Ontario

Drinking-Water Systems Regulation O. Reg. 170/03

Drinking-Water System Number:	**220000460**
Drinking-Water System Name:	**North Bay Water Drinking Water System**
Drinking-Water System Owner:	**The Corporation of the City of North Bay**
Drinking-Water System Category:	**Large Municipal Residential**
Period being reported:	**January 1, 2023 to December 31, 2023**

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [X] No [ ]

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.

The Corporation of the City of North Bay
P.O. Box 360
200 McIntyre Street East
North Bay, ON P1B 8H8

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

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

Drinking Water System Name	Drinking Water System Number
N/A	

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes [ ] No [ ]

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 a newspaper

Describe your Drinking-Water System

The City of North Bay water treatment plant (WTP), water distribution facilities and water distribution piping system are owned and operated by the Corporation of the City of North Bay.
The City of North Bay Water Treatment System is classified as a "Large Municipal Residential" Drinking-Water System, Class 3 Water Treatment Plant and Class 4 Water Distribution System with the Drinking-Water System Number: 220000460. The WTP is located at 248 Lakeside Drive in North Bay and treats water from Trout Lake which is part of the Mattawa River watershed. The WTP services a population of approximately 54,000, the permit to take water permits water consumption up to 79,500 cubic meters per day.

The water distribution facilities consist of the following:

- **Ellendale Reservoir, High lift Pump Station & Re-chlorination Facility;**
- **CFB Standpipe;**
- **Canadore Pumping Station;**
- **Cedar Heights Booster pumping station;**
- **Judge Avenue Valve Chamber;**
- **Birches Road Standpipe and Re-chlorination Station; and**
- **Airport Road Standpipe, Booster Pumping Station and Re-chlorination Facility.**
- **Larocque Rd. Standpipe**

The membrane filtration water treatment plant has the design capacity of 79,500 cubic meters per day. The plant is a SCADA controlled membrane filtration system with ultraviolet and chlorine disinfection. The plant also doses fluoride, caustic for pH adjustment and Control Max for corrosion control prior to delivery to the distribution system.

The membrane filtration plant meets the Ontario Drinking Water Standards requirements for the removal/disinfection of 3-log Giardia Lambia, 2-log Cryptosporidium and 4-log Viruses. The membrane filtration Primary Barrier provides a 3- log Giardia removal, 2-log Cryptosporidium removal. The chlorine/UV disinfection Secondary Barrier provides for a 0.5 Giardia removal, 0.5-log Cryptosporidium removal and with chlorine addition gives a 4- log virus removal.

In general the North Bay WTP can be described as follows:

Intake

A 1200mm diameter 45 series polyethylene intake pipe, with a capacity of 80,000 cubic meters per day. The pipe, constructed in 1973, extends approximately 300 meters into Delaney Bay of Trout Lake and includes an intake structure consisting of a steel inlet bell mouth with fiber reinforced plastic (FRP) cage and is in approximately 21.5 meters of water at low water level.

Membrane Feed Pump Well/Prescreening

Two (2) parallel sub-surface well chambers with level monitoring containing, two (2) 6mm mesh manual prescreen in series, five (5) vertical turbine pumps (4 duty and one standby) each rated at 20 ML/d feeding the primary membrane system.

Membrane Feed Strainers

Five (5) 300 micron automatic membranes feed strainers (four duties and one standby).

Treatment Plant Process Areas

A building housing the following process components:

- **Primary and secondary membrane filtration system;**
- **Primary and secondary UV disinfection system;**
- **Two (2) chlorine contact tanks;**
- **split high lift pump well**
- **three (3) chemical storage and delivery rooms housing membrane cleaning and neutralization chemical systems, pre-chlorination system, primary disinfection chemical system, secondary chlorination chemical system, pH adjustment system, fluoride and corrosion control addition system.**

Also includes;

- **High lift pumping room;**
- **Generator room;**
- **Electrical room.**
- **Compressor/blower room**

Administration Area

Two floor administrative area including laboratory/control room, server room, multipurpose training room, offices, washrooms, women's and men's locker rooms, janitor room, building mechanical room and storage room.

Membrane Filtration

Eleven (11) pressurized primary membrane racks treating water from the membrane feed strainers, two(2) pressurized secondary membrane racks treating non-chemical backwash water from the primary membrane racks. The primary racks have a maximum production flow rate of 78.7 MLD based on raw water flow rate of 79.5 MLD, Ancillary systems including backwash pumps, instrument air for operating valves and integrity testing membranes, process blowers, and chemical cleaning and neutralization systems.

