	August 9, 2023	0.15 <MDL	ug/L	No
Phorate	August 9, 2023	0.01 <MDL	ug/L	No
Picloram	August 9, 2023	1 <MDL	ug/L	No
Polychlorinated Biphenyls(PCB)	August 9, 2023	0.04 <MDL	ug/L	No
Prometryne	August 9, 2023	0.03 <MDL	ug/L	No
Simazine	August 9, 2023	0.01 <MDL	ug/L	No
THM (Running Annual Average of Quarterly Results)	2023	43	ug/L	No
HAA (Running Annual Average of Quarterly Results)	2023	25	ug/L	No
Terbufos	August 9, 2023	0.01 <MDL	ug/L	No
Tetrachloroethylene	August 9, 2023	0.35 <MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	August 9, 2023	0.20 <MDL	ug/L	No
Triallate	August 9, 2023	0.01 <MDL	ug/L	No
Trichloroethylene	August 9, 2023	0.44 <MDL	ug/L	No
2,4,6-Trichlorophenol	August 9, 2023	0.25 <MDL	ug/L	No
Trifluralin	August 9, 2023	0.02 <MDL	ug/L	No
Vinyl Chloride	August 9, 2023	0.17 <MDL	ug/L	No

Table 10 - Inorganic or Organic parameter(s) that have exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards

Parameters	Result Value	Unit of Measure	Date of Sample
N/A			

2023 Summary Report to Council

In accordance with Schedule 22 of Ontario Regulation 170/03, a Summary Report shall be prepared no later than March 31st for the preceding year and supplied to members of Municipal Council.

The Report shall list the requirements of the Act, Regulations, Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), and any Orders applicable to the system that were not met at any time during the period covered by the Report.

The Report must also include a summary of the quantities and flow rates of potable (drinkable) water supplied during the reporting period, including monthly average and maximum daily flows. A comparison of these flows, to the rated capacity and flow rates approved in the system Drinking Water Works Permit and Municipal Drinking Water Licence, must also be provided.

Acts, Regulations, and Prescribed Instruments applicable to the Port Hope Drinking Water System (DWS)

The Port Hope DWS is governed by, and must operate their DWS in accordance with the following Acts and Regulations at minimum:

- Safe Drinking Water Act, 2002;
 - O. Reg. 170/03 – Drinking Water Systems;
 - O. Reg. 128/04 – Certification of Drinking Water System Operators and WQA;
 - O. Reg. 169/03 – Ontario Drinking Water Quality Standards;
- Environmental Protection Act, where applicable;
- Clean Water Act, where applicable;
- Municipal Drinking Water Licence 146-101;
- Municipal Drinking Water Works Permit 146-201; and
- Permit to Take Water 2205-7DQHGN.

Compliance with Prescribed Instruments, Acts and Regulations

Safe Drinking Water Act

The Municipality, acting as the Operating Authority for the operation of the Port Hope Drinking Water System, endeavors to be fully compliant with Ontario Acts, Regulations and Orders and as such has maintained a MECP inspection rating of 100% for most years. The 2022 MECP inspections was completed in February of 2023 scored a rating

of 100%. No non-compliance events or best management practices were noted in the inspection report.

One notice was submitted to the MECP in accordance with section 16-3 of Schedule 16 of O.Reg.170/03 and reported to the Haliburton Kawartha Pineridge District Health Unit and the Spills Action Centre during this Reporting Period. Corrective actions were taken immediately. A Boil Water Advisory was issued for the affected area of concern. Re-sampling was completed, revealing no adverse effects to public health. Details of the reportable event can be found in Table 3 – Summary of Reportable Incidents above.

SAI Global conducted an offsite surveillance system audit on the Municipality of Port Hope's Drinking Water Quality Management System (QMS) on May 15, 2023. No non-conformances were identified during the audit. One (1) opportunity for improvement was suggested. A small administrative amendment was made under Element 20, Management Review, to the Operational Plan. The audit determined that the QMS is effectively implemented, maintained, and meets the requirements of the Drinking Water Quality Management Standard Version 2.0 – 2017.

In accordance with Schedule C, Condition 6.0 of the Port Hope Municipal Drinking Water Licence, a Harmful Algal Bloom monitoring, reporting, and sampling plan shall be developed, kept up to date and shall be implemented when a potential harmful algal bloom is suspected or present. During the Reporting Period, monitoring of harmful algal blooms was conducted from June 1, 2023, until October 31, 2023. No harmful algal blooms were identified or suspected through visual inspection. No reporting or sampling was required during the Reporting Period.

Clean Water Act

The Ganaraska Source Protection Plan was approved by the MECP and came into effect on January 1, 2015. The Municipality has put necessary internal processes in place with the Planning, Fire and Emergency Services and Works and Engineering Departments to ensure compliance with the Source Protection Plan. The vulnerable scores for the Port Hope Intake Protection Zone are too low to create prescribed significant drinking water threats within the Intake Protection Zone (IPZ) 1 and IPZ 2. The current local significant drinking water threats have been identified through an event-based modelling approach and are mitigated through emergency preparedness and sound operational practices.

2023 Annual & Summary Report

Permit to Take Water

In accordance with Permit to Take Water number 3130-AW2KR4, the Port Hope Water Treatment Plant is permitted to take 52,700 m³/day from Lake Ontario, at a maximum flow rate of 609.95 Litres/second. Throughout the Reporting Period, the Municipality of Port Hope WTP remained within compliance limits identified in the Permit to Take Water for the facility. A maximum daily taking of 8,589 m³ was recorded on June 6, 2023. The maximum flow rate recorded was 299 L/s on June 14, 2023. For further details on Raw Water taking throughout the reporting period, see Table 11 – Monthly Summary of Net Daily Raw Water Volumes below.

Raw Water Flow Rates

A summary of the daily quantities of water being taken from Lake Ontario (i.e., net daily raw water volumes) are shown in Table 11. As shown, the highest daily raw water volume of 8,589 m³/day has not exceeded 52,700 m³/day as stipulated in the Permit to Take Water.

Table 11 - Monthly Summary of Net Daily Raw Water Volumes

Month	Daily Average Raw Water Volume per Month (m ³ /day)	Maximum Daily Raw Water Volume in Month (m ³ /day)	Maximum Flow Rate (l/s)
January	5,562	6,211	179.61
February	5,550	6,183	175.43
March	5,475	6,074	194.78
April	5,823	6,582	193.28
May	6,680	8,526	183.37
June	7,066	8,589	298.16
July	6,326	8,470	182.93
August	5,716	6,669	298.92
September	5,999	7,366	281.71
October	5,351	7,036	196.13
November	4,744	5,832	178.22
December	4,440	5,372	167.79
Average	5,728		
Maximum		8,589	298.92

Drinking Water Works Permit/Municipal Drinking Water Licence

Summary of Water Quantities and Flow Rates

This section provides a summary of records related to flow rates of treated water, wastewater, and membrane instantaneous flow rates.

