2025

# WASTEWATER SYSTEM

ANNUAL REPORT

CITY OF Thunder Bay
Superior by Nature

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*This Wastewater System report comprises 2 parts, the first relating to Wastewater Treatment and the second relating to Wastewater Collection, covering requirements of the respective Environmental Compliance Approvals.*

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PART 1

# Introduction - Treatment

The City of Thunder Bay owns and operates the Water Pollution Control Plant (WPCP) located at 901 Atlantic Ave., on the shore of Lake Superior. The Plant provides primary and secondary treatment, phosphorus and ammonia removal and anaerobic sludge digestion for the entire serviced area of Thunder Bay. Disinfection of the effluent occurs on a seasonal basis, from April 15 to October 15. The treatment facility has a rated capacity of 84.5 million litres per day (MLD).

The Atlantic Avenue WPCP is classified as a Class IV wastewater treatment facility under Ontario Regulation 129/04.This WPCP is operated under **Environmental Compliance Approval (ECA) #6927-9QDM2P**.

This report summarizes the monitoring results for the Atlantic Avenue WPCP required by the ECA and describes the operational performance to ensure production of quality effluent. In 2025, the annual average daily flow to the WPCP was **66 million litres**, which is 78% of the rated capacity specified in the ECA. The report also provides an overview of a vital part of the City of Thunder Bay's infrastructure.

# Wastewater Treatment Process

## 1. INFLUENT PUMP STATION

Wastewater from the serviced area in Thunder Bay enters the WPCP at the Influent Pump Station (IPS) where five pumps are available to deliver the wastewater to the preliminary treatment process. The wastewater then flows by gravity to the end of the primary treatment process.

## 2. PRELIMINARY TREATMENT

The Preliminary Treatment Process removes larger objects such as rags, paper, and wood debris. The wastewater enters two aerated grit tanks, where the flow is slowed to allow solids to settle out. Suspended heavier material such as sand and gravel settles to the bottom of the grit tanks, where it is collected and dewatered by grit classifiers. This material is collected and hauled to the City's Solid Waste and Recycling Facility (SWRF). Polymer is added to the grit tanks to foster settling of suspended solids. Aluminum sulphate is also added to help remove phosphorus and suspended solids.

## 3. PRIMARY TREATMENT

The Primary Treatment Process settles the organic material and dissolved contaminants by gravity in four large rectangular settling tanks (clarifiers). The wastewater flows very slowly through the clarifiers, where the wastewater, now called primary effluent, overflows the outlet weirs. A surface skimmer pushes fats, oils and greases (FOG) to the scum troughs, which then feed the FOG into the scum treatment system. Settled sludge is moved by a scraper along the bottom of the clarifier to a sludge hopper where the sludge is collected and then treated in the anaerobic digesters to allow decomposition by micro-organisms.

## 4. SECONDARY TREATMENT

Secondary Treatment is a biological process that uses aerobic micro-organisms to consume suspended solids and dissolved organic materials in wastewater. The WPCP uses the Biological Aerated Filter (BAF) process. The BAF process removes biochemical oxygen demand, suspended solids and ammonia. In the filters, the primary effluent flows upward through a bed of media. The filters are aerated to satisfy the requirements of the micro-organism population and to maintain biological activity and growth. Sludge generated in the Secondary Treatment Process is thickened in the Dissolved Air Flotation (DAF) plant before being treated in the anaerobic digesters.

## 5. DISINFECTION

Treated wastewater is disinfected with ultraviolet (UV) light to destroy pathogens. The process utilizes UV light, and therefore has no impact on the chemical composition of the water. UV disinfection is required from Apr. 15 to Oct. 15.

## 6. DISCHARGE

The final step in the wastewater treatment process is the return of clear treated water to Lake Superior. The effluent from the WPCP is discharged into the Kaministiquia River, approximately 400 metres upstream of Lake Superior.


## 7. SOLIDS TREATMENT AND COGENERATION

Sludge is produced as a by-product of the wastewater treatment process. Two types of sludge, primary and secondary, are processed in the anaerobic digesters.

Biogas contains approximately 60% methane (the combustible component of natural gas). The cogeneration system converts the biogas to electricity and captures the heat generated from the engine. The biogas can also be used in the plant boilers to generate heat.

Digested sludge is mechanically dewatered using centrifuges to separate the solids from the liquid to create a sludge cake. The centrifuges increase the solids content of the digested sludge from approximately 2% to 25%. The sludge cake is collected in bins and transported to the City's Solid Waste and Recycling Facility (SWRF) for final disposal.

The residual liquid (centrate) is returned to the Influent Pump Station for processing.

## FINAL EFFLUENT MONITORING AND COMPLIANCE

Ontario's Ministry of the Environment, Conservation and Parks (MECP) sets effluent discharge limits and objectives for all wastewater plants across the province. The limits are set out in the Environmental Compliance Approval (ECA) for each plant. The limits define the maximum concentrations or ranges of parameters such as:

- Total Suspended Solids (TSS), a measure of the amount of particulate matter in the water
- Acidic or alkaline (pH) levels
- Carbonaceous Biochemical Oxygen Demand ($CBOD_5$), a measure of the amount of material in water that will consume oxygen as it decomposes
- E. coli bacteria associated with the wastewater during the disinfection season (April 15 to Oct. 15)
- Total Phosphorus (TP), where high levels can cause increase growth of algae and large aquatic plants
- Ammonia, as the total ammonia expressed as nitrogen. Ammonia has seasonal objectives set under the ECA