UV Disinfection Systems

Three (3) 600mm primary UV reactors (two duty and one standby) treating water from the eleven (11) pressurized primary membrane racks and two (2) secondary membrane racks. Two dedicated UV reactors for secondary membrane racks up stream of primary UV reactors. Each reactor contains medium pressure high intensity lamps housed in quartz sleeves; units equipped with self-cleaning mechanism and intensity sensors.

Chemical systems for:

Primary disinfection
Secondary (residual) disinfection
Fluoride Dosing
pH Adjustment
Corrosion Control
Membrane cleaning
Membrane cleaning solutions neutralization

Chlorine Contact Tank #1 and #2
Two (2) baffled chlorine contact tanks in series with capacities of 688 cubic meters in (tank #1) and 502 cubic meters (tank #2).

High Lift Pump Well #1 and #2
High lift pump well #1 has a capacity of approximately 240 cubic meters and is equipped with one (1) variable speed and two (2) constant speed vertical turbine high lift pumps each rated at 20 MLD. High lift pump well #2 has a capacity of approximately 240 cubic meters and is equipped with one (1) variable speed and one (1) constant speed vertical turbine high lift pump each rated at 20 MLD.

Generator Room
One (1) dual fuel generator set (NG/Diesel) with a rating of 2050KW, to provide power during peak hours and emergency situations.

Wastewater Disposal System
Primary Membrane Backwash Tank
Tank with a volume of approximately 310 cubic meters,
Two (2) membranes feed pumps supplying water to the Secondary Membrane System.

Secondary Waste Tank
Tank with a volume of approximately 130 cubic meters,
Two (2) pumps, one duty and one standby, to deliver water to the sanitary sewer.

Neutralization Tank #1 and #2
Two (2) tanks each with a volume of 150 cubic meters, pH and Chlorine Residual analyzers. Designed to dechlorinate and adjust pH to suitable levels for wastewater plant.

Sanitary Sewage Disposal
One sump with two (2) submersible pumps in the Administration Area and two (2) sumps and two (2) submersible pumps in the Process Area discharging to the sanitary sewer along Lakeside Drive

The treated water is pumped to the distribution system.

The water distribution facilities can be described as follows:

Ellendale Reservoir High lift Pumping Station and Re-chlorination Facility
The facility is a reinforced concrete at-grade, double cell, un-baffled, treated water reservoir, located at

the east end of Ellendale Drive. The reservoir has an approximate capacity of 18,200 cubic meters, with dimensions of 71 meters by 38 meters by 7 meters. The facility is equipped with a sodium hypochlorite re-chlorination system, on-line continuous water quality analyzer for free chlorine residual monitoring. A 500KW. 346/600V standby diesel generator is available to operate the facility during power outages.

Birch's Road Standpipe and Re-chlorination Station

The facility consists of one (1) 39 meter high, 19 meter diameter, 11,775 cubic meter capacity with a hydrostatic mixing system, the steel standpipe is located near the southwest corner of Birch's Road and Booth Road. The facility is equipped with a sodium hypochlorite re-chlorination system and on-line continuous water quality analyzer for free chlorine. A fixed 7.5kW, 120/240 Volt single phase diesel powered generator to power the re-chlorination and SCADA communications during prolonged power outages.

Larocque Rd. Standpipe

The facility consists of one (1) 22 meter high, 15meter diameter, and 4,000 cubic meter capacity glass fused to steel standpipe with a hydrostatic mixing system. The standpipe is located at the North end of the city on Larocque Rd. to provide water pressure to future development, along with the Canadore College and Nippissing University. There is a 10KW, 120/240V backup generator to maintain communication and SCADA controls during power outages.

Judge Avenue Valve Chamber

The facility consists of two (2) valves and chlorine analyzer designated as the distribution residual compliance point. The station is located near the northeast corner of Judge Avenue and Lakeshore Drive. The facility is equipped with a fixed 7.5kW 120/240 Volt single phase, diesel powered generator to power the valve and SCADA communications during prolonged power outages. Valve control for pressure or tower level integrated with Birches Standpipe. The equipment for a re-chlorination station is located at the facility however not currently in use.