This section provides a summary and discussion on the quantity of treated water supplied in 2023 compared to the rated capacity specified in the Municipal Drinking Water Licence, including monthly average and maximum daily flows.

There are sufficient membrane modules installed to produce Phase 1 flows of 14,000 m³/day. This flow rate is a total net daily production of treated water.

Given that there's downtime for cleaning, backwashing and membrane integrity tests, the instantaneous flow rate into the membranes is higher than the plant rated capacity as defined above. The current recovery rate is 92%, which provides an instantaneous factor of approximately 1.11 l/s. Thus, requiring an instantaneous raw water flow rate into the membranes of 15,540 m³/day.

A summary of the above is provided below:

- Current plant rated capacity (net treated water production) = 14,000 m³/day.
- Current instantaneous raw water flow rate at plant rated capacity = 15,540 m³/day.
- Current maximum daily flow rate from membranes = 8,163 m³/day. This has increased 31 m³/day compared to 2022 and decreased 345 m³/day compared to 2021.

Membrane Instantaneous Flow Rates

A summary of the combined instantaneous flow rate from the membranes is shown in Table 12 – Monthly Summary of Combined Instantaneous Flowrate from Membranes below. As shown, the maximum instantaneous flow rate from the membranes has not exceeded the anticipated instantaneous raw water flow rate of 15,540 m³/day.

Table 12 - Monthly Summary of Combined Instantaneous Flowrate from Membranes

Month	Daily Average Per Month	Maximum Instantaneous Flow Rate (l/s)	Maximum Instantaneous Flow Rate (m ³ /day)
January	5,274	68	5,880
February	5,242	68	5,832

2023 Annual & Summary Report

Month	Daily Average Per Month	Maximum Instantaneous Flow Rate (l/s)	Maximum Instantaneous Flow Rate (m ³ /day)
March	5,163	65	5,654
April	5,494	73	6,302
May	6,327	94	8,129
June	6,708	94	8,163
July	5,992	93	8,027
August	5,343	73	6,268
September	5,619	80	6,896
October	5,025	77	6,612
November	4,475	63	5,474
December	4,098	58	5,007
Average	5,397	75	
Maximum		94	8,163

Treated Water Flow Rates

A summary of the treated water flows is shown in Table 13 – Monthly Summary of Treated Water Flows. As shown, the plant rated capacity of 20,300 m³/day was not exceeded. The maximum daily water demand reached 37.19% of the plant rated capacity, averaging 29.44% over the year.

Table 13 - Monthly Summary of Treated Water Flows

Month	Daily Average per Month (m ³ /day)	Maximum Daily (m ³ /day)	% Max/ Rated Capacity	Maximum Flow Rate (l/s)
January	4,961	5,515	27.17	220.13
February	4,921	5,550	27.34	217.85
March	4,867	5,335	26.28	235.28
April	5,159	6,038	29.74	243.12
May	5,957	6,968	34.32	242.89
June	6,332	7,412	36.51	227.89

2023 Annual & Summary Report

Month	Daily Average per Month (m ³ /day)	Maximum Daily (m ³ /day)	% Max/ Rated Capacity	Maximum Flow Rate (l/s)
July	5,641	7,549	37.19	230.36
August	4,998	6,016	29.64	218.58
September	5,282	6,115	30.12	224.68
October	4,682	5,787	28.51	228.34
November	4,180	5,006	24.66	245.92
December	3,823	4,434	21.84	225.15
Average	5,067		29.44	230.02
Maximum		7,549	37.19	245.92

Wastewater Flow Rates

Wastewater is generated on-site from cleaning the membranes utilizing the following processes: backwashing, maintenance cleans, and recovery cleans. It has been anticipated that approximately 10% of the raw water volume is used for these processes, resulting in the plant recovery rate of approximately 90%.

Table 14 – Monthly Summary of Wastewater Flows shows that wastewater production, in any given month, has averaged 13.80% of the raw water flows, which is 3.80% more than the anticipated 10% wastewater production.

Table 14 - Monthly Summary of Wastewater Flows

Month	Total Monthly Raw Water Volume (m ³)	Total Monthly Wastewater Volume (m ³)	% Wastewater/ Raw
January	172,429	21,255	12.33%
February	155,408	20,650	13.29%
March	169,736	22,687	13.37%
April	174,688	22,363	12.80%
May	207,079	25,305	12.22%
June	211,975	24,820	11.71%
July	196,111	25,694	13.10%
August	177,185	27,008	15.24%

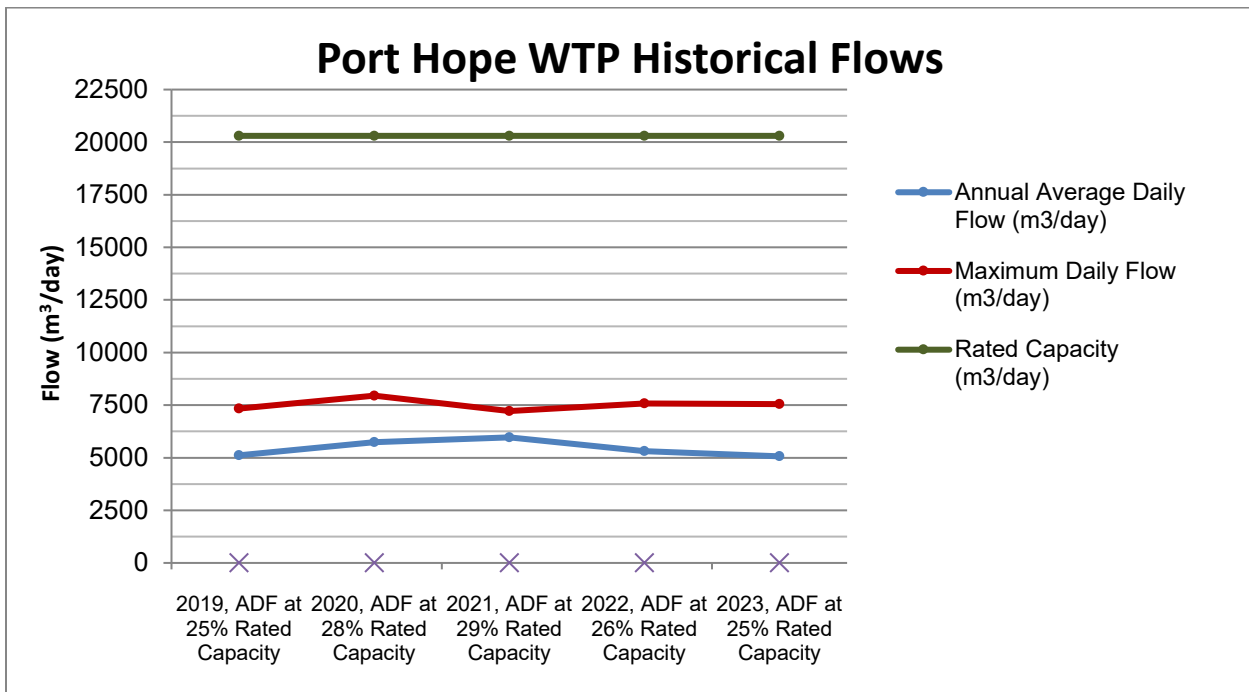
2023 Annual & Summary Report

Month	Total Monthly Raw Water Volume (m ³)	Total Monthly Wastewater Volume (m ³)	% Wastewater/ Raw
September	179,957	26,937	14.97%
October	165,869	24,786	14.94%
November	142,308	21,137	14.85%
December	137,629	23,033	16.74%
Average	174,198	23,806	13.80%
Maximum	211,975	27,008	16.74%

Historical Flow Comparison

Accounting for 27% of the facility's rated capacity, the 5-year Average Daily Flow (ADF) is 5,441 m³/day. The following chart below shows the 5-year average daily flows for the years 2019 to 2023, including max daily flows and percentage of rated capacity, for each year, respectively.