## COMPLIANCE SUMMARY

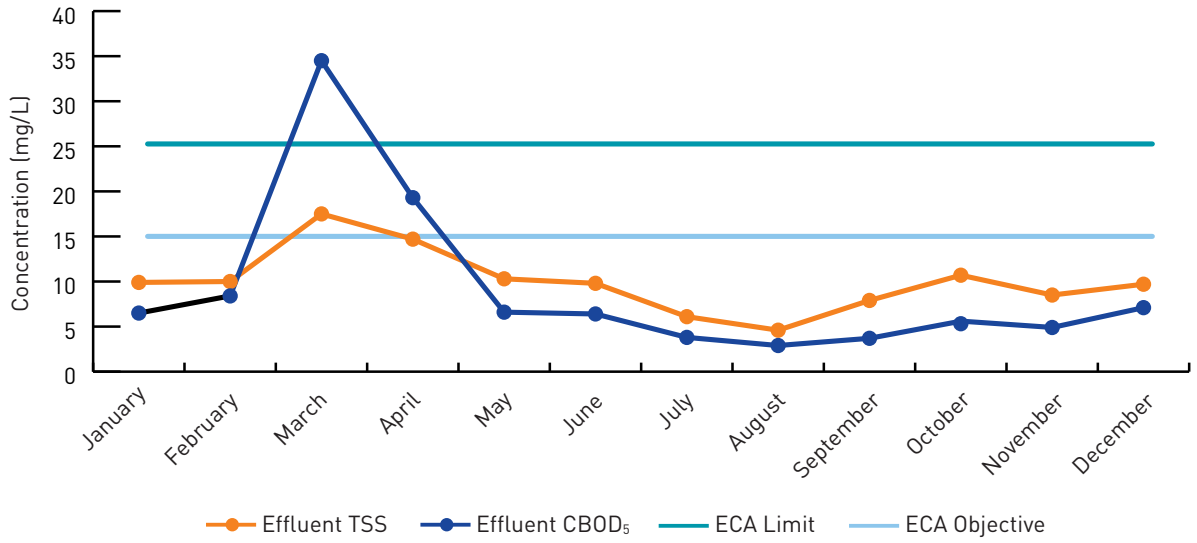
Throughout 2025, the Atlantic Avenue WPCP met the effluent concentration limits for Total Suspended Solids (TSS), Total Phosphorus (TP), E. coli, and maintained pH within the range of 6.0 to 9.5, as prescribed in the ECA.

The WPCP encountered difficulties in meeting the effluent concentration limit for $CBOD_5$ during the secondary treatment plant maintenance outage, despite running Chemically Enhanced Primary Treatment. The effluent exceeded the $CBOD_5$ monthly average limit of 25 mg/L in March, with an average of 34.5. Refer to Table 1 - Summary of Operating Issues and Actions Taken for more details. The secondary treatment process outage was pre-approved by provincial and federal authorities.

Outside the maintenance outage period, the TSS effluent concentration and $CBOD_5$ effluent concentration remained below ECA objectives.

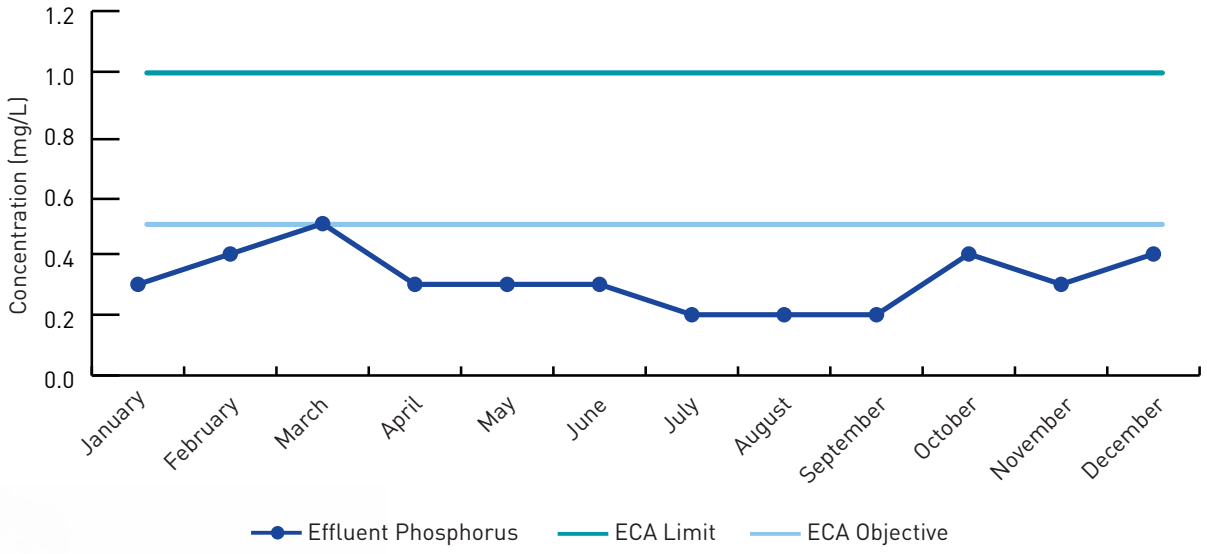
Figure 1 shows the monthly total suspended solids and carbonaceous biochemical oxygen demand.

**Figure 1: Monthly Effluent Results - TSS and $CBOD_5$**



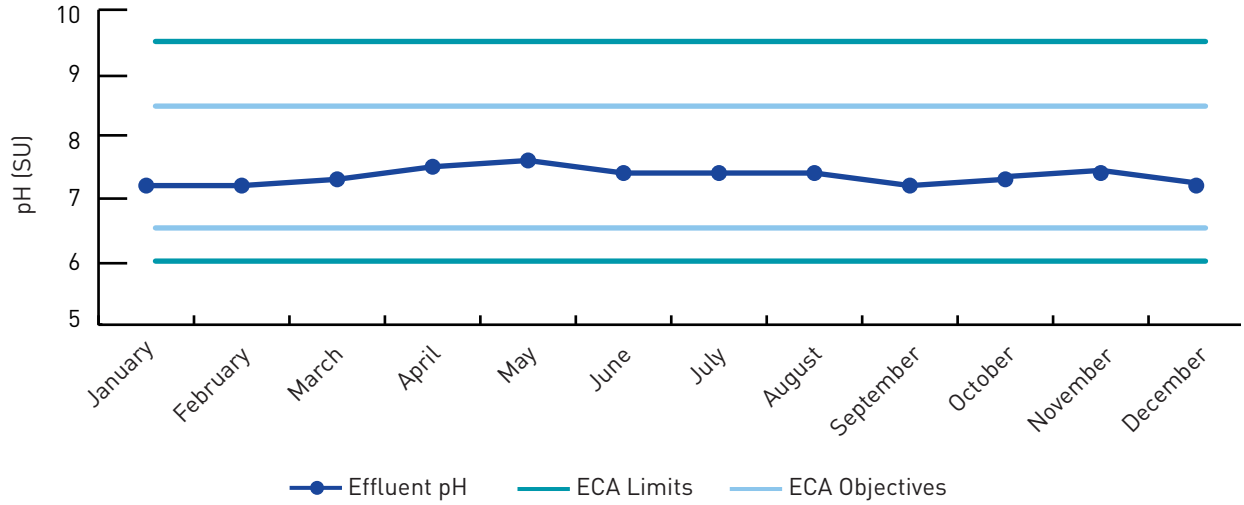

The effluent total phosphorus concentrations remained at or below the ECA objective level throughout the year. See Figure 2 below for the monthly total phosphorus results.