CFB Standpipe

The standpipe is a glass fused to steel un-baffled tank with an electric mixer inside, it is located on the Airport Standpipe property and shares all the buildings resources such as the PLC and standby generator. This Standpipe has a volume of 2,280m3 and supplies water to zone 3 and the Airport Standpipe. The piping at this facility allows this standpipe to also supply water for zone 5 during emergencies and maintenance activities.

Canadore Pumping Station

The facility is equipped with two (2) PRV's, one (1) six inch and one (1) two inch which are responsible for providing water from zone 2 into zone 1. This helps with water age in Laroque standpipe and provides extra fire flow water available to the lower zone.

Cedar Heights Booster Station
This Facility is equipped with two (2) 100 hp high lift pumps responsible for filling the Larocque Rd. Standpipe with a pressurized cushion tank to protect pressure surges in the grid. There is an on-line continuous water quality analyzer to monitor free chlorine residual and a 357kW, 347/600 Volt, 3 phase diesel generator to provide equipment power and SCADA communications during prolonged power outages.

Airport Standpipe, Booster Pumping Station
This 4,000 cubic meter water storage standpipe, booster pumping station and re-chlorination facility was constructed in 2009. With the standpipe, high lift pumps, pressurized cushion tanks and a 500kW back-up diesel generator. This system consists of a standpipe and a series of pumps to facilitate filling of the standpipe and providing pressure to the Airport Rd. and Carmichael Dr. area (Zone 5). Filling the standpipe utilizes three booster pumps (2 duty and 1 standby). The standpipe provides suction pressure for four booster pumps (3 duties and 1 standby) and two fire pumps to provide pressure for Zone 5. Zone 5 is equipped with four (4) pneumatic tanks to mitigate minor pressure fluctuations within the distribution system, and to provide some volume of available storage during power interruptions while the standby power system engages.

List all water treatment chemicals used over this reporting period

Sodium Hydroxide
Sodium Hypochlorite
HydroFluorosilicic Acid
Control Max

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 treatment and distribution of water to Major repair and replacement to ensure reliable the water system.

The major capital repairs and replacements include:

- **Completion of phase 2 of Aviation Lane project, with the installation of the remaining 495 m of 300mm water main. Also installed 8 new hydrants on this new main.**
- **Installation of 61 m of 150mm watermain on Geroge St. looping in Gladstone Ave. to Lee Ave.**
- **Installation of 126m of 150mm water main on Mary St. between Ducan Ave. and Park Ave. Installed one new fire hydrant and decommissioned 35.0m of 50mm watermain.**
- **Replaced 360m of 150mm watermain with new 200mm watermain on Ivanhoe Dr. from Sage Rd. to Rita Rd. and side streets at Camelot Dr. and Rita Rd.**
- **Installed all new 150mm piping in Canadore Booster Station and installed two PRV's, one PRV is 150mm and the second is 50mm to feed water from Zone 2 into Zone 1.**
- **Large Electrical upgrade at Ellendale Reservoir including the upgrading of electrical panels and a new 500KW, 346/600V back up diesel generator.**

- **Replaced Chlorine tanks at Ellendale Reservoir and replaced with one single chlorine storage tank with a capacity of 2200L, increasing capacity from 1000L. Installed doors and ventilation to separate chlorine storage are from the rest of the facility.**
- **Installed a permanent 4" PRV valves on the redundant line at Judge Valve Chamber. This allows any pressure surges in Zone 1 to be dissipated in the Zone 1A to protect the water infrastructure in the distribution.**
- **Upgraded panels on the Neutralization Tank System to Prominent standardizing with other chemical analyzers in the Water Treatment Plant.**
- **IT department worked on various infrastructure upgrades with PLC and SCADA Networking Equipment at the Water Treatment Plant**
- **Upgrade to cellular communications from troublesome satellites stations from radio due to poor connectivity.**
- **ROV inspection of Laroque standpipe was conducted to inspect the internal shape of the tank.**

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
July 27, 2023	UVT Monitoring at the Water Treatment Plant	Manual Setting 70%	% Transmittance.	Non–Compliance resulting from sample pump failure. The sample pump feeds the UVT Analyzer which needs to have a reading every five(5) minutes as per the water license. MECP notified	July 31, 2023
July 31, 2023	UVT Monitoring at the Water Treatment Plant	Manual Setting 70%	% Transmittance.	Non–Compliance resulting from UVT Analyzer wiper issue which did not allow a reading every five(5) minutes as per the water license. MECP Notified	August 2, 2023
October 6, 2023	Lead Exceedance Plumbing	0.0119	mg/L	Sample from plumbing at 1016 Fisher St. resulted in a lead exceedance. Reported to MOH and MECP as per regulations on October 19, 2023. Results sent to homeowner through registered mail.	October 19, 2023

