

# DRINKING WATER **QUALITY**







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Environment Division

**water**  
**AUTHORITY**

*Every drop is superior...*



## MESSAGE FROM THE DIRECTOR

As the Director of the Environment Division – Water Authority, I am pleased to present our 2023 Drinking Water Quality Annual Report, confirming to you the continual delivery of high-quality, safe drinking water.

This report details water quality results from Jan. 1 to Dec. 31, 2023 in accordance with Ontario Drinking Water System Regulation (O. Reg. 170/03) under the Safe Drinking Water Act 2002. It also contains information on how your water is treated, how it is delivered and how to protect your drinking water at the tap. You have the right to know what is in your drinking water and where it comes from.

Every minute of every day, water quality is monitored by certified operators and on-line instrumentation. Our customers can have confidence in the quality of the drinking water produced at the Bare Point Water Treatment Plant and delivered through the distribution system.

I am pleased to inform the drinking water system received a Final Inspection Rating of 100% from a focused Ministry of Environment, Conservation and Parks inspection in November 2023. In addition, the external full scope system audit conducted in the summer of 2023 by SAI Global



confirmed the Water Authority has an effective process for the continual improvement of the drinking water quality management system by use of the quality policy, quality objectives, audit results, data analysis, management review, and the appropriate management of corrective and preventive actions.

It is our top priority to maintain a safe and sustainable supply of water, providing for public health protection, fire protection and support for the local economy – all contributing to Thunder Bay's high quality of life. I hope you will find this report informative and welcome you to contact us with any questions you have about your drinking water.

On behalf of the Environment Division, we look forward to another year of providing excellent water service to our residents, our customers and those visiting the City of Thunder Bay.

Sincerely,

**Michelle Warywoda, P. Eng.**  
Director, Environment Division



# QUALITY MANAGEMENT SYSTEM POLICY

The Environment Division – Water Authority on behalf of the Corporation of The City of Thunder Bay is committed to:

- Operating and maintaining a safe, clean, continuous potable water supply to the citizens of Thunder Bay
- Meeting or exceeding applicable legislative and regulatory requirements
- Participating in studies relevant to drinking water
- Participating in and encouraging water conservation initiatives
- Implementing a Quality Management System consisting of policies, standard operating procedures, staff competency, and emergency contingency and response planning

The Environment Division – Water Authority is dedicated to the maintenance and continual improvement of the Quality Management System through the support and participation of all affected employees.



# WHO WE ARE

## INFRASTRUCTURE & OPERATIONS

**General Manager** - Kerri Marshall, P. Eng., MBA, FEC  
**Policy & Research Analyst** - Julie Wiejak

**Climate Adaptation Coordinator** - Jacob Porter  
**Project Manager** - Amy Coomes

## ENVIRONMENT DIVISION

**Director** - Michelle Warywoda, P.Eng.  
**Chief Chemist** - Ian Morgan, Ph.D., P. Chem., C. Chem.  
**Planning & Research Analyst** - Dan Currie, CET

**Process Engineers** - Lindsay Menard, P.Eng., PMP, Walter Turek, P. Eng.  
**Manager - Compliance & Quality Control** - Gary Person

**Quality Control & Training Specialists** - Shelby Jaspers, Marc Leschuk, P. Eng.  
**Water & Wastewater Engineer** - Joshua Daniels, M. Eng., P. Eng.

## WATER TREATMENT

**Superintendent, Water Treatment Plant** - Erin Marcella-Fui  
**Supervisor, Maintenance** - Ian Johnstone  
**Supervisor, Operations** - Dave L Sutton (acting)  
**Lead Operator** - Keith Erickson

**Environmental Engineering Technicians/ Small System Operators** - Dan Ward, Dennis Belluz, Kristi Tennesco, Ian Buckler, Logan Cuthbert  
**Lead Electrician** - Cosimo Crupi  
**Line Patrol** - Dennis Charles

**Operators** - Judith Petch, Myron Holyk, Susan Tomlinson, Geordi Komar, Logan Cuthbert, Dan Krause, David DiRisio, Harshit Peryagh, Phil Slongo

## SEWER & WATER OPERATIONS & MAINTENANCE

**Superintendent, Sewer & Water Operations and Maintenance** - Dave Warwick, Adam Tempelman (Acting)  
**Supervisors** - Adam Tempelman, Adam Oatman, David Briand, Jordan Cook (Acting), Craig Drabit (Acting)  
**Equipment Operator II** - Lee Campbell, Sean McEachran, Paul Kassa  
**Lead Operators** - Lloyd Hamilton, Eric Sokk, Jordan Cook, Kyle Kawahara, Devon Blair, Rob Coggin (Acting), Dan Lavoie (Acting)  
**Planning and Research Analyst** - Vanessa Sticca

**Skilled Sewer and Water Workers (Maintenance)** - Rob Coggin, Luc Connell, David Tremonti, Bryan Arruda, Tom Tronsen, Matthew Donio, Bob Gashinski, Brian Ogima, Steve Brescacin, Steve Leisander, Luca Ferriolo, Justin Fui, Ryan Faid, Jamie Fabiano, Tyler Squier, Larry Margarit, Chris Bruno, Alex Rollason  
**Turnkey** - Craig Drabit  
**Utility Locator Technicians** - Allan McCrae, Mike Bee, Chris Latta  
**Utility Plumber** - Paul Fennell

**Water Distribution Technician** - Michael Sacino  
**Water Distribution & Wastewater Collection Operators** - Lloyd Hamilton, Dan Lavoie, Melanie Swistun, Amanda Suttie, Devlyn McGuire, Derek Kantyluk, Jeremy Hansen, Reginald Defeo, Colin Stover, Shanne Rinne, Blair Sakiyama  
**Equipment Operator I** - Kris Blomquist, Walter Schick, Don McCall, Gordon Gordon (temp)

## CONTRACT PROJECT SERVICES

**Supervisor** - Jeff Track  
**Equipment Operator I** - Chris Fenton, Bob Wyllychuck  
**Equipment Operator II** - Cliff Linton  
**Equipment Operator III** - Scott Wideman, Brad Doran

**Lead Hand Meter Shop** - Jim Van Uden  
**Lead Operators (Construction)** - Mark Bevilacqua, Niel Watts  
**Journeyman Plumber** - Neil Riley  
**Skilled Sewer and Water Worker (Construction)** - Christian Bociurko

**Skilled Water Meter Technician** - Jim Van Uden  
**Water Distribution and Wastewater Collection Operator** - Neil Taylor



Infrastructure & Operations Staff at Public Works Day

## ENGINEERING & OPERATIONS DIVISION

**Director** - Kayla Dixon, P.Eng., MBA

**Supervisor, Design & Field Engineering**  
- Jesse Mikulinski

**Field Technologists** - Mike Precosky, Mitch Drabek, Bryce Lendrum

**Construction Inspectors** - Stuart Green, Tom Dingwell, Mike Leveque, Dave MacGowan, Lonny Bohonos

**Project Engineers** - Lisa Parent, P.Eng., Brian Newman, P.Eng., Mike Vogrig, P.Eng., Aaron Ward, P.Eng., Matt Miedema, P.Eng.

**Senior Technologist** - Cosimo Palermo, Shawn Stephens

**Intermediate Technologist II** - Zachary Belec

**Intermediate Technologist I** - Nathan Doliska

**Survey Technologists** - Alex DiMartino, Mitch Drabek, Ryan Love, Mike Kuzyk, Troy Kundrat

**Traffic Technician** - David Binch

**GIS Technician** - Kendra Moen

## CENTRAL SUPPORT DIVISION

**Manager** - Matthew Pearson

**Supervisor, Administrative Support Services** - Kaitlin Cain / Christy Howells

**Supervisor, Budgets & Capital Programs** - Laurie Fors

**Communications Officer**  
- Stephanie Reid (Acting)

**Supervisor, Customer Services** - Kyle Melnyk

**Accounting & Administration Clerks**

- Tracey Dychko, Robert Lupinski, Rita Komfolio, Kristi Fisher, Kristy Sunderland

**Dispatchers** - Peter Viita, Cindy Woodbeck, Toni Lightwood, Ina Torttila, Charlotte Wevers, Charles Seguin, Gord Bedard, Estelle Sabeau, Jennifer Reid, Lisa Robinson