**Figure 2: Monthly Effluent Results - Total Phosphorus**



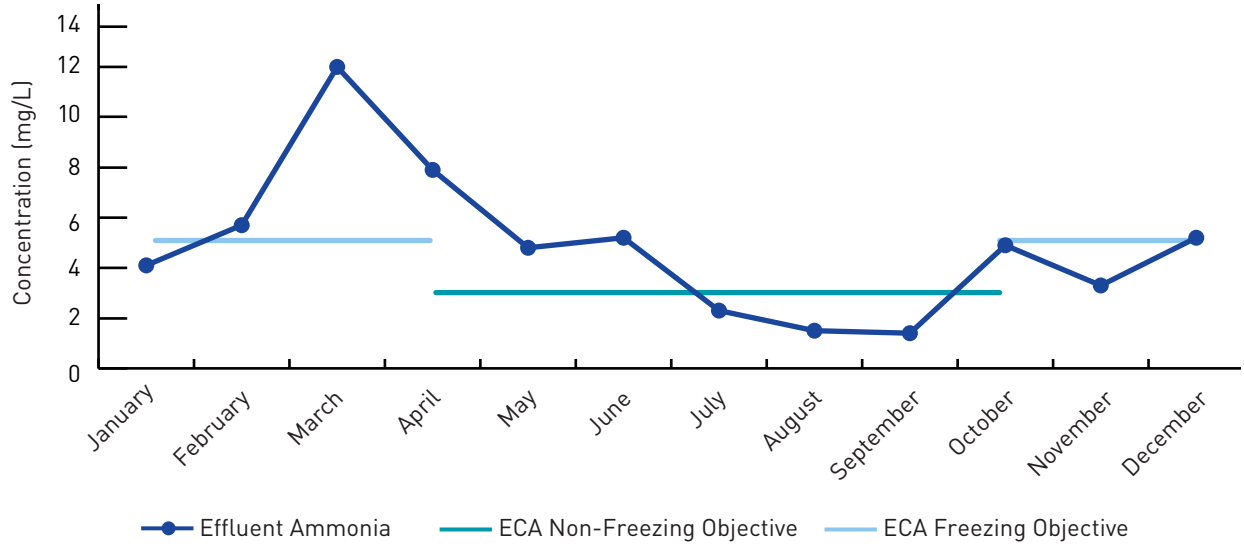
The effluent pH for the WPCP remained within the range outlined in the ECA as shown in Figure 3.

**Figure 3: Monthly Effluent Results - pH**




In 2025, the effluent exceeded the total ammonia nitrogen (TAN) monthly average ECA objectives during seven months, primarily in colder seasons. This was due to the reduced nitrifying capacity of the secondary treatment process when wastewater temperatures drop. Additionally, during peak flow events caused by heavy rainfall or spring snowmelt, the facility occasionally operated the Biological Aerated Filter (BAF) in parallel, utilizing only the carbonaceous phase of secondary treatment. While necessary for managing high flows, this operational adjustment can temporarily impair ammonia nitrogen removal. For a detailed overview of monthly ammonia nitrogen levels, refer to Figure 4.

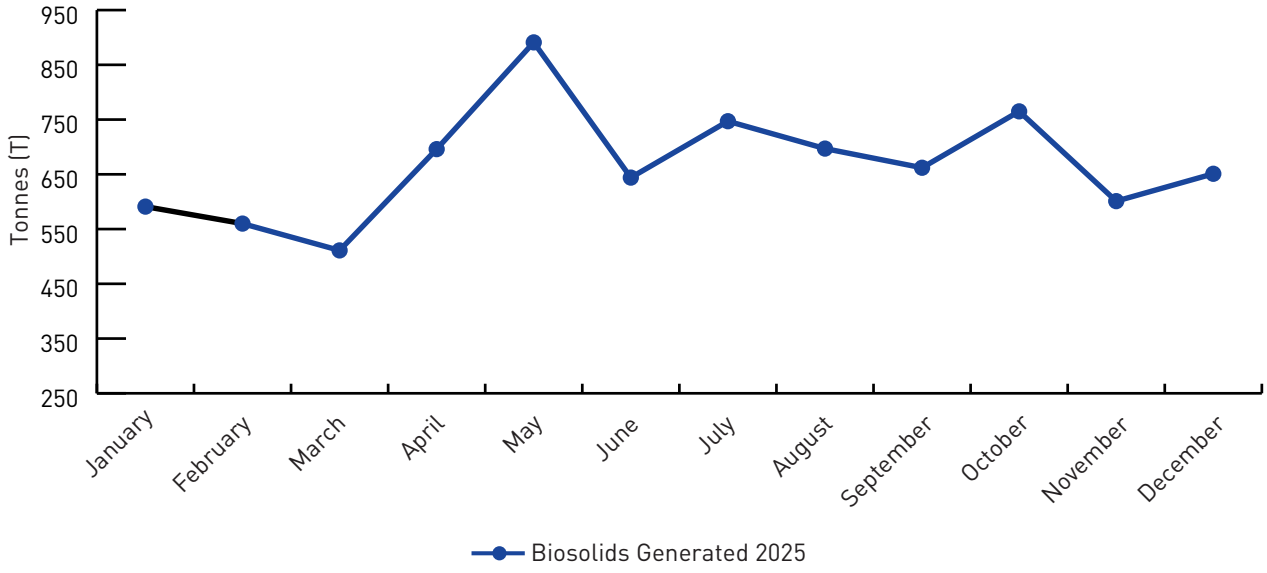
**Figure 4: Monthly Effluent Results - Ammonia Nitrogen**



## BIOSOLIDS SUMMARY

The monthly volumes of dewatered sludge generated in 2025 are presented in Figure 5. Over the year, a total of 8,015 tonnes of biosolids (dewatered sludge) was transported to the City's Solid Waste & Recycling Facility (SWRF) by a contracted waste hauler, where the biosolids were weighed and subsequently disposed with other incoming solid nonhazardous waste. This disposal practice will continue in 2026, with the Water Pollution Control Plant (WPCP) projecting an estimated 8,000 tonnes of biosolids for the year, assuming a similar wastewater flow.