Figure 1 - Historical Flow Comparison



Sampling Analytical Results

This section provides a summary of analytical results of sampling required by Ontario Drinking Water Quality Standards (ODWQS) and conditions in the Municipal Drinking Water Licence, Section 1.5 of Schedule C.

Microbiological

The bacteriological data in the raw, treated and distribution water supply are shown in Table 4 - Microbiology Testing Summary above. If either the treated or distribution water contain any total coliform (TC) or fecal coliform (FC), then the water quality is considered adverse. The corrective action in all cases is to report, resample, analyze and follow the instructions as directed by the Medical Officer of Health. The Municipality observed one incident of adverse samples in 2023. Details of the reportable event can be found in Table 3 – Summary of Reportable Incidents above.

Turbidity

Permeate water turbidity readings from all four membrane trains averaged 0.02 NTU in 2023.

Table 15 - Analysis of Permeate Water Turbidity Data

Month	Sampling Location	Train 1 Average	Train 2 Average	Train 3 Average	Train 4 Average	Total Turbidity Samples	Total Turbidity Samples <0.1NTU	Percentage of Samples <0.1 NTU
January	On-line	0.03	0.02	0.02	0.02	6487498	6477857	99.851%
February	On-line	0.03	0.02	0.02	0.02	6011884	6007169	99.922%
March	On-line	0.04	0.02	0.02	0.01	6436009	6417329	99.710%
April	On-line	0.03	0.02	0.02	0.02	6704935	6692618	99.816%
May	On-line	0.02	0.02	0.04	0.02	7315472	7307937	99.897%
June	On-line	0.02	0.02	0.02	0.02	7279555	7270411	99.874%
July	On-line	0.02	0.02	0.02	0.01	6689705	6683307	99.904%
August	On-line	0.02	0.02	0.02	0.02	6466091	6459564	99.899%
September	On-line	0.02	0.01	0.02	0.02	6768293	6765875	99.964%
October	On-line	0.02	0.02	0.02	0.02	6200278	6191696	99.862%
November	On-line	0.02	0.02	0.02	0.02	5570862	5556186	99.737%
December	On-line	0.02	0.02	0.02	0.02	6128510	6124346	99.932%
Average		0.02	0.02	0.02	0.02			

Disinfection

Primary and Post Chlorination Disinfection Chlorine Residuals

Primary disinfection: chlorine is added just prior to the dual cell contact chambers to target a free chlorine residual of 1.30 to 1.50 mg/l.

Post chlorination disinfection: chlorine is injected into the high lift equalization chambers, to maintain free chlorine residual of 1.50 mg/L, entering Zone 1 of the distribution system.

Table 16 - Summary of Primary and Post Chlorination Disinfection Free Chlorine Residuals

Location	Sample Count	Minimum Free Chlorine Residual (mg/L)	Average Free Chlorine Residual (mg/L)	Maximum Free Chlorine Residual (mg/L)	% of time > 0.05 mg/L	% of time > 0.2 mg/L
WTP – Primary Disinfection	continuous	0.69	1.36	4.37	100	100
WTP – Post Chlorination Disinfection	continuous	0.52	1.59	3.39	100	100

Secondary Disinfection Chlorine Residuals – Distribution System

The Procedure for Disinfection of Drinking Water in Ontario states that “the distribution system must be operated such that at all times and at all locations within the distribution system there is at least a detectable free chlorine residual of 0.05 mg/L at a pH 8.5 or lower.”

O. Reg. 170/03, Schedule 16-3.4 states that the distribution water quality is considered to be adverse if the free chlorine residual is measured to be less than 0.05 mg/L. The corrective action is to restore chlorination immediately and follow the instructions as directed by the Medical Officer of Health. All samples analyzed in 2023 met the regulatory requirement for free chlorine residual, being greater than 0.05 mg/L.

The Municipality has implemented the following procedures to comply with the Regulation:

- Scheduled flushing of dead-end water mains through automated flushing stations, blowoffs, and hydrants;

2023 Annual & Summary Report

- Chlorine addition at the Zone 2 at the Elevated Tank and Reservoir; and
- Initiation of a “Capital Works” program to replace all 100 mm cast iron water mains and loop dead ends within the next ten (10) years.

Table 17 - Summary of Distribution Free Chlorine Residuals

Location	Sample Count	Minimum Distribution Chlorine Residual (mg/L)	Average Distribution Chlorine Residual (mg/L)	Maximum Distribution Chlorine Residual (mg/L)	% of time > 0.05 mg/L	% of time > 0.2 mg/L
Distribution – Jocelyn Street Reservoir	continuous	1.18	1.50	3.47	100	100
Distribution – Fox Rd. Elevated Water Tank	continuous	1.03	1.49	3.17	100	100
Distribution System, Grab Samples	1419	0.62	1.41	2.20	100	100

Supernatant Total Suspended Solids

Schedule C, Section 1.5 of the Municipal Drinking Water Licence states that the annual average concentration of the suspended solids (TSS) in the effluent discharged from the Port Hope WTP into the natural environment shall not exceed 25 mg/L. Furthermore, as stated in Schedule C, Section 4.4, the total suspended solids composite sampling is required to be completed quarterly at the effluent discharge pipe. As shown below, the annual average concentration of suspended solids has not exceeded the discharge limit of 25 mg/L and continuing efforts are made to optimize the process to ensure TSS content in the effluent remains below 25 mg/L.

Table 18 - Supernatant Discharge Total Suspended Solids

Location	Sample Count	Minimum Total Suspended Solids (mg/L)	Average Total Suspended Solids (mg/L)	Maximum Total Suspended Solids (mg/L)
Supernatant Discharge at Outfall	12	2.0	11.75	23.0

Other Parameters

Table 19 lists deviations from Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG).