**Administrative Clerks** - Bonnie Low, Joyce Ruggles, Maria Figliomeni (acting)

**Capital Project Analysts** - Shari Dykeman, Chelsea Groom, Cathy Wood (acting)

**Technology Management Specialist** - Henry Connor, B. Eng., GLSP

**Budget Analyst** - Irene Dahl



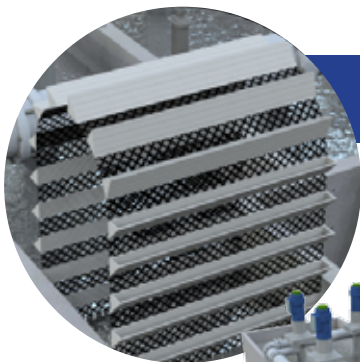
# HOW YOUR WATER IS TREATED

Lake to Lake Approach  
for Safe Drinking Water



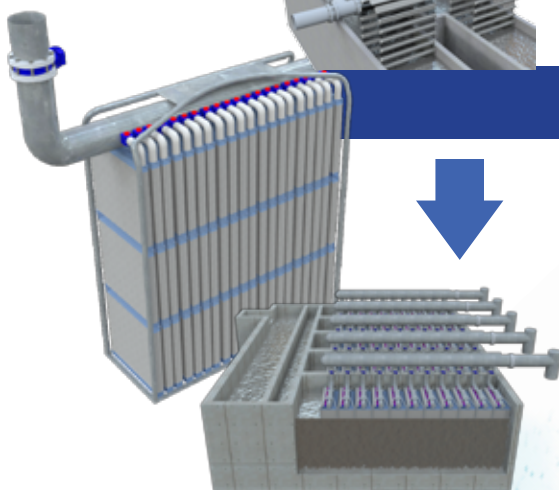
## STEP 1: Source Water

Our drinking water starts with the world's largest source of fresh water, Lake Superior. The intake for the plant is located nearly 1 km from the shoreline and is positioned at a water depth of approximately 14 metres and rests approximately 4 metres above the lake bottom. The depth of the intake protects it from debris entering from the bottom of the lake and from the water surface.



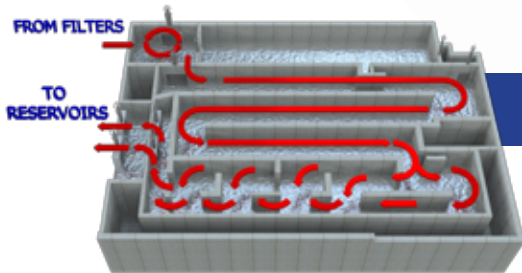
## STEP 2: Screening

The raw water enters the plant through the intake. Travelling screens remove debris and prevent particles from entering the plant. The raw water is stored briefly in the wet well. The screens are similar to common household window screens, although they are made from stainless steel.



## STEP 3: Filtration

The water is then pulled through the ZeeWeed membrane filtration system using vacuum generated from pumps. Hollow fibre ultra-filtration membranes use gentle suction to filter impurities from the water.



## STEP 4: Disinfection

The clearwell is used for primary disinfection as described by the Ministry of the Environment, Conservation and Parks. Sodium hypochlorite is added to the water in the clearwell mixing chamber. The clearwell uses a baffling system to allow the sodium hypochlorite to mix with the water. This creates a long contact time or soaking time for the water to mix with the hypochlorite.



## STEP 5: Storage

The clean, safe, disinfected drinking water is then stored at the plant in two underground storage tanks to keep the water cool and fresh, awaiting delivery to customers' taps. Each reservoir can hold over two million litres of water.



## STEP 6: Water Delivery

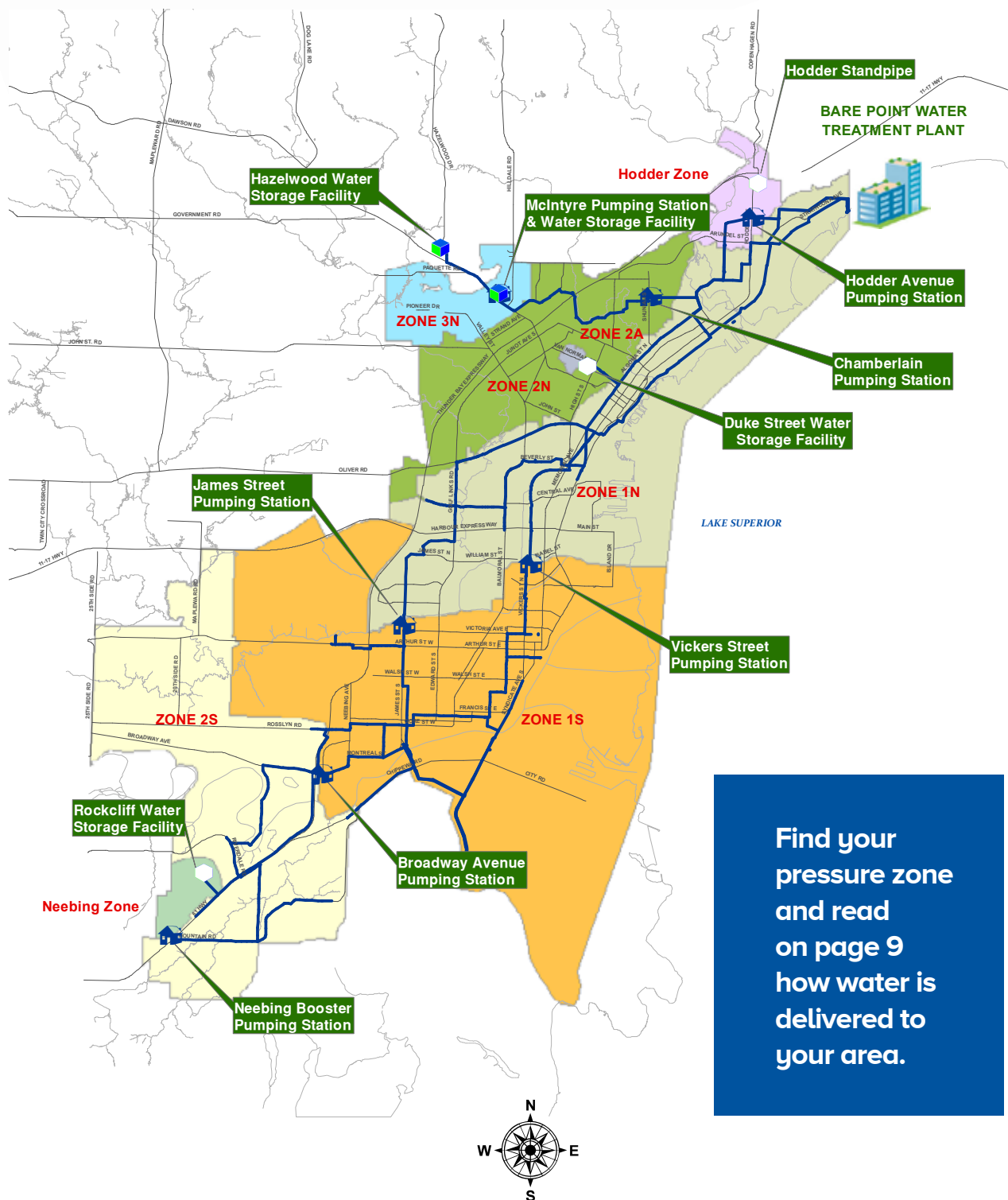
Water is pumped from the storage reservoirs into the distribution system by high lift pumps. Some of the water is delivered directly to customer taps and some is delivered to one of five storage facilities within the distribution system.



## STEP 7: Environmental Protection

Wastewater from the membrane filtration process is piped to the Atlantic Avenue Water Pollution Control Plant for treatment before being returned clean to Lake Superior.

# HOW YOUR WATER IS DELIVERED



Find your pressure zone and read on page 9 how water is delivered to your area.



## From the Plant to Your Tap

Thunder Bay's water distribution system is divided into eight pressure zones (see map on page 9). High lift pumps move the treated water from the plant into the distribution system. The water storage facilities and pumping stations regulate water pressure within the distribution system.

Water can be redirected through the distribution system when needed. The system is made up of the following components:

**Standpipe** – Above-ground water storage facility providing pressure by water column height

**Reservoir** – Large volume in or above ground water storage facility

**Pumping Station** – Pumps water from one zone into another zone and can be used to increase water pressure to an area

**Water Pressure Zone** – Areas where a minimum and maximum water pressure can be expected in the water distribution system



### Zone 1N

The reservoirs at the Bare Point Water Treatment Plant store water for this zone and pump it into this area as needed. The Duke Street Reservoir also provides water storage for this zone.