**Figure 5: Biosolids Transferred to City of Thunder Bay's Solid Waste & Recycling Facility**



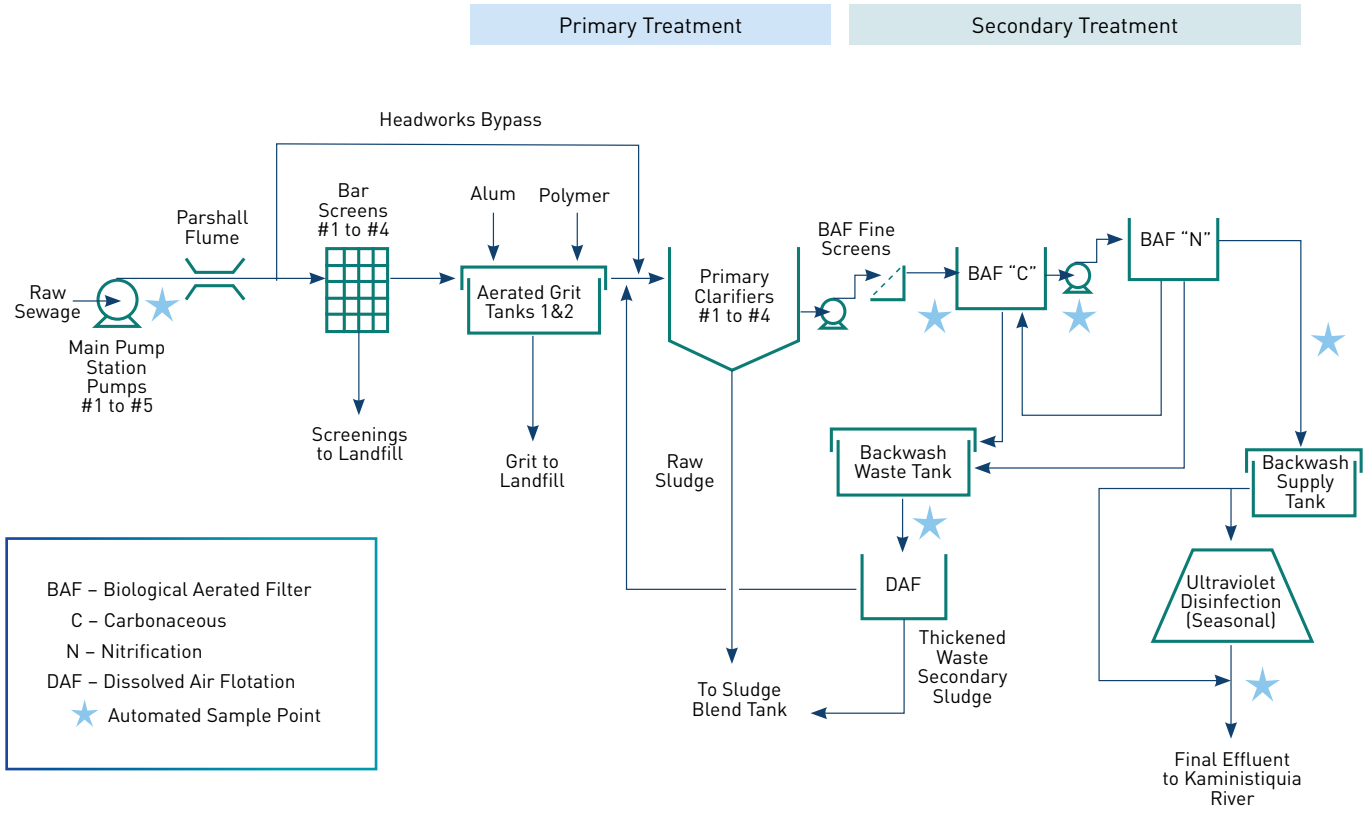

# Operating Issues and Corrective Actions

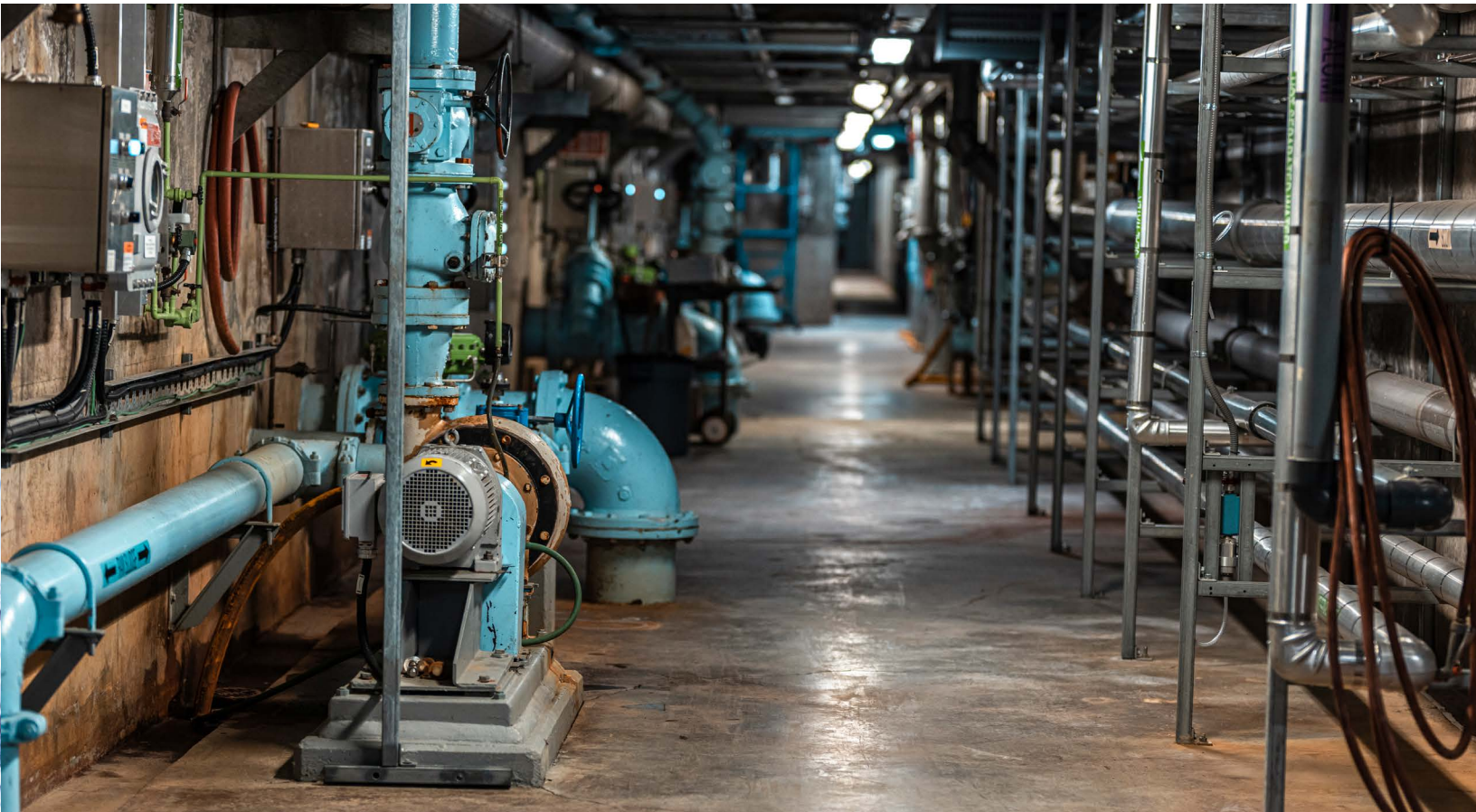
The Atlantic Avenue WPCP operates year-round, 24 hours a day. Occasional operating issues are encountered. Table 1 summarizes operating issues in the reporting period that temporarily affected the process or effluent quality, and lists the corrective actions taken.