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 (#)-(#)	Range of Total Coliform Results (#)-(#)	Number of samples Background Colony Counts	Range of Back-ground Colony Counts	Number of HPC Samples	Range of HPC Results (#)-(#)
Raw	52	0-23	0-73	52	8->200	N/A	N/A
Treated	52	0-0	0-0	52	0-0	52	0-9
Distribution Fixed Sites	364	0-0	0-0	364	0-0	104	0-7
Distribution Random Sites	520	0-0	0-0	520	0-2	156	0-120

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

POE Grab Samples	Number of Grab Samples	Range of Results (min #)-(max #)	ODWQS/Operational Requirement
Turbidity	**242**	**0.062 – 0.361 NTU**	**1.0 NTU max**
Chlorine	**296**	**0.89 – 1.45 mg/L**	**0.05 mg/L min.**
Fluoride (If the DWS provides fluoridation)	**211**	**0.0 – 0.86 mg/L**	**1.5 mg/L max**

Distribution Free Chlorine Grab Samples	Number of Grab Samples	Range of Results (min #)-(max #)	ODWQS Requirement
Chlorine Fixed Sites	**2919**	**0.24 – 4.44 mg/L**	**0.05mg/L min.**
Chlorine Random Sites	**520**	**0.12 - 1.78 mg/L**	**0.05 mg/L min.**

POE on-line Continuous Analyzers	Number of Grab Samples	Range of Results (min #)-(max #)	ODWQS/Operational Requirement
Turbidity	**8760**	**0.005 – 0.780NTU**	**5.0 NTU max**
Chlorine	**8760**	**0.80 – 2.77 mg/L**	**0.05 mg/L min.**
Fluoride (If the DWS provides fluoridation)	**8760**	**0.0 – 1.15mg/L**	**1.5 mg/L max**

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	**18 Jul 23**	**<0.0001**	**mg/L**	**no**
Arsenic	**18 Jul 23**	**0.0001**	**mg/L**	**no**
Barium	**18 Jul 23**	**0.011**	**mg/L**	**no**
Boron	**18 Jul 23**	**0.005**	**mg/L**	**no**
Cadmium	**18 Jul 23**	**<0.000015**	**mg/L**	**no**
Chromium	**18 Jul 23**	**<0.0010**	**mg/L**	**no**
Mercury	**18 Jul 23**	**<0.00002**	**mg/L**	**no**
Selenium	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Uranium	**18 Jul 23**	**<0.00005**	**mg/L**	**no**
Sodium	**18 Jul 23**	**11.3**	**mg/L**	**no**
Fluoride	**18 Jul 23**	**0.735**	**mg/L**	**no**
Nitrite	**4 Jan 23** **3 Apr 23** **4 Jul 23** **2 Oct 23**	**<MDL** **<MDL** **<MDL** **<MDL**	**mg/L** **mg/L** **mg/L** **mg/L**	**no**
Nitrate	**4 Jan 23** **3Apr 23** **4 Jul 23** **2 Oct 23**	**<MDL** **<MDL** **<MDL** **0.224**	**mg/L** **mg/L** **mg/L** **mg/L**	**no**

*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

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
Round 1 Dec 15 2022 to Apr 15 2023	**Plumbing**	**44**	**0.00003 – 0.00985**	**mg/L**	**0**
	Distribution	**8**	**0.00009 – 0.00033**	**mg/L**	**0**
Round 2 June 15 2023 to Oct 15 2023	**Plumbing**	**44**	**0.00004 – 0.01190**	**mg/L**	**1**
	Distribution	**8**	**0.00011 – 0.00045**	**mg/L**	**0**