### Hodder Zone

The Hodder Standpipe stores water for this zone. Water is pumped from the Bare Point Water Treatment Plant to the Hodder Pumping Station. This station supplies water to the Standpipe as needed.



### Zone 2A

The Duke Street Reservoir stores water for this zone. It was added to increase and maintain water pressure for this area.



### Zone 2N

The McIntyre Reservoir stores water for this zone. Water is pumped from the Bare Point Water Treatment Plant through the Chamberlain Pumping Station to this zone.



### Zone 3N

The Hazelwood Storage Facility is an above ground reservoir which stores water for this zone. Water is pumped from the Bare Point Water Treatment Plant through the Chamberlain Pumping Station to the McIntyre Reservoir. The McIntyre Pumping Station supplies water to the Hazelwood Storage Facility.



### Zone 1S

The Rockcliff Reservoir stores water for this zone. Water is pumped from the Bare Point Water Treatment Plant through the Vickers and James Street Pumping Stations filling the Rockcliff Reservoir and supplying water to the area.



### Zone 2S

Water is pumped from the Broadway Avenue Pumping Station to this zone. Water is drawn from the Zone 1S water distribution system, which includes the Rockcliff Reservoir.



### Neebing Zone

Water is drawn into this zone from the Zone 2S distribution system. The Neebing Booster Pumping Station increases water pressure for this zone.

# WATER QUALITY HIGHLIGHTS 2023

Operational Parameters	Units*	Min	Avg	Max	Drinking Water Quality Standard/ Objective	Frequency of Tests	What Does this Measure?
Alkalinity - Total as $\text{CaCO}_3$	mg/L	46.1	47.1	52.0	30 - 500	Monthly	The capability of water to neutralize acid
Dissolved Organic Carbon	mg/L	1.73	2.00	2.33	< 5	Quarterly	Residual organic matter after travelling through the membrane filters
Free chlorine residual	mg/L	1.27	1.46	1.71	> 0.05	77 per week	The amount of chlorine remaining in finished water
Hardness - $\text{CaCO}_3$	mg/L	42.8	46.1	51.2	80 - 100	Monthly	The decreasing capacity of water to react with soap
Nitrate-N	mg/L	0.284	0.327	0.372	< 10	Quarterly	Health related parameter
Nitrite-N	mg/L	< 0.010			< 1	Quarterly	Health related parameter
Odour	n/a	OK			Inoffensive	42 per week	Does the water smell good / bad
pH	n/a	7.06	8.01	8.32	7.0 - 10.5	77 per week	The acidity or alkalinity of the water
Sodium	mg/L	3.30	3.60	3.98	< 20	Quarterly	Health related parameter
Taste	n/a	OK			Inoffensive	42 per week	The taste of the water
True Colour	TCU	< 2.0	< 2.0	< 2.0	< 5	weekly	The appearance of the water
Turbidity	NTU	0.012	0.034	0.083	< 1	77 per week	The clarity of the water

For more information visit [thunderbay.ca/water](https://thunderbay.ca/water)

## Water Quality Monitoring

We are serious about drinking water quality. In 2023, Thunder Bay residents received excellent quality drinking water. Samples are taken and evaluated according to the Ministry of the Environment, Conservation and Parks regulations. Water quality is monitored at the treatment plant every minute of every day by operators and online instrumentation. In addition, an independent certified laboratory tested approximately 2,000 samples for potential contaminants. The total number of water samples taken in 2023 was more than 29,000

Our testing program is fully compliant with Ontario's Drinking Water Regulations.



### \*UNITS

- NTU** = Nephelometric turbidity units
- mg/L** = milligrams per litre = parts per million
- TCU** = True colour units
- $\text{CaCO}_3$**  = Calcium Carbonate
- n/a** = not applicable

# OPERATOR CERTIFICATION AND TRAINING

Under the Safe Drinking Water Act (SDWA) all Ontario Drinking Water Systems must be categorized by type of system and classification level. The City of Thunder Bay's Bare Point Water Treatment Plant and Distribution Subsystem is categorized as a Level III Treatment System and a Level IV Distribution System.

Section 12 (1) under the SDWA requires that no person shall operate a municipal drinking-water system unless the person holds a valid operator's certificate issued in accordance with the regulations.

The certification program establishes occupational standards for operators and water quality analysts. It is intended to give greater assurance of safe drinking water to the residents of Ontario through ensuring that operators have the education, experience and knowledge to perform their responsibilities effectively.

Water Distribution (WD) and Water Treatment (WT) Certificates must be renewed every three years. In order for operators to maintain a WD or WT certificate they must complete a minimum of 150 hours of training over the three year period; this includes 42 hours of Director Approved Training which involves completing an exam with a minimum of 70 percent to pass, 108 hours of Hands on Training pertinent to WD or WT and completion of the Provincial Mandatory Course. In 2023, water operators working in the Environment Division completed a total of 8,281 hours of training.

All Operators hold current and valid certificates and remain fully qualified as Drinking Water Operators.

In order to obtain a WD or WT certificate an operator must meet the following education and experience criteria:

Type of Certificate	Minimum Educational Requirement	Years of Experience
Operator in Training	Grade 12	NA
Class I	Grade 12	1 year
Class II	Grade 12	3 years
Class III	2 years of relevant post-secondary education	4 years (2 years as an Operator in Charge)
Class IV	4 years of relevant post-secondary education	4 years (2 years as an Operator in Charge)

As of December 31, 2023, the City of Thunder Bay's Environment Division operators held the following operator certificates permitting them to work with the Drinking Water System.

Type of Certificate	Number of Certificates
Water Distribution Operator-in-Training (OIT)	6
Water Distribution Class I	14
Water Distribution Class II	18
Water Distribution Class III	4
Water Distribution Class IV	22
Water Treatment Operator-in-Training (OIT)	0
Water Treatment Class I	3
Water Treatment Class II	5
Water Treatment Class III	3
Water Treatment Class IV	7





# OUR COMMITMENT TO CONTINUAL IMPROVEMENT

## Capital Asset Management

The City of Thunder Bay's water system is comprised of significant assets (2021 estimated replacement value: \$622 million), to provide for the delivery of safe drinking water for all. These assets include: Bare Point Water Treatment Plant, one lab, one standpipe, four reservoirs, seven water pumping stations, eight water pressure zones, over 700 kilometres of watermain, and thousands of connections, fire hydrants, access chambers and valves. These assets are referred to as capital. In 2018, the 20-year Capital Planning Study was updated. This Study, which focused on a high-level condition assessment for the facility components of the Bare Point Water Treatment Plant, pumping stations, storage reservoirs and standpipe, resulted in the determination of maintenance and renewal needs up to 2038.

The City of Thunder Bay is committed to developing and implementing a corporate wide **Asset Management Program** in compliance with Ontario Regulation 588/17, Asset Management Planning for Municipal Infrastructure introduced in 2018. This mandated that municipalities have asset management programs in place that are consistent across the province. In the regulation, certain assets are identified as CORE assets. Water and wastewater assets are located in that CORE group. In 2021, City Council approved the Asset Management Plan: Phase One which included an asset overview of Water Services which included, condition rating, asset age, levels of service, energy consumption, lifecycle, and levels of investment.

Asset Management Plan: Phase Two will be presented to Council in Spring 2024. This report will include updated data on CORE assets reported on in the Phase One report such as roads, water, wastewater and stormwater, and additionally report on the facilities, fleet, land improvement, machinery and equipment.

Further details on the Asset Management Plan can be found on the City of Thunder Bay website at: [getinvolvedthunderbay.ca/asset-management](https://www.thunderbay.ca/asset-management)

## Water System Financial Plan Update

In 2007, the Ministry of the Environment, Conservation and Parks released Regulation 453/07 requiring all municipalities to complete a Financial Plan for their drinking water system. City Council approved an update to the 20-year plan on January 8, 2024.

Through the process of updating the Plan, the Water Authority set out to achieve the following:

- Financial viability
- Limit overall water costs to consumers
- Provide safe drinking water in the short term and long term
- Fund the long-term capital plan
- Achieve full cost recovery over the long term
- Maintain current service levels

The plan focuses on achieving a balance between maintaining the water system in a safe and effective manner, and limiting expenditures and water rate increases.