**Table 1 - Summary of Operating Issues and Actions Taken**

| Issue | Date | Causes | Corrective Actions |
|---|---|---|---|
| TAN Objective Exceeded | February<br>March<br>April<br>May<br>June<br>October<br>December | 1. Low wastewater temperature, which inhibits nitrification<br>2. Secondary treatment outage for planned maintenance shutdown<br>3. During certain high flow events, the BAF was operated in parallel (without nitrification), to accommodate capacity constraints | 1. Reduce nitrification side filtration times for more frequent backwashing<br>2. Reduce backwash filtration to waste times<br>3. Ran secondary treatment in 'Winter Mode' to allow for nitrification treatment with increased recycle flow |
| Effluent $CBOD_5$ and TSS objectives or limits exceeded | March<br>April | Secondary treatment plant outage for planned maintenance shutdown | 1. Plant ran in Chemically Enhanced Primary Treatment – with increased coagulant and polymer dosages<br>2. Closely monitored primary treatment process |
| Daily Plant Flow exceeded Rated Capacity | April 14 - May 12;<br>May 16; June 17;<br>July 23 - 31 | Seasonal snow melt and/or heavy precipitation | 1. Monitored plant processes<br>2. Some processes were bypassed during the high plant flows |

## PLANT TREATMENT PROCESS SCHEMATIC



## INFRASTRUCTURE PROJECTS

As part of the Environment Division's Asset Management Plan, many projects were carried out during 2025 to protect and improve the equipment and infrastructure.

## 2025 WPCP PROJECTS

**Influent Pump Station (IPS)**

- Main Pump #4 impeller replacement & repairs
- Procurement of spare 400HP VFDs

**Primary Treatment**

- Annual maintenance on primary clarifiers
- Grit Tank #2 Screw replacement
- Bar Screen #2 rebuild
- Bar Screen redundant piping removal

**Sludge and Dewatering System**

- Centrifuge #1 overhaul
- Screw Conveyor 2, 3 & 4 replacement
- Sludge & Grit Bin repairs
- Sludge dewatering control room ventilation improvements

**Biological Aeration Filtration (BAF)**

- Fine Screen #6 replacement
- Upgrade and replacement of BAF Filter drain valves and associated actuators

**Heating and Ventilation**

- Boiler #4 re-tube
- Maintenance Shop air conditioning
- New digital boiler controllers

**Buildings & Grounds**

- Exterior/Interior lighting improvements
- Plant floor drain repairs
- Administration Building heater and air conditioner work, and Building Automation Controller upgrade

**Cogeneration and Gas System**

- Gas skid ventilation repairs
- Cogen major overhaul, and addition of water injection system
- Cogen / Gas Skid hydronic system upgrades and repairs

**Electrical & Instrumentation Systems**

- Design of site emergency power upgrade

**Disinfection System**

- UV system maintenance and lamp replacement

**Safety**

- Purchased portable gantry cranes
- Safety gates installation at elevated bar screen platforms

## WASTEWATER SYSTEM SUMMARY
## 2025 ATLANTIC AVENUE WATER POLLUTION CONTROL PLANT

### INFRASTRUCTURE

**520 km** of sanitary sewer

Four remote lift stations

Serving over **108,000** people

### WASTEWATER TREATED

**Over 24 billion**

litres of wastewater treated in 2025

Equivalent to over 9,900 Olympic sized swimming pools

Average flow of 66 MLD

### RESOURCES

**2,000 MWh** of electricity generated on-site

Over **85%** of gas generated in digesters was used to generate electricity or to heat on-site buildings

### OPERATIONS

**2,000+** days without a lost time incident

**20** licensed operators

Operated **365** days/year

24 hours/day

### ENVIRONMENTAL PROTECTION

**100%** of effluent limits were achieved (with secondary treatment)

Over 90% removal efficiency for:

- Suspended Solids
- Phosphorus
- Carbonaceous biochemical oxygen demand

Over **8,000** tonnes of solids removed from effluent stream

**DID YOU KNOW**

UV light is used to disinfect effluent, avoiding chemical disinfection residuals

## WASTEWATER SURVEILLANCE

The Wastewater Surveillance Initiative was established by the Ministry of the Environment, Conservation and Parks (MECP) in late 2020 to coordinate and fund university-led wastewater analysis for COVID-19. Wastewater surveillance offers a non-invasive, anonymous, and scalable approach to monitoring public health by providing pooled population-level data within defined geographic areas. In collaboration with the MECP, weekly influent wastewater sampling for COVID-19 began in February 2021. In 2023, the surveillance program expanded to include Influenza A and B and respiratory syncytial virus (RSV). The MECP-led program concluded in August 2024, however, monitoring has continued under the federal National Wastewater Monitoring of Pathogens (NWMP) program. Surveillance efforts have also included other pathogens of public health concern, such as sexually transmitted infections (STIs) and measles. Ongoing partnerships with wastewater surveillance researchers continue to support monitoring of emerging infections, pathogens, and chemicals of concern.

## COMPLIANCE & QUALITY CONTROL LABORATORY

The Compliance & Quality Control (C&QC) laboratory supports the process control testing for the WPCP. The testing includes, but is not limited to the following parameters: carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), total and soluble phosphorous (TP and SP), total solids (TS), volatile solids (VS), volatile acids, ammonia, alkalinity and ultraviolet transmittance (UVT). The laboratory has a quality control and assurance program in place. Additionally, the calibration and verification of the analytical equipment used in the laboratory is confirmed annually.

An external accredited laboratory conducts tests for metals, chemical oxygen demand (COD), ammonia, E. coli and total Kjeldahl nitrogen (TKN). Also, the C&QC laboratory provides analytical support for the SWRF and the Sewer Use Control Program.

## CALIBRATION & MAINTENANCE OF MONITORING EQUIPMENT

Calibration and maintenance of the automatic samplers was carried out by the Environmental Inspector and Laboratory Technicians. The influent flow measuring device is verified for accuracy by Plant Electricians on a routine basis and is also calibrated by a third party on an annual basis. The effluent flow meter is calibrated by a third party on an annual basis.