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	**18 Jul 23**	**<0.0003**	**mg/L**	**no**
Atrazine + N-dealkylated metabolites	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Azinphos-methyl	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Benzene	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Benzo(a)pyrene	**18 Jul 23**	**<0.000006**	**mg/L**	**no**
Bromoxynil	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Carbaryl	**18 Jul 23**	**<0.003**	**mg/L**	**no**
Carbofuran	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Carbon Tetrachloride	**18 Jul 23**	**<0.0002**	**mg/L**	**no**
Chlorpyrifos	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Diazinon	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Dicamba	**18 Jul 23**	**<0.001**	**mg/L**	**no**
1,2-Dichlorobenzene	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
1,4-Dichlorobenzene	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
1,2-Dichloroethane	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
1,1-Dichloroethylene (vinylidene chloride)	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Dichloromethane	**18 Jul 23**	**<0.005**	**mg/L**	**no**
2-4 Dichlorophenol	**18 Jul 23**	**<0.0002**	**mg/L**	**no**
2,4-Dichlorophenoxy acetic acid	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Diclofop-methyl	**18 Jul 23**	**<0.0009**	**mg/L**	**no**
Dimethoate	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Diquat	**18 Jul 23**	**<0.005**	**mg/L**	**no**
Diuron	**18 Jul 23**	**<0.005**	**mg/L**	**no**
Glyphosate	**18 Jul 23**	**<0.025**	**mg/L**	**no**
Malathion	**18 Jul 23**	**<0.005**	**mg/L**	**no**
Metolachlor	**18 Jul 23**	**<0.003**	**mg/L**	**no**
Metribuzin	**18 Jul 23**	**<0.003**	**mg/L**	**no**
Monochlorobenzene	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Paraquat	**18 Jul 23**	**<0.001**	**mg/L**	**no**
Pentachlorophenol	**18 Jul 23**	**<0.0002**	**mg/L**	**no**
Phorate	**18 Jul 23**	**<0.0003**	**mg/L**	**no**
Picloram	**18 Jul 23**	**<0.005**	**mg/L**	**no**
Polychlorinated Biphenyls(PCB)	**18 Jul 23**	**<0.00005**	**mg/L**	**no**
Prometryne	**18 Jul 23**	**<0.0001**	**mg/L**	**no**
Simazine	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
THM (NOTE: show latest annual average)		**66.63**	**ug/L**	**no**
Terbufos	**18 Jul 23**	**<0.0005**	**mg/L**	**no**

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Tetrachloroethylene	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
2,3,4,6-Tetrachlorophenol	**18 Jul 23**	**<0.0002**	**mg/L**	**no**
Triallate	**18 Jul 23**	**<0.01**	**mg/L**	**no**
Trichloroethylene	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
2,4,6-Trichlorophenol	**18 Jul 23**	**<0.0002**	**mg/L**	**no**
Trifluralin	**18 Jul 23**	**<0.0005**	**mg/L**	**no**
Vinyl Chloride	**18 Jul 23**	**<0.0002**	**mg/L**	**no**
2 Methyl-4-Chlorophenoxyacetic acid (MCPA)	**18 Jul 23**	**<0.01**	**mg/L**	**no**

THM Dist. Sample Location Mid-Canada Line & Pinewood Park Sample Stations	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
Sample Period	**Jan. 9 – Mar. 6, 2023**	**Apr.3 – June 5, 2023**	**July 4 – Sept. 5, 2023**	**Oct. 3 – Dec. 4, 2023**	**mg/L**	
Bromodichloromethane (Average)	**0.0040 0.0040**	**0.0040 0.0040**	**0.0043 0.0047**	**0.0035 0.0040**	**mg/L**	
Bromoform(Average)	**<0.005 <0.005**	**<0.005 <0.005**	**<0.005 <0.005**	**<0.005 <0.005**	**mg/L**	
Chloroform(Average)	**0.09200 0.08250**	**0.09200 0.08500**	**0.10967 0.10833**	**0.08400 0.09733**	**mg/L**	
Dibromochloromethane (Average)	**<0.002 <0.002**	**<0.002 <0.002**	**<0.002 <0.002**	**<0.002 <0.002**	**mg/L**	
Total Trihalomethanes	**0.09175**	**0.09150**	**0.11367**	**0.09580**	**mg/L**	**No**
THM All Distribution sites (Averages)	**1st Quarter Result Value**	**2nd Quarter Result Value**	**3rd Quarter Result Value**	**4th Quarter Result Value**	**Unit of Measure**	**Exceed-dance**
Sample Period	**Jan. 4 – Mar. 6, 2023**	**Apr.3 – June 5, 2023**	**July 4, - Sep. 6, 2023**	**Oct. 2 – Dec. 5, 2023**	**mg/L**	
Bromodichloromethane	**0.0032**	**0.0027**	**0.0028**	**0.0028**	**mg/L**	
Bromoform	**<0.005**	**<0.005**	**<0.005**	**<0.005**	**mg/L**	
Chloroform	**0.06497**	**0.05844**	**0.06533**	**0.06681**	**mg/L**	
Dibromochloromethane	**<0.002**	**<0.002**	**<0.002**	**<0.002**	**mg/L**	
Total Trihalomethanes	**0.06803**	**0.06114**	**0.06800**	**0.06936**	**mg/L**	