See the Plan here: [www.thunderbay.ca/waterreports](https://www.thunderbay.ca/waterreports)

## Investment to Reduce Wastewater

Membranes are used as the filter media at the Bare Point Water Treatment Plant (WTP). These are very effective at producing high quality drinking water, and one of the biggest challenges at the plant is maintaining these delicate membranes, which are prone to fouling. When this occurs, the contaminants that have been filtered out plug up the microscopic membrane pores, reducing the amount of water that can flow through them. Our first line of defence in managing this is to backwash each of the five membrane filter banks about once an hour.

During a backwash, the flow of water through the membranes is reversed, which helps dislodge embedded contaminants. The backwash water was released directly to Lake Superior prior to 2008, but since then it is pumped to the Water Pollution Control Plant (WPCP) on Atlantic Avenue, where it is treated before release. This provides environmental protection but adds pumping costs and load on the WPCP. In 2023, back wash controls re-programming was successful in reducing the amount of backwash water sent to the WPCP by more than 25%.

## Lakehead University Research Agreement Update

We continued to support two Lakehead University research teams in kind in 2023, as they were previously able to secure extensions to their funding from the Natural Sciences and Engineering Research Council of Canada (NSERC), which brings Federal dollars into our community.

Professor Wilson Wang and his team (including Dr. Mohamed Ahwiadi, a postdoctoral fellow) from the Department of Mechanical and Mechatronics Engineering previously developed smart sensors to collect vibration signals from water pumps and these were evaluated extensively in their laboratory and with partial trials at the Bare Point WTP. In 2023, a system they developed for real-time condition monitoring including vibration sensors, data acquisition and processing equipment and a custom wireless network were permanently installed for all five high lift pumps at the Bare Point WTP. In addition, their research contributions were published successfully in several prestigious journals, which will add value to leading-edge industrial practitioners and applied researchers.

Having demonstrated and quantified the effect of cold water on filtration membranes in 2022, a team led by Professor Baoqiang

Liao, Department of Chemical Engineering and Professor Wa Gao, Department Civil Engineering published their paper “The influence of temperature on dynamic membrane structure” in the Journal of Membrane Science in 2023. They also published a literature review of the existing body of work that concerns temperature effects on various membrane filtration technologies, and they carried out a literature review on the mechanisms and factors affecting hollow fiber membrane breakage. Finally, they conducted preliminary tests on the impact of low dose flocculants on turbidity and natural organic matter (NOM) removal.

These industry sponsored research agreements provide an enhanced experiential learning environment for graduate students by exposing them to unique and relevant research challenges.



Dr. Mohamed Ahwiadi, Lakehead University Department of Mechanical and Mechatronics Engineering, stands next to data acquisition and analysis equipment, and the high lift pumps that vibration sensors were installed on.

## CORROSION CONTROL PROGRAM FOR LEAD

In 2007 the Ministry of the Environment, Conservation and Parks (MECP) initiated the Lead Action Plan to address concerns of lead in drinking water across the province. Studies have shown chronic exposure to lead, even at low levels, can have health impacts. Of particular concern are the neurodevelopmental effects impacting learning and memory on developing fetuses and young children. For more information on health risks, please visit [www.tbdhu.com/health-topics/drinking-water](http://www.tbdhu.com/health-topics/drinking-water)

Lead in drinking water can originate from older internal pipes and lead service lines or from the solder used to connect the pipes or fixtures. Older homes built prior to 1950 are more likely to have lead pipes and service lines. The water produced by the Bare Point Water Treatment Plant does not contain lead. Lead enters the water when it sits still for long periods of time in lead pipes or fixtures.

Since 2007, the City of Thunder Bay continues to participate in the provincial Lead Action Plan by testing for elevated levels of lead in the drinking water in various private plumbing residences throughout the community. In accordance with Schedule 15.1 of Ontario Regulation 170/03 under the Safe Drinking Water Act, 2002 (SDWA 2002), the City developed a Corrosion Control Plan (CCP) as part of the Lead Action Plan that was approved in 2014 by the MECP.

The CCP includes lead testing, lead service replacement, public education and corrosion control. In 2023, 1006 lead water samples were collected and tested for residents and businesses with known or suspected lead services. There were also 169 representative lead water samples collected from the active distribution system. In addition to the regulated lead samples collected, 10 non-regulated

lead water samples were collected at the tap by private residents in 2023. City staff delivered sample bottles with detailed sample instructions to the door steps of residents willing to self-sample. These samples were collected by City staff and delivered to an accredited lab for analysis. Lead results were provided to residents. This lead testing service is provided free of charge.

In 2020, the use of sodium hydroxide as a corrosion control inhibitor was phased out and the Water Authority implemented a water filter program with approval from the MECP, City Council and support from the Thunder Bay District Health Unit (TBDHU), as an interim measure to reduce lead levels at the tap. Properties with known lead service pipes were provided a NSF/ANSI-53 approved water filter pitcher certified to remove lead and replacement filter cartridges at no charge. NSF/ANSI-53 certification confirms the product has met all of the lead reduction and other requirements of the standard. Filter delivery notifications were sent to residents with known lead service connections. This program continued throughout 2023 and has been extended for 2024.

The Water Authority continues to work with the MECP and the TBDHU on evaluating other means of corrosion control that may be implemented in the future.

As a reminder, customers are encouraged to routinely flush their pipes prior to consumption to maintain water quality at the tap. This can be accomplished by taking a shower, flushing the toilet, doing a load of laundry, or running your cold water tap to clear the pipes. Flushing is particularly important for homes with lead service pipes.



# LEAD SERVICE LINE REPLACEMENT

The removal of lead service pipes remains a key priority in the City's Corrosion Control Plan. City of Thunder Bay continues to review and verify a number of lead service connections, both publicly and privately owned across the city. It is estimated there are approximately 5,870 publicly owned and 8,000 privately owned lead service connections connected to the City of Thunder Bay's Water Distribution System. Part of the City's CCP to reduce lead levels at the tap includes replacing all publicly owned lead service connections and encouraging property owners to replace their privately owned lead service connection. **In 2023, approximately 215 publicly owned lead services were replaced. The City is continually updating records for lead service lines through information provided by plumbing permits, capital project removals, routine repairs/replacements and sampling and testing results.**

On streets scheduled for watermain renewal, the City provides the homeowner with a notice if they have a lead service line with guidance on pipe replacement and flushing instructions to reduce lead exposure. Prior to the City portion being replaced testing of the tap water in the private residence is recommended to provide a baseline lead result. If a homeowner wishes to have the private portion of their service line (property line to meter) replaced at the same time as the City portion, they must arrange with the on-site contractor to do the work at their own expense. A plumbing permit must be obtained, and a plumber must complete the final connection. Once the service line is partially or completely replaced, it is recommended that the homeowner routinely flush their pipes and also have their tap water re-tested to ensure lead levels are reduced. **Testing is free and arranged through the City by calling 807-625-2195.**

On streets not scheduled for watermain renewal, homeowners may arrange with a contractor to replace the private portion (property line to meter) of their lead service line. Once complete, the City will fund and complete the work extending from the property line

to the watermain. It is preferred that the homeowner contact the City to discuss the process further and first to arrange for lead testing prior to the replacement of their private portion to obtain a baseline lead result. The homeowner must obtain the required plumbing permit, hire a plumber for the final connection and have all final inspections completed. Once this is complete, the homeowner will submit a Priority Lead Water Service Replacement Form (located on the City website) with all documentation to The City of Thunder Bay's Engineering Division. The homeowner completes the final restoration of their property, and the City will restore the public property. The City processes such requests in sequence, the priority given to cases of elevated lead levels according to drinking water testing. **For information on drinking water testing and the Priority Lead Replacement Program, call the City at 807-625-2195 or visit: [thunderbay.ca/leadpipes](https://thunderbay.ca/leadpipes).**





### Financial Assistance for Private Lead Water Service Replacement:

The financial assistance loan program continued in 2023 to help homeowners with the replacement of private lead water service lines. A total of 22 loan applications were received in 2023, with 19 loans being issued.

The program provides interest-free loans for qualifying homeowners for up to \$5,000 of eligible costs to replace a private lead service line, to be paid back to the City over a 5 or 10 year period. To further assist property owners that qualify under the Tax and Water Credit Program for Low-Income Seniors and Low-Income Persons with Disabilities or the Tax and Water Credit Program for Low-Income Persons a \$1500 grant program was initiated in 2023.