## SEWER USE CONTROL PROGRAM

The Hauled Sewage Monitoring Program recorded a total of 1,089 loads of processed water and septic tank wastes, which accounted for 13.9 million litres received and processed at the WPCP in 2025. The WPCP provided sewage disposal services for cruise ships docked at the Pool 6 Cruise Terminal at the Prince Arthur's Landing and Marina.

The Over-Strength Discharge Program, provided through the City's Sewer Use By-law, allows participating industrial users to discharge effluent which contains excess phosphorous, $CBOD_5$, and total suspended solids higher than the limits outlined in the By-law. An additional fee, based on these parameters, and on the actual treatment cost of the loading above the By-law limits, is then applied to these industries. Industries approved to discharge are issued agreements, as required.

## SUMMARY OF COMPLAINTS

The ECA requires that all complaints received by the WPCP are logged, investigated and resolved. The City makes every effort to contact residents and address their concerns. There were no complaints received in 2025 related to the WPCP.

## BYPASS EVENTS

A **bypass** is a diversion of wastewater around one or more wastewater treatment processes. The bypassed portion of wastewater undergoes part of the treatment process prior to release into the Kaministiquia River at the approved discharge location and sampling point. Final effluent is sampled and tested during bypass events to assess its quality.

Occasional weather events such as heavy rainfall and spring snow melt can result in flow rates that exceed the WPCP design capacity and burden the treatment process. Challenges such as these, power outages, and the requirement for planned, preventative maintenance, may result in a discharge to the environment that has not undergone all treatment processes at the WPCP.

When a planned bypass is required to repair a part of the treatment process, a request is submitted to the federal and provincial governments to perform the bypass, including a plan to minimize its impact.

Total bypassed flow in 2025 was estimated to be 1,427 ML - the majority of this was from secondary bypassses, where wastewater received screening, grit removal, and primary treatment prior to discharge. During disinfection season from April to October, the secondary bypasses also received UV disinfection. There were 2 UV bypasses (totaling 112 ML) where a portion of the effluent did not receive UV disinfection.  Chemical disinfection was applied to the bypass flow during those events.

Of the bypasses that occurred in 2025, 86% of the volume bypassed was from the secondary treatment maintenance outage, and 13% was related to high flows from weather events. The remainder was due to power outages.

All bypass events were reported to the MECP, Environment and Climate Change Canada and the Thunder Bay District Health Unit following established reporting protocol.

*"Island Drive Bridge"*
*by Sean Randall*

# Data Tables

## Table 2: Plant Effluent Quality

| Month | Daily Flow (MLD) | $CBOD_5$ (mg/L) | $CBOD_5$ Loading (kg/day) | TSS (mg/L) | TSS Loading (kg/day) | TP (mg/L) | TP Loading (kg/day) | E Coli (#/100 mL) | TAN (mg/L) | pH (SU) |
|---|---|---|---|---|---|---|---|---|---|---|
| Objective | N/A | 15.0 | N/A | 15.0 | N/A | 0.5 | N/A | 150 | Apr 1 to Oct 31: 3.0<br>Nov 1 to Mar 31: 5.0 | 6.5 to 8.5 |
| Limit | 84.5 | 25.0 | 2,112.5 | 25.0 | 2,112.5 | 1.0 | 84.5 | 200 | N/A | 6.0 to 9.5 |
| Compliance Assessment Basis | Daily Average | Monthly Average | Annual Average | Monthly Average | Annual Average | Monthly Average | Annual Average | Monthly Geometric Mean Density | Monthly Average | At all times |
| January | 53.4 | 6.5 | | 9.9 | | 0.3 | | | 4.7 | 7.2 |
| February | 48.7 | 8.4 | | 10.0 | | 0.4 | | | 6.4 | 7.2 |
| March | 52.3 | 34.5 | | 17.5 | | 0.5 | | | 13.7 | 7.3 |
| April | 89.1 | 19.3 | | 14.7 | | 0.3 | | 6 | 8.4 | 7.5 |
| May | 86.0 | 6.6 | | 10.3 | | 0.3 | | 51 | 4.9 | 7.6 |
| June | 66.7 | 6.4 | | 9.8 | | 0.3 | | 34 | 5.5 | 7.4 |
| July | 79.1 | 3.8 | | 6.1 | | 0.2 | | 45 | 2.7 | 7.4 |
| August | 66.9 | 2.9 | | 4.6 | | 0.2 | | 25 | 1.6 | 7.4 |
| September | 64.5 | 3.7 | | 7.9 | | 0.2 | | 47 | 1.3 | 7.2 |
| October | 64.6 | 5.6 | | 10.7 | | 0.4 | | 76 | 4.9 | 7.3 |
| November | 62.5 | 4.9 | | 8.5 | | 0.3 | | | 3.3 | 7.4 |
| December | 56.7 | 7.1 | | 9.7 | | 0.4 | | | 5.7 | 7.2 |
| **Annual Average** | **66.0** | **9.1** | **603.1** | **10.0** | **658.0** | **0.3** | **20.9** | | **5.3** | **7.3** |

**Table 3: Flows Received**

| Month | Influent Volume (ML) | Total Precipitation (mm) | Maximum Daily Flow (MLD) | Average Daily Flow (MLD) |
|---|---|---|---|---|
| January | 1,654 | 20 | 120 | 53.4 |
| February | 1,363 | 20 | 135 | 48.7 |
| March | 1,622 | 21 | 128 | 52.3 |
| April | 2,674 | 102 | 257 | 89.1 |
| May | 2,666 | 17 | 145 | 86.0 |
| June | 2,002 | 87 | 150 | 66.7 |
| July | 2,452 | 131 | 274 | 79.1 |
| August | 2,075 | 34 | 132 | 67.0 |
| September | 1,934 | 40 | 120 | 64.5 |
| October | 2,002 | 59 | 137 | 64.6 |
| November | 1,875 | 18 | 124 | 62.5 |
| December | 1,759 | 33 | 127 | 56.7 |
| **Total** | **24,079** | **581** | | |
| **Average** | **2,007** | | | **66.0** |

**Table 4: Sludge Dewatering Results**

| Month | Sludge to Dewatering ($m^3$/day) | Total Sludge Dewatered ($m^3$) | Biosolids Generated (tonnes) |
|---|---|---|---|
| January | 233 | 7,212 | 591 |
| February | 250 | 6,991 | 560 |
| March | 205 | 6,367 | 511 |
| April | 231 | 6,918 | 696 |
| May | 256 | 7,947 | 891 |
| June | 205 | 6,138 | 644 |
| July | 222 | 6,877 | 747 |
| August | 205 | 6,363 | 697 |
| September | 199 | 5,960 | 662 |
| October | 242 | 7,488 | 765 |
| November | 227 | 6,806 | 601 |
| December | 250 | 7,735 | 651 |
| **Average** | **227** | | |
| **Total** | | **82,802** | **8,015** |