Table 19 - Deviations from ODWSOG

Parameter	Location	Operational Guideline (OG) /Aesthetic Objective (AO)	Annual Value(s) Observed	Comments
Raw Water Hardness (as CaCO ₃)	Plant	80-100 mg/L (AO)	119 mg/L	Uncontrolled parameter
Treated Water Hardness (as CaCO ₃)	Plant	80-100 mg/L (AO)	118 mg/L	Uncontrolled parameter
Treated Water Temperature	Plant	15 °C (OG)	0 – 22°C	Uncontrolled parameter

Abnormal or Emergency Drinking Water System Operating Conditions

There were no abnormal or emergency drinking water system operating conditions as a result of an emergency situation in 2023.

APPENDIX A

Ontario Ministry of the Environment, Conservation and Parks Compliance Inspection Results



PORT HOPE DRINKING WATER SYSTEM
35 MARSH ST, PORT HOPE, ON, L1A 4K3
Inspection Report

System Number: 260058006
Entity: THE MUNICIPALITY OF PORT
HOPE
Inspection Start Date: 02/06/2023
Inspection End Date: 03/06/2023
Inspected By: Viktoria Light
Badge #: 1100
Inspected By: Jacqueline Fuller
Badge #:
Inspected By: Chris Johnston
Badge #: 782



signature

We want to hear from you. How was my service? You can provide feedback at
1-888-745-8888 or [Ontario.ca/inspectionfeedback](https://www.ontario.ca/inspectionfeedback)

NON-COMPLIANCE/NON-CONFORMANCE ITEMS

This should not be construed as a confirmation of full compliance with all potential applicable legal requirement and BMPs. These inspection findings are limited to the components and/or activities that were assessed, and the legislative framework(s) that were applied. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

If you have any questions related to this inspection, please contact the signed Provincial Officer.

INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

Ministry Program: DRINKING WATER | **Regulated Activity:** DW Municipal Residential

Question ID	MRDW1001001	Question Type	Information
<p>Question: What was the scope of this inspection?</p>			
Legislative Requirement	Not Applicable		
Observation			
<p>The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.</p> <p>This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.</p> <p>This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.</p> <p>On February 6, 2023, Provincial Officer Viktoria Light initiated an unannounced inspection of the Port Hope Drinking Water System (DWS). Mike Stewart, Alexander Doucette and Christine Smith were in attendance during the inspection.</p> <p>Please note that all references to the "inspection review period" refer to the elapsed time since the previous Ministry Compliance Inspection was completed. In this inspection report, "inspection review period" refers to the period between February 1, 2022, and January 31, 2023.</p> <p>The Port Hope DWS is a Class 2 Water Treatment Subsystem and a Class 3 Water Distribution Subsystem.</p> <p>During the inspection review period, the Port Hope DWS operated under authority of the following control documents:</p> <ul style="list-style-type: none"> • Permit to Take Water Number 3130-AW2KR4 (issued February 23, 2018), • Drinking Water Works Permit Number 146-201, Issue Number 8 (issued September 8, 2022), and 			

• Municipal Drinking Water Licence Number 146-101, Issue Number 6 (issued August 26, 2020).

The drinking-water system inspection included a visual inspection of the treatment facility and Jocelyn Street Reservoir, document review and operator interview.

No audit samples were collected during the inspection.

Question ID	MRDW1000001	Question Type	Information
Question:			
Does this drinking water system provide primary disinfection?			
Legislative Requirement	Not Applicable		
Observation			
This Drinking Water System provides for both primary and secondary disinfection and distribution of water.			

Question ID	MRDW1018001	Question Type	Legislative
Question:			
Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.			

Question ID	MRDW1020001	Question Type	Legislative
Question:			
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 1 documents were prepared in accordance with their Drinking Water Works Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.			
Since the last compliance inspection, two (2) Forms 1 (Record of Watermains Authorized			

as a Future Alteration) were completed for the watermain construction on Walton Street and the Phase 5 of the Mason Homes development.

Question ID	MRDW1021001	Question Type	Legislative
Question:			
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 2 documents were prepared in accordance with their Drinking Water Works Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.			
Since the last compliance inspection, two (2) Forms 2 (Record of Minor Modification or Replacement) were completed for the removal of four (4) particle counters and replacement of filter effluent turbidimeters at the permeate discharge piping.			

Question ID	MRDW1114001	Question Type	Legislative
Question:			
Does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
The owner had evidence that required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period.			

Question ID	MRDW1025001	Question Type	Legislative
Question:			
Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?			
Legislative Requirement	SDWA 31 (1);		
Observation			
All parts of the drinking water system were disinfected in accordance with a procedure			

listed in Schedule B of the Drinking Water Works Permit.

'Disinfection of Watermains', 'Watermain Break Repair Procedure' and 'Watermain Commissioning Protocol' are included in the QMS document.

These procedures were followed during watermain constructions on Walton Street and at Mason Homes development.

Question ID	MRDW1024001	Question Type	Legislative
Question:			
Do records confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated as required?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (2);		
Observation			
Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.			
Distribution chlorine residual records, both on-line data and grab sample test results, were reviewed for the inspection period.			
Since the last inspection, the minimum distribution free chlorine residual of 0.54 mg/L was measured and recorded on July 29, 2022, at Walton and Pine.			

Question ID	MRDW1038001	Question Type	Legislative
Question:			
Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4;		
Observation			
Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.			

Question ID	MRDW1035001	Question Type	Legislative
Question: Are operators examining continuous monitoring test results and are they examining the results within 72 hours of the test?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10;		
Observation			
Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.			
Operation staff visited the facility at least each weekday and reviewed the on-line trending of operational parameters. The continuous data was also reviewed by duty on-call operator on weekends.			
The trending review, daily operational parameters and checks, as well as any unusual observations, were documented in the logbook.			

Question ID	MRDW1037001	Question Type	Legislative
Question: Are all continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or MDWL or DWWP or order, equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10; SDWA O. Reg. 170/03 6-5 (1.1);		
Observation			
All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.			
The minimum chlorine residual required to achieve primary disinfection in the worst-case conditions, using both chlorine contact chambers, is 0.45 mg/L, according to the CT calculations memo prepared by KMK Consultants Ltd. in 2005.			
It was reported during the inspection that the minimum and maximum chlorine alarms at the continuous chlorine analyzer monitoring primary disinfection are set at 0.65 mg/L and 2.2 mg/L, respectively. The minimum chlorine alarm will trigger an automatic production shutdown.			
In addition, chlorine residual is measured at the inlet into chlorine contact chamber. The minimum alarm set at this chlorine analyzer is 0.80 mg/L. The alarm will trigger an immediate notification to the operator.			
At the time of the inspection, the maximum (high-high) permeate turbidity alarms and			

automatic train shutdown systems were set at 0.8 NTU. High turbidity alarms were set at 0.1 NTU at all four (4) on-line turbidity analyzers.