**Full program details and application can be viewed on the City's website at [thunderbay.ca/leadpipes](https://thunderbay.ca/leadpipes) or by calling 807-684-2433.**

### Partial Lead Service Line Replacement:

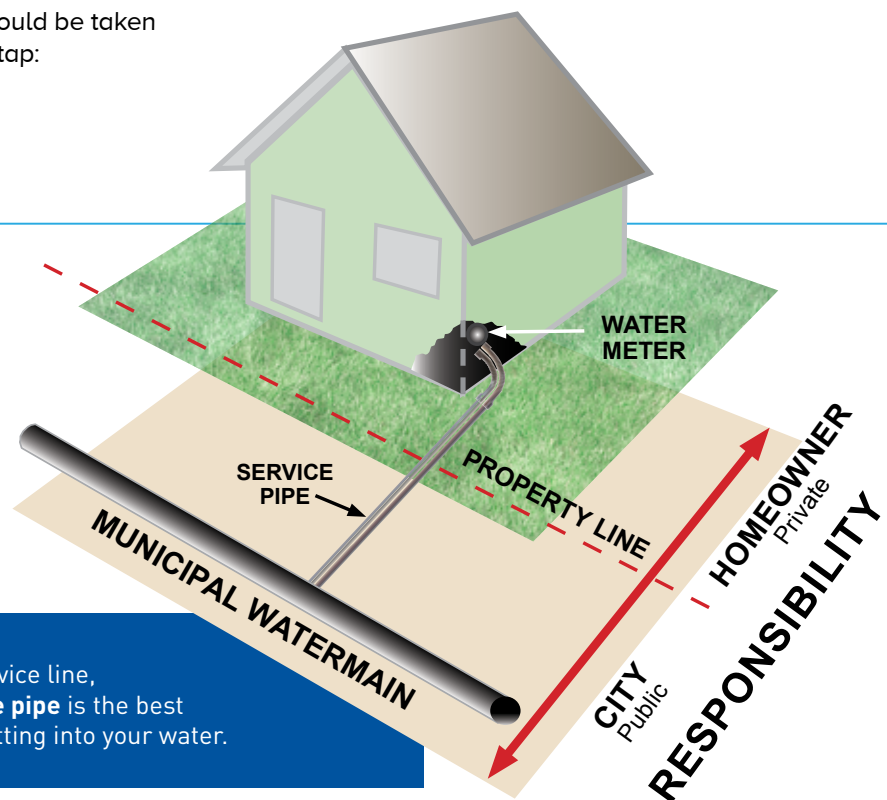
In the event a service line is partially replaced by the City or the homeowner, it is strongly recommended that private plumbing lines be flushed prior to consumption. Research indicates that when lead service lines are disturbed, the amount of lead found in consumers' drinking water may increase for weeks to months.

After a partial replacement of a lead service line has been completed, the following steps should be taken prior to consuming the water from your tap:

1. Remove and clean your faucet aerators from all cold water taps in the home.
2. Beginning in the lowest level of the home, fully open the cold water taps throughout the home.
3. Let the water run for at least 30 minutes at the last tap you opened (top floor).
4. Turn off each tap starting with the taps in the highest level of the home. Be sure to run water in bathtubs and showers as well as faucets.
5. Do not consume tap water, open hot water faucets or use icemaker or filtered water dispenser until flushing is complete.
6. Replace cleaned aerators.

In addition to the above instructions, a daily mini-flush consisting of a five-minute displacement flush is recommended for six months post-partial-replacement of a lead service line. Aerators should be cleaned regularly to remove any particulate lead that may have accumulated.

**It is also recommended that after a partial or full lead service line replacement, the water be tested to ensure lead levels at the tap are reduced. This testing is free and arranged through the City by calling 807-625-2195.**



If your home has a lead service line, replacing the **entire service pipe** is the best way to ensure no lead is getting into your water.

# LEAD: FREQUENTLY ASKED QUESTIONS

## How does lead get into drinking water?

The raw water from Lake Superior and drinking water supplied from the water distribution system have little or no lead present. Lead enters the water when it sits still for long periods of time in lead pipes or fixtures. Lead can enter the drinking water in your home from the following:

- Lead service pipes, which were used before the mid-1950s, to connect your home's plumbing to the City's watermain
- Lead solder, which was used to join pipes together before the 1990s
- Leaded-brass fixtures, such as faucets and valves

## How do I determine if I have lead pipes in my home?

Lead service pipes were used in older homes usually built before the mid-1950s. Lead pipes are a dull grey colour. If you scrape the surface of the pipe gently with a Loonie, the metal beneath will be shiny and silver. You can also call City Dispatch 807-625-2195 to inquire.

## What should I do if I live in a house with a lead service pipe or plumbing?

**1. Flush.** When water sits in the lead service pipe for long periods of time, it absorbs more lead than when running. Water that has stood in the tap for more than six hours should not be used for consumption. Before using water for drinking or cooking, let the water run from the cold water tap for up to five minutes. To avoid wasting water, take a shower, run the washing machine, or run the dishwasher to clear the pipes. Once you have let the water run, fill pitchers, kettles or pots for drinking or for food preparation during the day. Boiling your tap water DOES NOT remove lead.

**2. Filter.** Use the filter jug provided by the City to filter tap water prior to consuming or cooking. Follow the manufacturer's instructions for filter cartridge replacement.

## Who can I call to arrange to have my water tested?

If you are concerned about lead levels in your water, contact the City of Thunder Bay's Infrastructure & Operations Dispatch at 807-625-2195 to arrange to have your water tested.

## Does lead in drinking water pose a health risk?

Lead is a common metal found in the environment in air, soil, household dust, food, certain types of pottery and water.

Lead can pose a significant risk to your health if too much enters your body. The greatest risk is to young children and pregnant women. Lead exposure is a world-wide health problem. If you have, or suspect you have a lead water service, alternative sources of drinking water should be considered for young children and pregnant women.

## How can I reduce my exposure to lead in my drinking water?

There are many steps you can take to reduce your exposure to lead in drinking water, but if you have a lead service line, the best step you can take is to have it replaced.

In addition you can:

- Have your water tested for lead, free of charge
- Run your water to flush the lead out – if it hasn't been used for several hours, run the water for 3-5 minutes to clear most of the lead from the water.
- Always use cold water for drinking, cooking and preparing food – never cook with or drink water from the hot water tap.
- Filter your tap water prior to consuming or cooking
- Do not boil water to remove lead – boiling does not reduce lead concentrations
- Periodically remove and clean faucet screens / aerators— while removed, run water to eliminate debris
- Identify and replace plumbing fixtures containing lead. Brass faucets, fittings and valves may leach lead into drinking water.

## What is the City doing to reduce lead?

The City of Thunder Bay is replacing lead service connections and fixtures, providing ongoing watermain flushing/cleaning, increasing overall water quality awareness and providing free testing for lead at the tap. The piped water infrastructure is renewed by the watermain replacement program, which also replaces the individual service connection to the property line (partial replacement). The City has provided properties with known lead service lines a water filter pitcher NSF certified to remove lead as well as replacement cartridges to use for drinking water. An interest-free loan and grant program is available to help homeowners with private lead service replacement.

The City continues to work with the Ministry of the Environment, Conservation and Parks to evaluate further methods to reduce lead levels at the tap and update the Corrosion Control Plan.

## What can you do to help?

If you have a lead service, please contact the City to arrange for testing. A qualified licensed operator will come to your home and test your tap water free of charge. For a faster response time for lead testing you have the option of collecting the sample yourself. City staff will drop the sample bottles and detailed instructions off at your residence. Once you have collected the samples they will be picked up and delivered to the lab for analysis. You will be provided with the results of the testing. You can also help by replacing your lead service line – reducing the amount of lead. **If you would like to apply for an interest-free loan to help manage the cost of replacing the private portion, please visit [thunderbay.ca/leadpipes](http://thunderbay.ca/leadpipes) or call 807-684-2433.** If you replace your service line, follow the flushing instructions post-replacement, and contact the City for testing. For the public lead service line to be replaced, visit the City's Engineering Division in person to fill out an application to start that process. Once this full replacement is complete, arrange for testing through the City to ensure lead levels have been reduced.

**Free testing can be arranged by contacting the City at 807-625-2195.**

# PROTECTING DRINKING WATER AT YOUR TAP

Cold water is best for drinking, cooking and preparing food. Hot water is meant for washing dishes, laundering clothes and bathing. To protect the quality of the drinking water coming out of your tap you need to maintain your faucets and filter system (if you have one installed).