# Staff Organization

## INFRASTRUCTURE AND OPERATIONS

**Commissioner -** Kayla Dixon (Acting), P.Eng., MBA

**Policy & Research Analyst –** Julie Wiejak, Jessica Strobel

**Program Lead - Asset Management -** Amy Coomes

**Climate Adaptation Coordinator –** Jacob Porter

**Communications Officer –** Ian Kaufman (Acting), Amanda Nason

**Technology Management Specialist -** Henry Connor

## ENVIRONMENT DIVISION

**Director –** Michelle Warywoda, P. Eng.

**Program Administrator -** Katrina Hotson, Zena Ariganello, Patrizia Charrette

**Chief Chemist –** Ian Morgan, Ph.D., P. Chem., C. Chem.

**Manager – Compliance & Quality Control –** Gary Person

**Planning & Research Analyst –** Jared Kreiner

**Process Engineers -** Walter Turek, P. Eng., Kirsten Maki, P.Eng.

**Training & Quality Assurance Coordinator –** Shelby Jaspers

**Quality Control & Training Specialist -** Marc Leschuk, P.Eng., Patrick McGuire

**Water and Wastewater Engineer –** Joshua Daniels, P. Eng.

## WATER POLLUTION CONTROL PLANT

**Plant Superintendent –** Lindsay Menard, P. Eng., PMP

**Supervisor, Maintenance –** Dan Currie

**Supervisor, Operations –** Rick Sutton

**Accounting & Administration Clerk –** Kristie Fisher

**Electrical Lead** – Rob Farwell (Acting)

**Project Manager -** Mike Brown

**Maintenance Lead –** Thane Gagnon

**Lead Operator –** Keenan Colosimo

**Environmental Inspector –** Patrick McGuire, Brett Rizzuto

**Janitor/Handyworker –** Darrin White

**Laboratory Technicians -** Julie Carlin, Brett Rizzuto, Ashlyn Smith

**Millwrights –** Thane Gagnon, John Hrycyk, Warren Perry, Mat Prien

**Operators –** Shane Bureau, Philip Kennedy, Cody Lane, Patrick Melanson, Marcus Uliana, Hunter Tollefsen, Joe Pobihushchy, Daniel Jedruch,

**Plant Electrician –** Andrew van Eeden

## WASTEWATER COLLECTION

**Superintendent – WD & WWC -** David Warwick

**Supervisors, Operations & Maintenance -** David Briand, Kyle Kawahara, Dan Lavoie (Acting), Adam Oatman

**Supervisor, Contract Project Services -** Jordan Cook

**Lead Operators –** Devon Blair, Rob Coggin, Lloyd Hamilton, Dan Lavoie, Stephen Leisander, Mike Sacino, Eric Sokk, Niel Watts

**Skilled Sewer & Water Workers –** David Breiland, Luc Connell, Matthew Donio, Jamie Fabiano, Ryan Faid, Luca Ferriolo, Bob Gashinski, Paul Kassa, Ben Kmill, Travis Lewis, Brian Ogima, Patrick Rivest, Alex Rollason, Tyler Squier, Dave Tremonti

**Equipment Operator I -** Kris Blomquist, Chris Fenton, Chelsea Lyons, Don McCall

**Equipment Operator II -** Lee Campbell, Vince Cuglietta, Sean McEachran, Rylan Yawney

**Equipment Operator III -** Brad Doran, Bob Wyllychuk

**Turnkey –** Craig Drabit

**Utility Plumber –** Paul Fennell

**Water Distribution & Wastewater Collection Operators –** Kell Brett, Chris Bruno, Jeremy Hansen, Derek Kantyluk, Devlyn McGuire, Shane Rinne, Blair Sakiyama, Amanda Suttie, Melanie Swistun, Neil Taylor, Tom Tronsen

PART 2

# WASTEWATER COLLECTION

ANNUAL REPORT

2025

# Introduction - Collection

The City of Thunder Bay's Wastewater Collection System is governed by the Ministry of the Environment, Conservation and Parks (MECP) and is also subject to federal legislation. The Wastewater Collection System collects and conveys wastewater within Thunder Bay's urban boundary to the ultimate point of treatment.

This report was prepared in accordance with the requirements of the Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) Number 024-W601, dated May 21, 2024, for The City of Thunder Bay's Wastewater Collection System, Schedule E, Section 4.6. This report covers the operating period from January 1, 2025, to December 31, 2025.

## OVERVIEW

The City of Thunder Bay's Wastewater Collection System consists of works for the collection and transmission of sewage, including approximately 560 km of collection mains (including trunk sewers, separate sewers), approximately 35,000 service connections, 11 km of forcemains, less than 1 km of combined sewers, and four sewage pump stations with ultimate discharge into the Atlantic Avenue Water Pollution Control Plant (WPCP). The system is operated and maintained by the City of Thunder Bay's Infrastructure and Operations, Environment Division.

# Summary and Interpretation of Monitoring Data

## PUMP STATIONS

The City of Thunder Bay operates four sewage pump stations, known as Adelaide Sewage Pumping Station, Current Avenue Sewage Pumping Station, Montreal Street Sewage Pumping Station and Prince Arthur's Landing Sewage Pumping Station. WPCP Supervisory Control and Data Acquisition (SCADA) system controls and continuously monitors pump station operations.

**Table 5: Pump Station - Monthly Average Daily Volume ($m^3$)**

| Monthly Average Daily Volume $m^3$ | | | | |
|---|---|---|---|---|
| **Month** | **Adelaide** | **Current Ave** | **Montreal St** | **Prince Arthur's Landing** |
| January | 3.56 | 1.27 | 51.44 | 158.27 |
| February | 4.33 | 1.67 | 5.41 | 185.33 |
| March | 8.64 | 2.02 | 6.43 | 168.11 |
| April | 10.59 | 5.03 | 23.23 | 158.58 |
| May | 7.86 | 4.40 | 22.64 | 188.71 |
| June | 6.12 | 2.21 | 11.99 | 203.43 |
| July | 6.97 | 3.09 | 26.33 | 201.81 |
| August | 7.56 | 1.96 | 79.58 | 193.05 |
| September | 5.68 | 1.85 | 89.54 | 87.90 |
| October | 6.13 | 2.42 | 87.11 | 89.59 |
| November | 5.59 | 2.00 | 53.56 | 74.55 |
| December | 5.48 | 1.78 | 78.91 | 140.85 |

**Table 6: Pump Station - Annual Volume ($m^3$)**

| **Total Annual Pumped Volume ($m^3$)** | **Adelaide St.** | **Current Ave.** | **Montreal St.** | **Prince Arthur's Landing** |
|---|---|---|---|---|
| | 2377.20 | 896.10 | 17326.90 | 56275.00 |

### COLLECTION SYSTEM

Sanitary Sewer Overflow (SSO) points are equipped with instrumentation equipment to continuously monitor for high level and potential overflow, using either the WPCP SCADA system or via a monitored inline level sensor. Control and monitoring equipment are maintained according to manufacturers' requirements. The level in the existing Combined Sewer Overflow (CSO) point is continuously monitored via an inline velocity sensor that is maintained according to manufacturers' requirements.