THM Dist. Sample Location Mid-Canada Line & Pinewood Park Sample Stations	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
Total Trihalomethanes 4 Quarter Running Average (Random & Fixed Sites Included)				**0.06663**	**mg/L**	**No**

HAA Distribution Sample Locations Judge Valve & HLPS (Averages)	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed-dance
Sample Period	Jan 1 – Mar. 31, 2023	Apr.1 – June. 30, 2023	July 1, - Sep. 30, 2023	Oct. 1 – Dec. 31, 2023		
(Mono)Bromoacetic Acid	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	mg/L	
(Mono) Chloroacetic Acid	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	mg/L	
Dibromoacetic Acid	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	< 0.002 < 0.002	mg/L	
Dichloroacetic Acid	0.0190 0.0215	0.0349 0.0476	0.0204 0.0270	0.0219 0.0172	mg/L	
Trichloroacetic Acid	0.0330 0.0437	0.0424 0.0620	0.0363 0.0106	0.0597 0.0360	mg/L	
Avg.Total Haloacetic Acids	0.05860	0.09365	0.04715	0.06740	mg/L	
Total Haloacetic Acid Running Quarterly Average				**0.06670**	**mg/L**	**No**

Quarterly PFAS Sample (Range)	1st Quarter Result Value	2nd Quarter Result Value	3rd Quarter Result Value	4th Quarter Result Value	Unit of Measure	Exceed -dance
	Jan.16, 2023	April 12, 2023	July 11, 2023	October 11, 2023	ng/L	
Perfluorodecanoic Acid (PFDA)	<2.0	<2.0	<2.0	<2.0	ng/L	
Perfluorododecanoic Acid (PFDOA)	<2.0	<2.0	<2.0	<2.0	ng/L	
Perfluorodecane Suldonic Acid (PFDS)	<2.0	<2.0	<2.0	<2.0	ng/L	
Perfluoroheptanoic Acid 3 (PFHPA)	4.2	4.2	3.7	3.4	ng/L	
Perfluorohexanoic Acid (PFHXA)	6.3	6.8	6.3	5.4	ng/L	
Perfluorohexane Sulfonic Acid (PFHXS)	12.3	11.9	11.5	12.4	ng/L	
Perfluorononanoic Acid (PFNA)	<2.0	<2.0	<2.0	<2.0	ng/L	
Perfluorooctanoic Acid (PFOA)	3.5	4.3	3.8	3.0	ng/L	
Perfluorooctane Sulfonic Acid (PFOS)	26.7	37.5	30.2	24.4	ng/L	
Perfluorooctane Sulfonamide (PFOSA)	<2.0	<2.0	<2.0	<2.0	ng/L	
Perfluoroundecanoic Acid (PFUNA)	<2.0	<2.0	<2.0	<2.0	ng/L	
Total Sum for Quarter	53.0	64.7	55.5	48.6	ng/L	No