Question ID	MRDW1040000	Question Type	Legislative
Question:			
Are all continuous analysers calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10;		
Observation			
All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.			
The on-line raw and permeate turbidity analyzers were calibrated on June 16, 2022, by Nichol Water Services.			
All hand-held chlorine and turbidity analyzers were calibrated by Nichol Water Services on June 6, 2022.			
The on-line primary disinfection chlorine analyzer was calibrated by operation staff monthly, as per 'Instrument Calibration & Maintenance Procedure'. The calibration activities were documented in the city-wide Maintenance Management System.			
The on-line chlorine analyzers located at the Jocelyn Street Reservoir and the Fox Road Elevated Tank were calibrated semi-annually by the operations staff. Calibrations were documented in the Maintenance Management System through work orders.			

Question ID	MRDW1108001	Question Type	Legislative
Question:			
Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by O. Reg. 170/03, an Order, MDWL, or DWWP issued under Part V, SDWA, has triggered an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?			
Legislative Requirement	SDWA O. Reg. 170/03 6-5 (1)1-4; SDWA O. Reg. 170/03 6-5 (1)5-10; SDWA O. Reg. 170/03 6-5 (1.1);		
Observation			
Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.			

Question ID	MRDW1033001	Question Type	Legislative
Question: Is the secondary disinfectant residual measured as required for the large municipal residential distribution system?			
Legislative Requirement	SDWA O. Reg. 170/03 7-2 (3); SDWA O. Reg. 170/03 7-2 (4);		
Observation			
The secondary disinfectant residual was measured as required for the large municipal residential distribution system.			
Distribution system free chlorine residuals were continuously measured at the Fox Road Elevated Tank and at the Jocelyn Reservoir by on-line chlorine analyzers. Chlorine residuals were continuously recorded on the SCADA system. In addition, distribution chlorine residuals were measured during bacteriological sampling using a hand-held colourimetric unit.			

Question ID	MRDW1099001	Question Type	Information
Question: Do records show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03)?			
Legislative Requirement	Not Applicable		
Observation			
Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg. 169/03).			
The laboratory analytical test results were reviewed for the period from February 1, 2022, to January 31, 2023. Test results of drinking water samples taken during the inspection period for analysis by a licensed laboratory showed that chemical and microbiological parameters were below the Ontario Drinking Water Standards in all samples collected.			

Question ID	MRDW1081001	Question Type	Legislative
Question: For LMR systems, are all microbiological water quality monitoring requirements for distribution samples being met?			

Legislative Requirement	SDWA O. Reg. 170/03 10-2 (1); SDWA O. Reg. 170/03 10-2 (2); SDWA O. Reg. 170/03 10-2 (3);
Observation	
<p>All microbiological water quality monitoring requirements prescribed by legislation for distribution samples in a large municipal residential system were being met.</p> <p>The Port Hope distribution system serves a population of approximately 12,587 residents. The system is classified as a large municipal residential system, and the owner and operating authority for the system is required to collect at a minimum twenty-one (21) distribution samples each month and have them tested for the prescribed bacteriological parameters.</p> <p>During the inspection period, the operation staff collected seven (7) distribution samples each week and between 28 – 37 distribution samples each month for microbiological analysis. Free chlorine residuals were measured at the time of sampling. All distribution samples were tested for total coliform, E. coli and heterotrophic plate count bacteria.</p>	

Question ID	MRDW1096001	Question Type	Legislative
Question:			
Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?			
Legislative Requirement	SDWA O. Reg. 170/03 6-3 (1);		
Observation			
Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.			

Question ID	MRDW1086001	Question Type	Legislative
Question:			
Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?			
Legislative Requirement	SDWA O. Reg. 170/03 13-6.1 (1); SDWA O. Reg. 170/03 13-6.1 (2); SDWA O. Reg. 170/03 13-6.1 (3); SDWA O. Reg. 170/03 13-6.1 (4); SDWA O. Reg. 170/03 13-6.1 (5); SDWA O. Reg. 170/03 13-6.1 (6);		
Observation			
All haloacetic acid water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.			

Since the last ministry inspection, haloacetic acid samples were collected at Hamilton Road or Welcome sampling stations on April 6, 2022; July 5, 2022; October 4, 2022, and January 10, 2023.

The running annual average of haloacetic acids in the samples collected in the past four quarters was 26 µg/L.

Question ID	MRDW1087001	Question Type	Legislative
Question:			
Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?			
Legislative Requirement	SDWA O. Reg. 170/03 13-6 (1); SDWA O. Reg. 170/03 13-6 (2); SDWA O. Reg. 170/03 13-6 (3); SDWA O. Reg. 170/03 13-6 (4); SDWA O. Reg. 170/03 13-6 (5); SDWA O. Reg. 170/03 13-6 (6);		
Observation			
All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.			
Since the last ministry inspection, trihalomethane samples were collected at the extremities of the distribution system monthly. The running annual average of trihalomethanes in the samples collected in the past four quarters was 43 µg/L.			

Question ID	MRDW1094001	Question Type	Legislative
Question:			
Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?			
Legislative Requirement	SDWA 31 (1);		
Observation			
All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.			
Schedule C of the Municipal Drinking Water Licence, issued on August 26, 2020, requires collection of quarterly composite samples for total suspended solids (TSS) analysis and continuous monitoring of total chlorine residual in the wastewater supernatant. The MDW sets the annual running average limits for TSS at 25 mg/L, and a limit of 0.02 mg/L for instantaneous total chlorine residual. The document review confirmed that wastewater composite samples were collected			

monthly and analyzed for total suspended solids. The 2022 annual average of TSS was 18.5 mg/L.

Total chlorine residual was monitored at the wastewater discharge using an on-line chlorine analyzer. The data review for the inspection period confirmed that all total chlorine residuals were maintained below 0.02 mg/L, with the exception of brief spikes (less than 2 minutes) generally caused by maintenance activities.

In addition, Schedule C requires quarterly sampling and testing of treated water for Uranium and Arsenic.

The data review confirmed that during the inspection period raw and treated water samples were taken on a weekly basis for Uranium and Arsenic analysis.

Question ID	MRDW1101001	Question Type	Legislative
Question:			
For LMR Systems, have corrective actions (as per Schedule 17 of O. Reg. 170/03) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?			
Legislative Requirement	SDWA O. Reg. 170/03 17-1; SDWA O. Reg. 170/03 17-10 (1); SDWA O. Reg. 170/03 17-11; SDWA O. Reg. 170/03 17-12; SDWA O. Reg. 170/03 17-13; SDWA O. Reg. 170/03 17-14; SDWA O. Reg. 170/03 17-2; SDWA O. Reg. 170/03 17-3; SDWA O. Reg. 170/03 17-4; SDWA O. Reg. 170/03 17-5; SDWA O. Reg. 170/03 17-6; SDWA O. Reg. 170/03 17-9;		
Observation			
Corrective actions (as per Schedule 17), including any other steps that were directed by the Medical Officer of Health, had been taken to address adverse conditions.			