Make sure your sink is cleaned regularly and leaking faucets are repaired. Sediment can also build up on the screen of your faucet. Follow the instructions below to clean your faucet aerator.

## Faucet Aerators (also called screens)

Routinely clean faucet screens. Sediment and metals can collect in the faucet screen located at the tip of your faucets. Replace screens that are in poor condition. New screens are available at local hardware stores.

To clear the faucet screen of debris:

1. Unscrew the housing.
2. Separate the individual parts.
3. Remove any sediment (mineral or rust build up) on the screen and other parts. If necessary, soak the parts in white vinegar for a few minutes and scrub with a brush.
4. Reassemble the screen parts and re-attach to faucet.

\*Modified from DC Water's Household Water Quality Guide:  
[https://www.dewater.com/sites/default/files/household\\_water\\_quality.pdf](https://www.dewater.com/sites/default/files/household_water_quality.pdf)

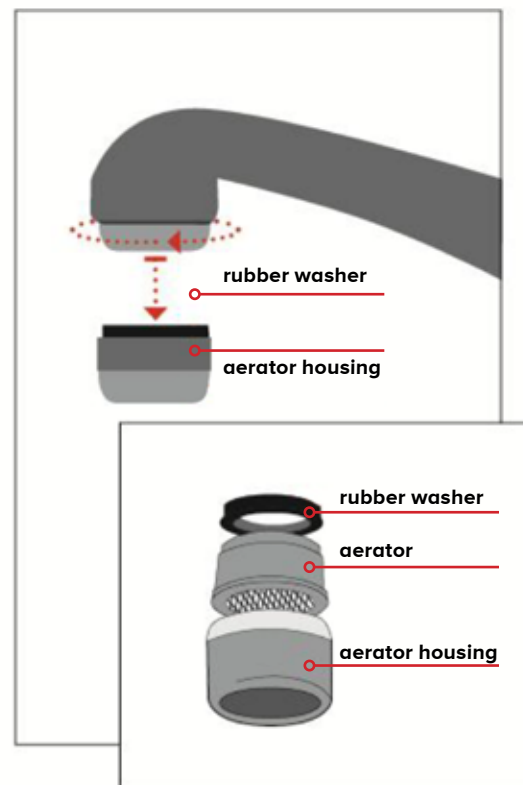
## Cross-Connection & Backflow Prevention Program

The City of Thunder Bay is dedicated to protecting the quality of our drinking water. In order to manage the potable water supply and minimize risks to public health, the Development Services Department and Environment Division – Water Authority have implemented a Backflow Prevention Program. Work is ongoing with property owners, certified testers and plumbing contractors to identify cross-connections, and advise where backflow prevention devices are required to protect the public potable water supply.

**For more information on this program, contact the City's Building Division at 807-625-2574.**

## Water Treatment Devices (Filter Systems)

If you own a filter system for your home or use the pitcher-style filter, make sure you follow the manufacturer's instructions for maintenance on the system and replace filters according to the manufacturer's instructions.





# SOURCE WATER PROTECTION

## Objectives and Scope of the Source Protection Plan

For the Lakehead Source Protection Area, the Source Protection Plan sets out policies to protect sources of municipal drinking water. It determines how drinking water threats will be reduced, eliminated or monitored, who is responsible for taking action, timelines, and how progress will be measured.

The Plan specifically applies to municipal residential drinking water sources (Wellhead Protection Areas and Intake Protection Zones).

Section 22 of the Ontario Regulation 287/07 lists these Source Protection Plan objectives:

1. To protect existing and future drinking water sources in the Lakehead Source Protection Area.
2. To ensure that in all areas where a significant drinking water threat could exist, that: a) If the activity is occurring at the time the Source Protection Plan takes effect, the activity ceases to be a significant drinking water threat; and b) The activity never becomes a significant drinking water threat.

Section 36 workplan updates were completed and submitted to the MECP in 2023. These were done before the announcement of the planned Avalon Lithium Processing Facility, which would be located in an Intake Protection Zone for Bare Point WTP. So further updates may be necessary.



The Lakehead Source Protection Plan, released in 2013 by the Lakehead Source Protection Committee and annual progress reports on it, are available at:

<https://lakehead.ca/watershed/source-water-protection>

## Keep it Superior

Although we live on the doorstep of Lake Superior, we must use the resource wisely! Less than one per cent of the total water on the planet is available to us as fresh water. Only a portion of that is renewable fresh water. If all the earth's water were stored in a 5-litre container, available fresh water would not quite fill a teaspoon. The World Resources Institute defines renewable fresh water as "salt-free water that is fully replaced in any given year through rain and snow that falls on continents and islands and flows through rivers and streams to the sea." Canada contains 6.4 percent of the world's annual renewable fresh water.

## We all have a stake in protecting our water

- If you have a septic system, make sure it is well maintained.
- Avoid fertilizers and pesticides which pollute ground water.
- When washing vehicles, go to a commercial car wash that filters and recycles water. It's the safe way to keep oil, sediment and other pollutants from going down the drain and harming lakes, creeks, rivers or ground water.
- Use environmentally safe, biodegradable detergents and personal care products (shampoos, hair dyes, lotions) without added chemicals.
- Invest in water and energy-efficient appliances such as dishwashers and washing machines.
- Reduce your use of motors on water bodies – use a paddle or a sail and enjoy the sounds of nature.
- Dispose of household hazardous waste properly. Please do not put the following down the drain:
  - Paint
  - Oils or grease
  - Chemicals or cleaning products
  - Pharmaceuticals - return unused pharmaceuticals to your pharmacy

For more information on protecting our water or on proper disposal of hazardous waste contact the Infrastructure & Operations Dispatch at 807-625-2195.

# WATER EDUCATION PROGRAMS

## Single Use Plastics

Disposable plastic items are made to be thrown away, but they don't actually disappear. About 10,000 metric tons of plastic enters the Great Lakes every year, and it takes years to degrade in the environment and can affect water quality, harm wildlife, and destroy habitat. Even though recycling is important, there more plastic than the system can handle, and much of it is not recyclable. We need to get drastic with plastic!

- Refuse items like plastic straws, cups, and bottled water
- Carry a reusable mug, water bottle and set of utensils in your purse or car
- Replace shopping bags and sandwich bags
- Take your empty containers to bulk stores and refill locations for food, shampoo and cleaning products

## Water Filter Recycling

Did you know that Water filters degrade the environment through increased landfill waste from filter cartridge replacements? When we don't deal with this waste properly, we risk damaging our communities, our forest, and our waterways. The carbon footprint of one liter of Brita-optimized water is up to 25x smaller than that of bottled water but replacing water filters regularly creates waste. EcoSuperior is collecting any brand and size of water filter to send away for recycling, including under counter and fridge filters. By using EcoSuperior's water filter recycling program, you'll be diverting waste from our landfill and reducing waste on our land and waterscapes. Bring your used filters to the EcoSuperior office Monday through Thursday, 8:30 am to 4:30 pm.

## Reusable Mug Exchange Program

Now when people want a to-go hot beverage, they can be a part of EcoSuperior's Huskee Mug Exchange Program which gets you a to-go hot beverage but without waste! Customers subscribe to the program by purchasing their first mug and then ordering their drink using the new mug. Keep the mug until the next time you order then simply hand-in the rinsed mug and the coffee shop fills the order in a ready-to-go clean mug. The cycle continues without the customer ever having to throw away a disposable cup! Customers can purchase a mug from a participating cafe or through EcoSuperior.

# YOUR BUTT STOPS HERE PROGRAMS

Every year, 4.5 trillion cigarette butts get tossed as litter on streets, shorelines, parks, and sidewalks across the world-making them the most prevalent form of litter on Earth. Although cigarettes are small in size, waste accumulated in such large quantities can pose enormous threats to our health, and natural environment.

EcoSuperior, with funding from the City of Thunder Bay Supports volunteers who pick up tens of thousands of cigarette butts each spring, and that represents just a fraction of the cigarette litter that enters the environment.

Learn more about reducing cigarette waste with EcoSuperior:

- Your Butt Goes Here – Ashtrays for Businesses Program
- Pocket Ashtray Program
- Cigarette Recycling Program

Visit <https://ecosuperior.org/cigarette-waste>



# FREQUENTLY ASKED QUESTIONS

## How do we know our drinking water is safe?

The Ministry of the Environment, Conservation and Parks sets stringent monitoring requirements for drinking water. Water quality is monitored 24 hours a day, seven days a week. Customers can have confidence that their water treatment plant has highly effective water treatment and quality assurance processes in place to remove bacteria and other harmful substances from the water.