**** Sample Results and Sums are representing Treated Samples at POE. ****

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

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.0740	mg/L	0.050	0.100	Jan.4,2023
THM	0.0750	mg/L	0.050	0.100	Jan.4,2023
THM	0.1110	mg/L	0.050	0.100	Jan.9,2023
THM	0.0810	mg/L	0.050	0.100	Jan.9,2023
THM	0.0590	mg/L	0.050	0.100	Jan.9,2023
THM	0.0610	mg/L	0.050	0.100	Jan.9,2023
THM	0.0630	mg/L	0.050	0.100	Jan.9,2023
THM	0.0530	mg/L	0.050	0.100	Jan.9,2023
THM	0.0530	mg/L	0.050	0.100	Jan.9,2023
THM	0.0890	mg/L	0.050	0.100	Jan.9,2023
PFAS(Raw)	53.50	ng/L	35.00	70.00	Jan.16,2023
PFAS(Treated)	53.00	ng/L	35.00	70.00	Jan.16,2023
THM	0.0750	mg/L	0.050	0.100	Feb.6,2023
THM	0.0710	mg/L	0.050	0.100	Feb.6,2023
THM	0.0930	mg/L	0.050	0.100	Feb.6,2023
THM	0.1000	mg/L	0.050	0.100	Feb.6,2023
THM	0.0870	mg/L	0.050	0.100	Feb.6,2023
THM	0.0580	mg/L	0.050	0.100	Feb.6,2023
THM	0.0630	mg/L	0.050	0.100	Feb.6,2023
THM	0.0540	mg/L	0.050	0.100	Feb.6,2023
THM	0.0900	mg/L	0.050	0.100	Feb.6,2023
THM	0.0870	mg/L	0.050	0.100	Feb.6,2023
THM	0.0610	mg/L	0.050	0.100	Feb.6,2023
HAA	0.0520	mg/L	0.040	0.080	Mar.6,2023
HAA	0.0652	mg/L	0.040	0.080	Mar.6,2023
THM	0.0610	mg/L	0.050	0.100	Mar.6,2023
THM	0.0640	mg/L	0.050	0.100	Mar.6,2023
THM	0.0940	mg/L	0.050	0.100	Mar.6,2023
THM	0.0930	mg/L	0.050	0.100	Mar.6,2023
THM	0.0600	mg/L	0.050	0.100	Mar.6,2023
THM	0.0540	mg/L	0.050	0.100	Mar.6,2023
THM	0.0740	mg/L	0.050	0.100	Mar.6,2023
THM	0.0830	mg/L	0.050	0.100	Mar.6,2023
THM	0.0650	mg/L	0.050	0.100	Apr.3,2023
THM	0.0720	mg/L	0.050	0.100	Apr.3,2023
THM	0.0550	mg/L	0.050	0.100	Apr.3,2023
THM	0.0780	mg/L	0.050	0.100	Apr.3,2023
THM	0.0590	mg/L	0.050	0.100	Apr.3,2023
THM	0.0570	mg/L	0.050	0.100	Apr.3,2023
THM	0.0500	mg/L	0.050	0.100	Apr.3,2023

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.0530	mg/L	0.050	0.100	Apr.3,2023
THM	0.0630	mg/L	0.050	0.100	Apr.3,2023
PFAS(Raw)	70.60	ng/L	35.00	70.00	Apr.12,2023
PFAS(Treated)	64.70	ng/L	35.00	70.00	Apr.12,2023
THM	0.0760	mg/L	0.050	0.100	May1,2023
THM	0.0620	mg/L	0.050	0.100	May2,2023
THM	0.0570	mg/L	0.050	0.100	May2,2023
THM	0.102	mg/L	0.050	0.100	May2,2023
THM	0.0860	mg/L	0.050	0.100	May2,2023
THM	0.0630	mg/L	0.050	0.100	May2,2023
THM	0.0570	mg/L	0.050	0.100	May2,2023
THM	0.0630	mg/L	0.050	0.100	May2,2023
THM	0.100	mg/L	0.050	0.100	May2,2023
THM	0.104	mg/L	0.050	0.100	May2,2023
HAA	0.0773	mg/L	0.040	0.080	June 5,2023
HAA	0.110	mg/L	0.040	0.080	June 5,2023
THM	0.0560	mg/L	0.050	0.100	June 5,2023
THM	0.0900	mg/L	0.050	0.100	June 5,2023
THM	0.0620	mg/L	0.050	0.100	June 5,2023
THM	0.0590	mg/L	0.050	0.100	June 5,2023
THM	0.0710	mg/L	0.050	0.100	June 5,2023
THM	0.0770	mg/L	0.050	0.100	June 5,2023
THM	0.0860	mg/L	0.050	0.100	July 4,2023
THM	0.0510	mg/L	0.050	0.100	July 4,2023
THM	0.1370	mg/L	0.050	0.100	July 4,2023
THM	0.0900	mg/L	0.050	0.100	July 4,2023
THM	0.0840	mg/L	0.050	0.100	July 4,2023
THM	0.0580	mg/L	0.050	0.100	July 4,2023
THM	0.0550	mg/L	0.050	0.100	July 4,2023
THM	0.0630	mg/L	0.050	0.100	July 4,2023
THM	0.1160	mg/L	0.050	0.100	July 4,2023
PFAS(Raw)	56.10	ng/L	35.00	70.00	July 11,2023
PFAS(Treated)	55.50	ng/L	35.00	70.00	July 11,2023
Sodium	11.30	mg/L	10.00	20.00	July 18,2023
THM	0.1160	mg/L	0.050	0.100	Aug.8,2023
THM	0.0850	mg/L	0.050	0.100	Aug.8,2023
THM	0.0620	mg/L	0.050	0.100	Aug.8,2023
THM	0.0820	mg/L	0.050	0.100	Aug.8,2023
THM	0.0500	mg/L	0.050	0.100	Aug.8,2023
THM	0.0550	mg/L	0.050	0.100	Aug.8,2023
THM	0.0570	mg/L	0.050	0.100	Aug.8,2023
THM	0.1000	mg/L	0.050	0.100	Aug.8,2023
THM	0.1180	mg/L	0.050	0.100	Aug.8,2023