Question ID	MRDW1104000	Question Type	Legislative
Question:			
Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?			
Legislative Requirement	SDWA O. Reg. 170/03 16-6 (1); SDWA O. Reg. 170/03 16-6 (2); SDWA O. Reg. 170/03 16-6 (3); SDWA O. Reg. 170/03 16-6 (3.1); SDWA O. Reg. 170/03 16-6 (3.2); SDWA O. Reg. 170/03 16-6 (4); SDWA O. Reg. 170/03 16-6 (5); SDWA O. Reg. 170/03 16-6 (6);		
Observation			
All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.			

--

Question ID	MRDW1059000	Question Type	Legislative
Question: Do the operations and maintenance manuals contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system?			
Legislative Requirement	SDWA O. Reg. 128/04 28;		
Observation The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.			

Question ID	MRDW1060000	Question Type	Legislative
Question: Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?			
Legislative Requirement	SDWA 31 (1);		
Observation The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA. Operation Manual for the Port Hope DWS contains procedures prescribed by the MDWL and DWWP, such as CT calculations prepared by KMK Consultants Ltd. In October 2005, handling drinking water complaints, sample & sample handling, sampling & testing & monitoring, instrument calibration & maintenance, harmful algal bloom monitoring plan, water system emergency response plan, emergency power system maintenance, AWWA standards for watermain disinfection, etc.			

Question ID	MRDW1061001	Question Type	Legislative
Question: Are logbooks properly maintained and contain the required information?			
Legislative Requirement	SDWA O. Reg. 128/04 27 (1); SDWA O. Reg. 128/04 27 (2); SDWA O. Reg. 128/04 27 (3); SDWA O. Reg. 128/04 27 (4); SDWA O. Reg. 128/04 27 (5); SDWA O. Reg. 128/04 27 (6); SDWA O. Reg. 128/04 27 (7);		
Observation			

Logbooks were properly maintained and contained the required information.

Question ID	MRDW1062001	Question Type	Legislative
Question:			
Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst, or person who meets the requirements of O. Reg. 170/03 7-5?			
Legislative Requirement	SDWA O. Reg. 170/03 7-5;		
Observation			
Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.			
Distribution system chlorine residuals measured by a hand-held instrument were recorded in the operation logs along with operator's initials.			
Weekly chlorine residual verifications were recorded in the 'Chlorine Analyzers Verification' logs. Operator's initials were documented in the logs.			
All operators working at the Port Hope DWS are appropriately certified to conduct operational tests.			

Question ID	MRDW1071000	Question Type	BMP
Question:			
Has the owner provided security measures to protect components of the drinking water system?			
Legislative Requirement	Not Applicable		
Observation			
The owner had provided security measures to protect components of the drinking water system.			
The property around the Port Hope water treatment facility is fenced. The building's access door is locked and equipped with Alliance security alarm system.			
The Fox Street Elevated Tank is fenced. The entry door is locked and equipped with intrusion alarm system.			
The Jocelyn Street Reservoir is not fenced, but the access door is equipped with Alliance intrusion alarm system.			

Question ID	MRDW1073001	Question Type	Legislative
Question: Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?			
Legislative Requirement	SDWA O. Reg. 128/04 23 (1);		
Observation			
The overall responsible operator had been designated for each subsystem.			
During the inspection period Mike Stewart, Water Operations Manager, was designated as the Overall Responsible Operator (ORO). Mr. Stewart holds a valid Class 3 Water Treatment Subsystem and a Class 3 Water Distribution and Supply Subsystem certificate. The ORO designation is documented in the logbook.			

Question ID	MRDW1074001	Question Type	Legislative
Question: Have operators-in-charge been designated for all subsystems for which comprise the drinking water system?			
Legislative Requirement	SDWA O. Reg. 128/04 25 (1);		
Observation			
Operators-in-charge had been designated for all subsystems which comprise the drinking water system.			
The Municipality deems all operators certified with a Class 1 certificate or higher in each respective treatment or distribution subsystem as OIC. The following operators were designated as OIC and were credited OIC experience for every working hour:			
<ul style="list-style-type: none"> • Amber Bissett (WTS Class 2, WDS Class 2) • Alexander Doucette (WTS Class 3, WDS Class 3) • Benjamin Coull (WTS Class 2, WDS Class 3) • Geoff Morgan (WTS Class 3, WDS Class 3) • Dennis Buckley (WTS Class 3, WDS Class 4) • Carson Little (WTS Class 2, WDS Class 3) • Matt Moore (WTS Class 1, WDS Class 1) • Damian Concannon (WTS Class 1, WDS Class 1) 			

Question ID	MRDW1075001	Question Type	Legislative
--------------------	-------------	----------------------	-------------

Question: Do all operators possess the required certification?	
Legislative Requirement	SDWA O. Reg. 128/04 22;
Observation All operators possessed the required certification.	

Question ID	MRDW1076001	Question Type	Legislative
Question: Do only certified operators make adjustments to the treatment equipment?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (2);		
Observation Only certified operators made adjustments to the treatment equipment.			

Question ID	MRDW1012001	Question Type	Legislative
Question: Does the owner have a harmful algal bloom monitoring plan in place that meets the requirements of the MDWL?			
Legislative Requirement	SDWA 31 (1);		
Observation The owner had a harmful algal bloom monitoring plan in place. In April 2020, the Municipality of Port Hope developed and implemented 'Harmful Algal Bloom Monitoring Plan' for the Port Hope DWS, which complies with MDWL requirements.			

Question ID	MRDW1014001	Question Type	Legislative
Question: Is there sufficient monitoring of flow as required by the MDWL or DWWP issued under Part V of the SDWA?			
Legislative Requirement	SDWA 31 (1);		
Observation There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.			

--

Question ID	MRDW1016001	Question Type	Legislative
Question:			
Is the owner in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the MDWL issued under Part V of the SDWA?			
Legislative Requirement	SDWA 31 (1);		
Observation			
<p>The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.</p> <p>Part 1.0 of Schedule C of the current MDWL limits the maximum daily volume of treated water that directed to the distribution system to 20,300 m³/day. The SCADA summary data was reviewed for the inspection period. The rated capacity for the flow into the distribution system has not been exceeded during inspection period. The maximum daily volume of treated water entering the distribution system of 7,574 m³/day was recorded on July 11, 2022.</p>			

Question ID	MRDW1023001	Question Type	Legislative
Question:			
Do records indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a DWWP and/or MDWL issued under Part V of the SDWA at all times that water was being supplied to consumers?			
Legislative Requirement	SDWA O. Reg. 170/03 1-2 (2);		
Observation			
<p>Records indicated 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 Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.</p> <p>The Port Hope DWS obtains water from a surface water (Lake Ontario). The treatment system must be capable of achieving an overall performance that provides, at a minimum, 4-log removal or inactivation of viruses, 3-log removal or inactivation of Giardia cysts and 2-log removal or inactivation of Cryptosporidium oocysts. The treatment system at the Port Hope DWS consists of Zenon ultrafiltration followed by disinfection using gas chlorination. The ultrafiltration is credited to provide 2-log Cryptosporidium oocysts, 3.5-log Giardia cysts and no viruses removal or inactivation.</p>			

Chlorine disinfection is required to provide, at a minimum, 0.5-log removal or inactivation of Giardia cysts.