## What is a Water Fill Station?

Water fill stations are locations where residents may purchase City water. Two self-serve residential water fill stations are open 24 hours a day, seven days a week. The stations are located at the corner of Hwy. 61 and Mount Forest Boulevard and on Valley Street at Hutton Park Drive. A “Fob” must be purchased in advance to use the water fill stations. For more information on the stations or where to obtain a “Fob”, please contact 807-625-2195.

## Does the Backflow Prevention Program apply to residential homeowners?

The Water Works By-law does not require single-family dwellings to install backflow prevention devices unless the Water Authority determines that the property is a high risk. However, homeowners can take steps to protect the drinking water system.

Indirect cross-connections such as a hose with one end immersed in a swimming pool, laundry sink, fish tank, bucket, etc., can result in contaminated water being pulled back into the drinking water system. Wherever possible, install backflow prevention devices on outside water taps, boilers and sprinkler systems to protect the quality of the public drinking water supply and the quality of the water in your home.

## What is a remote meter reading device?

Remote reading devices can be installed for a water meter which will allow the meter to be read from outside your home. These devices provide accurate water consumption readings without requiring the homeowner to be home or to call in quarterly meter readings. Upon request, these devices can be installed at the cost of the homeowner. For further information on installing a remote device, please contact the City’s Environment Division at 807-474-4817.

## What can homeowners do to reduce the risk of frozen water services?

- If water piping is located within cupboards next to exterior walls, keep cupboard doors open to allow warmer air to circulate around pipes.
- Do not set furnace lower than 55°F or 13°C at night, or when the house is vacant.
- Close and drain pipes leading to outside faucets.
- Wrap foam pipe insulation around pipes most susceptible to freezing (for example, pipes near outside walls, in crawl spaces, or in attics).
- Seal air leaks in homes and garages.

- If you will be away for a long period of time, close off your main service valve in your basement and open all taps to allow pipes to drain, and have someone check your home regularly.
- When renovating, take care not to leave plumbing against the exterior wall of the basement, and insulate over top. Whenever possible, insulation and vapour barriers should be placed between the exterior wall and the plumbing to prevent freezing. If this is not possible, consider leaving the plumbing exposed.
- Remember to heat your crawl space and close all vents for the winter months. For chronic freezing issues in crawl spaces, heat tracing can be secured to water lines and wrapped in insulation.
- Take into consideration the location of your water service when removing snow or planning landscaping or driveway work. Snow provides natural insulation to prevent frost from deeply penetrating soils. When a water service line is directly under a driveway or an area where the snow is removed or compacted, the likelihood of frost levels reaching the depth of the water service line is greatly increased.

## What should homeowners do if they have or suspect they have a water leak?

If a homeowner suspects they have a water leak from pipes inside their home, the homeowner is encouraged to consult a licensed plumber. If the water needs to be turned off immediately, use the shut-off valve located inside the home on the water pipe before the water meter. If a homeowner suspects they are experiencing a leaking pipe that is underground, they should contact the City’s 24-hour Dispatch line at 807-625-2195. The City will follow up with the homeowner by sending a certified Water Distribution Operator to determine if the leak is on private or public property. If the leak is determined to be on public property, the City will take appropriate measures to remedy the leak at the City’s cost. A homeowner is responsible for any leaks determined to be on private property. There is a fee for the water service valve to be turned off and turned back on when repairs are concluded. This fee will be added to the homeowner’s water bill. Homeowners should always monitor for anything out of the ordinary in their home or around their property. Homeowners or occupants may watch for continuously wet locations in the yard, unusual cold or wet spots on the basement floor, water meters that continue to run when no faucets are open, abnormal sounds of running water or “hissing” sounds, and sump pumps running more than usual.

## Does the City of Thunder Bay provide sampling and testing of well water? If not, where can I have my well water tested?

No, the City of Thunder Bay does not perform water quality tests for private wells. This service is provided free of charge by the Thunder Bay District Health Unit (TBDHU). For more information contact TBDHU at 807-625-5900 or visit their website at [www.tbdhu.com](http://www.tbdhu.com).



# TREATED WATER TO DISTRIBUTION 2023 SUMMARY REPORT

MONTH	Total for Month (Million Litres)	Peak Flow MLD	Minimum Flow MLD	Avg Daily MLD	Operational Capacity (%)
January	1251	66.5	36.9	40.3	33.5
February	1157	66.8	39.2	41.3	36.4
March	1282	67.3	38.6	41.4	36.4
April	1303	67.2	39.6	43.4	38.3
May	1354	68.7	39.9	43.7	38.5
June	1475	68.5	41.5	49.2	43.3
July	1424	68.5	41.6	45.9	40.5
August	1426	68.7	42.6	46.0	40.5
September	1374	69.7	40.7	45.8	40.5
October	1389	71.1	42.5	44.8	39.5
November	1341	69.1	41.5	44.7	39.4
December	1365	67.5	40.4	44.0	38.8
Total Volume	16142		Average	44.2	39.0

Flow results in MLD (million litres per day). Maximum capacity, 113 MLD based on peak plant rating.



**ANNUAL REPORT 2023**

<b>Drinking-Water System Number:</b>	<b>220000273</b>
<b>Drinking-Water System Name:</b>	Bare Point Water Treatment Plant and Distribution Subsystem
<b>Drinking-Water System Owner:</b>	City of Thunder Bay
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 1 – December 31 2023

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p><b>Does your Drinking-Water System serve more than 10,000 people? Yes [X] No [ ]</b></p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]</b></p> <p><b>Location of annual report hard copies;</b></p> <ul style="list-style-type: none"> <li>➤ Bare Point Water Treatment Plant</li> <li>➤ Branches of the Thunder Bay District Library</li> <li>➤ Environment Division Office – Victoriaville</li> <li>➤ City Hall</li> <li>➤ Front St. Service Yard</li> </ul> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b></p> <ul style="list-style-type: none"> <li>➤ Bare Point Water Treatment Plant</li> <li>➤ Environment Division Office – Victoriaville</li> </ul>	<p><b><u>Complete for all other Categories.</u></b></p> <p><b>Number of Designated Facilities served:</b></p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</b></p> <p><b>Number of Interested Authorities you report to:</b> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div></p> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</b></p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report**

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

<b>Drinking Water System Name</b>	<b>Drinking Water System Number</b>
King Georges Park Distribution System	260070265
Terra Vista	260094380

**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 [X] No [ ]

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

- ☒ Public access/notice via the web
- ☒ Public access/notice via Government Office
- ☒ Public access/notice via a newspaper
- ☒ Public access/notice via Public Request
- ☒ Public access/notice via a Public Library

**Describe your Drinking-Water System**

In 2023, the Bare Point WTP treated an average of 44.2 ML of Lake Superior water daily using ultrafiltration. For the purpose of disinfection, sodium hypochlorite was added to the water.

**List all water treatment chemicals used over this reporting period**

Sodium Hypochlorite

**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**

In 2023 The City of Thunder Bay Environment Division Bare Point Water Treatment Plant expensed approximately \$1.1 million towards the annual maintenance of equipment, buildings & grounds and emergency repairs. A total of \$507,000 was spent on the purchase of chemicals used to disinfect the drinking water and clean the membranes. Capital Projects within the Treatment & Distribution Subsystem totaled an expensed amount of approximately \$1.2 million. Notable projects in 2023 include an estimated \$1 million for membrane replacements and \$90,000 for process network maintenance & cybersecurity improvements.

In 2023 the City of Thunder Bay invested over \$5.3 million on infrastructure improvements and replacements for the linear drinking water distribution system. These improvements include replacing approximately 3 km of old watermain as well as cement mortar relining 2.9 km of existing watermain. Additional improvements include the replacement of 215 municipal lead service lines and 20 Kerr hydrants.