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
THM	0.0730	mg/L	0.050	0.100	Aug.16,2023
THM	0.0900	mg/L	0.050	0.100	Sep.5,2023
THM	0.0710	mg/L	0.050	0.100	Sep.5,2023
THM	0.0720	mg/L	0.050	0.100	Sep.5,2023
THM	0.0500	mg/L	0.050	0.100	Sep.5,2023
THM	0.0670	mg/L	0.050	0.100	Sep.5,2023
THM	0.0594	mg/L	0.050	0.100	Sep.5,2023
THM	0.1050	mg/L	0.050	0.100	Sep.5,2023
HAA	0.0469	mg/L	0.040	0.080	Sep.6,2023
HAA	0.0567	mg/L	0.040	0.080	Sep.6,2023
THM	0.0500	mg/L	0.050	0.100	Oct.2,2023
THM	0.0740	mg/L	0.050	0.100	Oct.3,2023
THM	0.0530	mg/L	0.050	0.100	Oct.3,2023
THM	0.0630	mg/L	0.050	0.100	Oct.3,2023
THM	0.0700	mg/L	0.050	0.100	Oct.3,2023
THM	0.0890	mg/L	0.050	0.100	Oct.3,2023
PFAS(Raw)	43.1	ng/L	35.00	70.00	Oct.11,2023
PFAS(Treated)	48.6	ng/L	35.00	70.00	Oct.11,2023
THM	0.0700	mg/L	0.050	0.100	Nov.13,2023
THM	0.1010	mg/L	0.050	0.100	Nov.13,2023
THM	0.0930	mg/L	0.050	0.100	Nov.13,2023
THM	0.0930	mg/L	0.050	0.100	Nov.13,2023
THM	0.0620	mg/L	0.050	0.100	Nov.13,2023
THM	0.0640	mg/L	0.050	0.100	Nov.13,2023
THM	0.0690	mg/L	0.050	0.100	Nov.13,2023
THM	0.0750	mg/L	0.050	0.100	Nov.13,2023
THM	0.0990	mg/L	0.050	0.100	Nov.13,2023
THM	0.1110	mg/L	0.050	0.100	Nov.13,2023
THM	0.0770	mg/L	0.050	0.100	Nov.14,2023
THM	0.0880	mg/L	0.050	0.100	Nov.14,2023
THM	0.0650	mg/L	0.050	0.100	Dec.4,2023
THM	0.0900	mg/L	0.050	0.100	Dec.4,2023
THM	0.0760	mg/L	0.050	0.100	Dec.4,2023
THM	0.0520	mg/L	0.050	0.100	Dec.4,2023
THM	0.0540	mg/L	0.050	0.100	Dec.4,2023
THM	0.0610	mg/L	0.050	0.100	Dec.4,2023
THM	0.0630	mg/L	0.050	0.100	Dec.4,2023
THM	0.0730	mg/L	0.050	0.100	Dec.4,2023
THM	0.0950	mg/L	0.050	0.100	Dec.4,2023
THM	0.1040	mg/L	0.050	0.100	Dec.4,2023
THM	0.0530	mg/L	0.050	0.100	Dec.5,2023
THM	0.0780	mg/L	0.050	0.100	Dec.5,2023
HAA	0.0532	mg/L	0.040	0.080	Dec.5,2023

Parameter	Result Value	Unit of Measure	½ MAC VALUE	MAC VALUE	Date of Sample
HAA	**0.0816**	**mg/L**	**0.040**	**0.080**	**Dec.5,2023**

PFAS limits are not regulated at this point, the 70ng/L is a recommended limit by MECP
***THM and HAA (MAC Limits) our calculated by Running Quarterly Averages ***