The primary disinfection free chlorine residual is continuously measured at the end of the chlorine contact chambers and recorded on a SCADA system. The daily instantaneous analyzer chlorine residuals monitored at different process stages are recorded in 'Daily Physical Inspection Sheets'. Weekly grab sample verifications of analyzers accuracy are recorded in the 'Chlorine analyzer Verification' logs.

The minimum chlorine residual required to achieve primary disinfection in the worst-case conditions, using both chlorine contact chambers, is 0.45 mg/L, according to the CT calculations memo prepared by KMK Consultants Ltd. in 2005. The minimum chlorine residual alarm set at the chlorine analyzer monitoring primary disinfection is 0.65 mg/L. The minimum chlorine alarm will trigger an automatic production shutdown.

The monthly data summaries and continuous chlorine residuals were reviewed for the inspection period. The minimum primary disinfection chlorine residual of 0.83 mg/L was recorded on January 2, 2023.

To claim 3.5 log Giardia cysts removal and 2.0 log Cryptosporidium oocyst removal credit, the ultrafiltration process at the Port Hope DWS must meet the monthly performance criterion for filtered water turbidity of less or equal to 0.1 NTU in 99% of the measurements each month.

The continuous permeate turbidity readings are recorded on the SCADA system.

The review of the monthly data summaries and continuous readings confirmed that permeate turbidities were maintained below 0.1 NTU in more than 99% of time during the inspection period.

During the inspection review period, the Port Hope DWS provided the required minimum level of treatment through ultrafiltration and chlorine disinfection.

Question ID	MRDW1030000	Question Type	Legislative
Question:			
Is primary disinfection chlorine monitoring being conducted at a location approved by MDWL and/or DWWP issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved?			
Legislative Requirement	SDWA O. Reg. 170/03 7-2 (1); SDWA O. Reg. 170/03 7-2 (2);		
Observation			
Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.			

Question ID	MRDW1032001	Question Type	Legislative
Question:			

If the drinking water system obtains water from a surface water source and provides filtration, is continuous monitoring of each filter effluent line being performed for turbidity?

Legislative Requirement SDWA | O. Reg. 170/03 | 7-3 | (2);

Observation

Continuous monitoring of each filter effluent line was being performed for turbidity.

On-line turbidity analyzers are located at the discharge line from each of the four (4) membrane filtration treatment trains.

Membrane permeate turbidities are continuously recorded on the SCADA system.

Question ID	MRDW1083001	Question Type	Legislative
--------------------	-------------	----------------------	-------------

Question:

For LMR systems, are all microbiological water quality monitoring requirements for treated samples being met?

Legislative Requirement SDWA | O. Reg. 170/03 | 10-3;

Observation

All microbiological water quality monitoring requirements prescribed by legislation for treated samples were being met.

Question ID	MRDW1084001	Question Type	Legislative
--------------------	-------------	----------------------	-------------

Question:

Are all inorganic water quality monitoring requirements prescribed by legislation conducted within the required frequency?

Legislative Requirement SDWA | O. Reg. 170/03 | 13-2;

Observation

All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.

The Port Hope DWS obtains water from a surface water source. The owner and the operating authority for the system is required to take at least one treated water sample every 12 months and have it tested for each parameter set out in Schedule 23 of O.Reg. 170/03.

Treated water samples were collected and tested for inorganic parameters listed in Schedule 23 on August 3, 2022.

Question ID	MRDW1088000	Question Type	Legislative
Question: Are all nitrate/nitrite water quality monitoring requirements prescribed by legislation conducted within the required frequency for the DWS?			
Legislative Requirement	SDWA O. Reg. 170/03 13-7;		
Observation			
All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.			
Nitrate & nitrite samples were collected at the treatment facility on a monthly basis. The concentration of nitrates and nitrites in all collected samples was below the Ontario Drinking Water Quality Standard (ODWS) of 10 mg/L and 1 mg/L, respectively.			

Question ID	MRDW1089000	Question Type	Legislative
Question: Are all sodium water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-8;		
Observation			
All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.			
The owner of a drinking water system and the operating authority for the system must ensure that at least one water sample is taken every 60 months and tested for sodium. The sodium sample was collected on August 3, 2022. The concentration of sodium in this treated water sample was 12.7 mg/L.			

Question ID	MRDW1090000	Question Type	Legislative
Question: Where fluoridation is not practiced, are all fluoride water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-9;		
Observation			
All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.			

If a drinking water system does not provide fluoridation, the owner of the system and the operating facility for the system must ensure that a treated water sample is taken at least once every 60 months and is tested for fluoride, in accordance with Schedule 13-9 of O. Reg. 170/03.

The fluoride sample was collected on August 3, 2022. The fluoride concentration in the collected sample was 0.12 mg/L.

Question ID	MRDW1085001	Question Type	Legislative
Question:			
Are all organic water quality monitoring requirements prescribed by legislation conducted within the required frequency?			
Legislative Requirement	SDWA O. Reg. 170/03 13-4 (1); SDWA O. Reg. 170/03 13-4 (2); SDWA O. Reg. 170/03 13-4 (3);		
Observation			
All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.			
Treated water samples were collected and tested for organic parameters listed in Schedule 24 every 12 months, in accordance with Schedule 13-4 of O.Reg. 170/03. The sampling and testing for organic parameters were conducted on August 3, 2022.			

KEY REFERENCE AND GUIDANCE MATERIAL

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



PUBLICATION TITLE	PUBLICATION NUMBER
FORMS:	
Drinking Water System Profile Information	012-2149E
Laboratory Services Notification	012-2148E
Adverse Test Result Notification	012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable	012-2149F
Avis de demande de services de laboratoire	012-2148F
Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau potable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web

Ministry of the Environment, Conservation and Parks - Inspection Summary Rating Record (Reporting Year - 2022-2023)

DWS Name: PORT HOPE DRINKING WATER SYSTEM
DWS Number: 260058006
DWS Owner: THE MUNICIPALITY OF PORT HOPE
Municipal Location: PORT HOPE

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Focused
Inspection Date: Feb-6-2023
Ministry Office: Peterborough District Office

Maximum Risk Rating: 518

Inspection Module	Non Compliance Rating
Treatment Processes	0 / 35
Operations Manuals	0 / 28
Water Quality Monitoring	0 / 24
Reporting & Corrective Actions	0 / 21
Other Inspection Findings	0 / 410
Overall - Calculated	0 / 518

Inspection Risk Rating: 0.00%

Final Inspection Rating: 100.00%

Ministry of the Environment, Conservation and Parks - Detailed Inspection Rating Record (Reporting Year - 2022-2023)

DWS Name: PORT HOPE DRINKING WATER SYSTEM
DWS Number: 260058006
DWS Owner Name: THE MUNICIPALITY OF PORT HOPE
Municipal Location: PORT HOPE

Regulation: O.REG. 170/03
DWS Category: DW Municipal Residential
Type of Inspection: Focused
Inspection Date: Feb-6-2023
Ministry Office: Peterborough District Office

All legislative requirements were met. No detailed rating scores.