**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
Feb 08 2023	TC	Present		Flushed and resample 2 rounds of bacteriological samples up and down stream and at the location, 24 hours apart.	Feb 15 2023 (2B form Submitted)
Feb 27 2023	Low Pressure in the Neebing Zone		PSI	Returned pressure in the system, flushed and took chlorine residual samples at various hydrants in the Neebing zone as a precaution to determine if there was any potential contamination.	March 02 2023 (2B form Submitted)
April 04 2023	*CAT 2 break, reported to the local MOH. Precautionary BWA issued.	Absent		Post repair-flush and take one downstream bacteriological sample	April 06 2023 (2B form submitted)
Aug 08 2023	TC	Present		Flushed and resample 1 round of bacteriological samples up and down stream and at the location.	Aug 11 2023 (2B form submitted)
Oct 03 2023	*CAT 2 break, reported to the local MOH. Precautionary BWA issued.	Absent		Post repair-flush and take one downstream bacteriological sample as directed by the MOH plus 3 additional bacteriological samples downstream as directed by the Distribution ORO as a precaution	Oct 05 2023 (2B form submitted)
Oct 10 2023	Low chlorine residual	0.02	mg/l	Flush and resample from the location and 2 additional downstream hydrants until the chlorine residuals are restored.	Oct 10 2023
Oct 11 2023	TC	Present		Flushed and resample 1 round of bacteriological samples up and down stream and at the location.	Oct 17 2024 (2B form submitted)
Nov 06 2023	*CAT 2 break, reported to the local MOH. Precautionary BWA issued.	Absent		Post repair-flush and take one bacteriological sample downstream and one at the location.	Nov 09 2023 (2B form submitted)
Nov 30 2023	Special case CAT 2 (sewage present in the excavation)	Absent		Return to service plan coordinated with the MOH and MECP. Two rounds of bacteriological samples taken downstream 24 hours apart.	Dec 04 2023 (2B form submitted)
Dec 17 2023	*CAT 2 break, reported to the local MOH. Precautionary BWA issued.	Absent		Post repair-flush and take one bacteriological sample downstream.	Dec 20 2023 (2B form submitted)

**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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	0-1	1-13	NA	NA
Treated	52	All Absent	All absent	52	0-2
Distribution	1638	All Absent	2-Present	529	0-131

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

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Turbidity	8760	0.011 – 0.579	NTU
Chlorine	8760	1.16 - 1.91	mg/L
Fluoride (If the DWS provides fluoridation)			

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

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

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

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	January 19 2023	<0.60	µg/L	no
Arsenic	January 19 2023	<1.0	µg/L	no
Barium	January 19 2023	11	µg/L	no
Boron	January 19 2023	<50	µg/L	no
Cadmium	January 19 2023	<0.10	µg/L	no
Chromium	January 19 2023	<1.0	µg/L	no
*Lead	See schedule 15.1 information		µg/L	
Mercury	January 19 2023	<0.10	µg/L	no
Selenium	January 19 2023	<1.0	µg/L	no
Sodium – Treated	October 19 2023	3.43	mg/L	no
Sodium – Distribution	July 09 2023	4.36	mg/L	no
Sodium – Raw	October 19 2023	2.97	mg/L	no
Uranium	January 19 2023	<2.0	µg/L	no
Cyanide - Treated	January 19 2023	<0.005	µg/L	no
Cyanide - Raw	January 19 2023	<0.005	µg/L	no
Fluoride - Treated	January 19 2023	<0.026	mg/L	no
Fluoride - Raw	January 19 2023	<0.029	mg/L	no
Nitrite - Treated	October 19 2023	<0.010	mg/L	no
Nitrite - Raw	October 19 2023	<0.010	mg/L	no
Nitrite - Distribution	October 19 2023	<0.010	mg/L	no
Nitrate - Treated	October 19 2023	0.284	mg/L	no
Nitrate - Raw	October 19 2023	0.327	mg/L	no
Nitrate - Distribution	October 19 2023	0.285	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
Plumbing	1006	0-*3700	µg/L	90
Distribution	169	0-4.4	µg/L	0

\*- (This value is a result of sampling through an old lead filter in error – this value is 179.0, when not including the error)

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
1,1-Dichloroethylene (vinylidene chloride)	January 19 2023	<0.50	µg/L	no
1,2-Dichlorobenzene	January 19 2023	<0.50	µg/L	no
1,2-Dichloroethane	January 19 2023	<0.50	µg/L	no
1,4-Dichlorobenzene	January 19 2023	<0.50	µg/L	no
Benzene	January 19 2023	<0.50	µg/L	no
Carbon Tetrachloride	January 19 2023	<0.20	µg/L	no
Dichloromethane	January 19 2023	<1.0	µg/L	no
Monochlorobenzene	January 19 2023	<0.50	µg/L	no
Tetrachloroethylene	January 19 2023	<0.50	µg/L	no
Trichloroethylene	January 19 2023	<0.50	µg/L	no
Vinyl Chloride	January 19 2023	<0.50	µg/L	no
Paraquat	January 19 2023	<1.0	µg/L	no
Polychlorinated Biphenyls (PCBs)	January 19 2023	<0.030	µg/L	no
Dicamba	January 19 2023	<0.20	µg/L	no
Bromoxynil	January 19 2023	<0.20	µg/L	no
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 19 2023	<0.05	µg/L	no
Picloram	January 19 2023	<0.20	µg/L	no
2 methyl-4-chlorophenoxyacetic acid (MCPA)	January 19 2023	<0.20	µg/L	no
Atrazine	January 19 2023	<0.10	µg/L	no
Atrazine Desethyl	January 19 2023	<0.10	µg/L	no
Azinphos-methyl	January 19 2023	<0.10	µg/L	no
Benzo(a)pyrene	January 19 2023	<0.005	µg/L	no
Carbaryl	January 19 2023	<0.20	µg/L	no
Carbofuran	January 19 2023	<0.20	µg/L	no
Chlorpyrifos	January 19 2023	<0.10	µg/L	no
Diazinon	January 19 2023	<0.10	µg/L	no
Diclofop-methyl	January 19 2023	<0.10	µg/L	no



Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Dimethoate	January 19 2023	<0.10	µg/L	no
Malathion	January 19 2023	<0.10	µg/L	no
Metribuzin	January 19 2023	<0.10	µg/L	no
Metolachlor	January 19 2023	<0.10	µg/L	no
Phorate	January 19 2023	<0.10	µg/L	no
Prometryne	January 19 2023	<0.10	µg/L	no
Simazine	January 19 2023	<0.10	µg/L	no
Terbufos	January 19 2023	<0.10	µg/L	no
Triallate	January 19 2023	<0.10	µg/L	no
Trifluralin	January 19 2023	<0.10	µg/L	no
Atrazine + N-dealkylated metobolites	January 19 2023	<0.20	µg/L	no
2-4 Dichlorophenol	January 19 2023	<0.30	µg/L	no
2,4,6-Trichlorophenol	January 19 2023	<0.50	µg/L	no
2,3,4,6-Tetrachlorophenol	January 19 2023	<0.50	µg/L	no
Pentachlorophenol	January 19 2023	<0.50	µg/L	no
Glyphosate	January 19 2023	<0.20	µg/L	no
Diuron	January 19 2023	<1.0	µg/L	no
Diquat	January 19 2023	<1.0	µg/L	no
			µg/L	
THM (A+B+C+D)/4) – sampled quarterly (A=2019 Q4 + B=2019 Q3 + C=2019 Q2 + D=2019 Q1)	Jan, Apr, Jul, Oct Avg.	29.85	µg/L	no
HAA (A+B+C+D)/4) – sampled quarterly (A=2019 Q4 + B=2019 Q3 + C=2019 Q2 + D=2019 Q1)	Jan, Apr, Jul, Oct Avg.	24.85	µg/L	no

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

Parameter	Result Value	Unit of Measure	Date of Sample

# CONTACT US

Our water quality specialists are available to respond to customer inquiries and concerns. We offer services and programs to ensure our water customers can contact us at any time of the day or night. It is our job to investigate and resolve problems quickly and efficiently.

We believe in... **QUALITY SERVICES FROM QUALITY PEOPLE**

<div> <div>CONTACT US!</div> <div>  <p><b>CITY OF Thunder Bay</b> Superior by Nature <a href="http://thunderbay.ca">thunderbay.ca</a></p> </div> </div>	
Water Quality Concerns/ Information Water Trouble Reporting	807-625-2195 (24 hours)
Lead Testing Program	807-684-3568
Backflow Prevention Program	807-625-2574
Water Billing and Arrears	807-625-2255
Water Meter Reading Phone In	807-625-3160 (24 hours)
Water Treatment Plant Tours	807-684-3567
EarthCare Thunder Bay	807-684-3217 
Water Conservation Programs delivered by EcoSuperior	807-624-2140 



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