Maximum Question Rating: 518

Inspection Risk Rating: 0.00%

FINAL INSPECTION RATING: 100.00%

APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS



The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection

results since fiscal year 2008-09. The primary goals of this assessment are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains 15 inspection modules consisting of approximately 100 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections.

ontario.ca/drinkingwater

The questions address a wide range of regulatory issues, from administrative procedures to drinking water quality monitoring. The inspection protocol also contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating less than 100 per cent does not mean the drinking water from the system is unsafe. It shows areas where a system’s operation can improve. The ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry’s annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario’s Risk Management Framework. Risk management is a systematic approach to identifying potential hazards, understanding the likelihood and consequences of the hazards, and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

$$\text{RISK} = \text{LIKELIHOOD} \times \text{CONSEQUENCE}$$

(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

TABLE 1:	
Likelihood of Consequence Occurring	Likelihood Value
0% - 0.99% (Possible but Highly Unlikely)	L = 0
1 – 10% (Unlikely)	L = 1
11 – 49% (Possible)	L = 2
50 – 89% (Likely)	L = 3
90 – 100% (Almost Certain)	L = 4

TABLE 2:	
Consequence	Consequence Value
Medium Administrative Consequence	C = 1
Major Administrative Consequence	C = 2
Minor Environmental Consequence	C = 3
Minor Health Consequence	C = 4
Medium Environmental Consequence	C = 5
Major Environmental Consequence	C = 6
Medium Health Consequence	C = 7
Major Health Consequence	C = 8

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2**.

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

Table 3 presents a sample question showing the risk rating determination process.

TABLE 3:							
Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?							
Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely)	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely)	L=3 (Likely)	L=2 (Possible)
R=4	R=2	R=6	R=12	R=15	R=6	R=21	R=16

Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions related to regulatory compliance and input their “yes”, “no” or “not applicable” responses into the Ministry’s Laboratory and Waterworks Inspection System (LWIS) database. A “no” response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone); type of inspection (i.e., focused, detailed); and source type (i.e., groundwater, surface water).

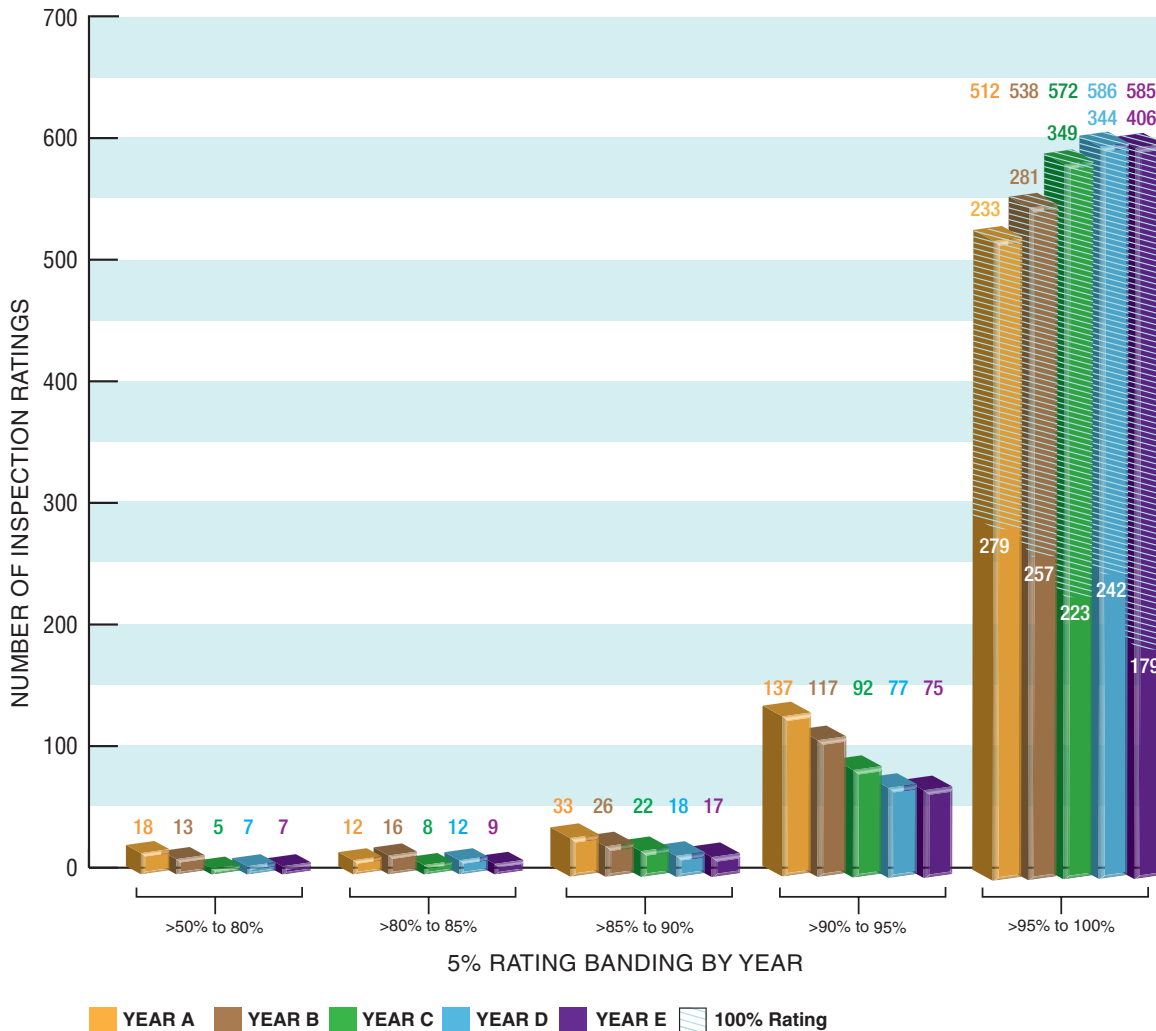
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

Figure 1 presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 15 possible modules of the inspection protocol,

which would provide the system owner/operator with information on the areas where they need to improve. The 15 modules are:

- | | | | |
|-------------------------|---------------------------------|--|--|
| 1. Source | 5. Treatment Process Monitoring | 9. Logbooks | 13. Water Quality Monitoring |
| 2. Permit to Take Water | 6. Process Wastewater | 10. Contingency and Emergency Planning | 14. Reporting, Notification and Corrective Actions |
| 3. Capacity Assessment | 7. Distribution System | 11. Consumer Relations | 15. Other Inspection Findings |
| 4. Treatment Processes | 8. Operations Manuals | 12. Certification and Training | |

For further information, please visit www.ontario.ca/drinkingwater