The City of Thunder Bay uses temporary level sensing equipment at select locations in the collection system to review collection system flows periodically.

# Description of Operating Problems and Corrective Actions

The Collection System saw no notable operating challenges or problems in 2025.

# Summary of Calibration and Maintenance Program

### PUMP STATIONS

Normal pump station operation is automated by use of electronics, electro-mechanical devices and programmable logic controllers (PLCs). Real time condition data is monitored by a SCADA system at the WPCP, and physical station inspections are completed regularly by WPCP personnel. Station alarms notify WPCP personnel, who attend the stations as required, and keep logs of alarms and actions relating to the stations.

### COLLECTION SYSTEM

- Approximately 11 km of Sanitary Sewer was inspected by a third-party contractor in 2025.
- Weekly and bi-monthly sewer inspections at key locations also took place.
- As a result of Sewer calls and Inspections, 46 sewer mains were cleaned in 2025 due to restricted flow.

**Table 7: Sewer Main Cleaning**

| Sewer Main Cleanings | | | |
|---|---|---|---|
| **Date** | **Location** | **Date** | **Location** |
| 05-Jan-25 | Ibbetson St. | 17-Jul-25 | Hull St. |
| 18-Jan-25 | Hodder Ave. | 28-Jul-25 | Topaz Cr. |
| 29-Jan-25 | Memorial Ave. | 29-Jul-25 | Van Horne/Ruttan St. |
| 11-Feb-25 | Court St. N. | 06-Aug-25 | Yonge and Amelia St. |
| 04-Mar-25 | Dorothy St. | 16-Aug-25 | Cameron St. |
| 11-Mar-25 | McPherson St./ Pacific Ave. | 23-Aug-25 | Cameron St. |
| 16-Apr-25 | Marina Park | 25-Aug-25 | Cameron St. |
| 16-Apr-25 | Sleeping Giant Parkway | 29-Aug-25 | George St. |
| 17-Apr-25 | Sleeping Giant Parkway | 04-Sep-25 | Amelia and Yonge |
| 19-Apr-25 | PAL Pumping Station | 05-Sep-25 | Christina St. E. |
| 21-Apr-25 | St. Paul St. | 16-Oct-25 | Pine St. |
| 22-Apr-25 | Memorial and Central Ave. | 22-Oct-25 | John St. Rd. |
| 27-Apr-25 | Darwin Cr. | 22-Oct-25 | Park Ave. |
| 28-Apr-25 | Rockwood Ave. S. | 23-Oct-25 | Stephens St. |
| 28-May-25 | Court St. N. | 23-Oct-25 | Marks St. S. |
| 30-May-25 | Franklin St. N. | 15-Nov-25 | Cumberland St. N. |
| 08-Jun-25 | David St. | 16-Nov-25 | Manion Pl. |
| 09-Jun-25 | Marks St. S. | 20-Nov-25 | Strathcona Ave. |
| 10-Jun-25 | Cuyler St. | 21-Nov-25 | Ford St. N. |
| 11-Jun-25 | Prescott Cr. | 02-Dec-25 | Adelaide St. |
| 17-Jun-25 | McLaughlin St. | 05-Dec-25 | Sixth Ave. |
| 26-Jun-25 | Clayte St. | 20-Dec-25 | Victoria Ave. E. |
| 08-Jul-25 | Memorial Ave. | 23-Dec-25 | Ray Blvd. |

# Summary of Complaints and Responses

The City of Thunder Bay's Wastewater Collection (WWC) staff responded to 922 calls for sewer issues in 2025. Many of these calls were related to sewage back-ups in private residences. Each complaint was investigated by WWC staff. Some incidents were identified as private plumbing issues unrelated to the City of Thunder Bay's infrastructure. Several issues required maintenance and repairs by WWC staff including, plunging, band-rodding, root treatments and auguring of sewer laterals.

# Summary of Alterations to the Authorized System

## Burwood Rd

Installation of a new 600 mm diameter PP Sanitary Sewer from the intersection of Burwood Road and Oliver Road southerly down Burwood Road, approximately 516 m in length.

## Cumberland St

Replacement of 332 m of existing 250 mm sanitary sewer with a new 250 mm PVC sanitary sewer on Cumberland St between McVicar and Tupper St. This contract also included roof leader disconnects

## High St

Replacement of 571 m of existing 250 mm sanitary sewer with new 250 mm PVC sanitary sewer on High St. between River St and Van Norman St.

## Leith St

The replacement of the existing sanitary sewer on Leith St from May St to Simpson St. The work consists of replacing 300 m of existing 300mm sanitary sewer with new 250 mm sanitary sewer.

## Simpson St

The work includes the replacement of 575 m of existing 700 mm x 900 mm sanitary sewer with new 300mm sanitary sewer.

## TBRHSC Sanitary Sewer Realignment

Approximately 110 m of realigned 750 mm diameter concrete sanitary sewer installed within the City of Thunder Bay registered sewer easement on Thunder Bay Regional Health Sciences Centre property.

# Summary of Collection System Overflows and Spills of Sewage

The City of Thunder Bay did not experience any CSO, overflows or bypass events in the linear collection system. The City of Thunder Bay developed a webpage in 2025 that provides information regarding CSO, SSO, and WPCP overflows and bypasses.

There was one spill of sewage on October 7, 2025. While clearing a blockage in a 250 mm diameter sanitary sewer on Hodder Ave, a brief sewer surcharge occurred, causing sewage to be spilled onto the roadway and into storm catch basins; the sewage ultimately discharged overland to the environment at an outfall located approximately at the intersection of Strathcona Ave and Arundel St. The City of Thunder Bay notified the Spills Action Centre and completed cleanup and remediation, including cleaning affected streets, storm infrastructure, and approximately 40 m of the outfall.

# Summary of Efforts Made to Reduce Overflows and Spills

The City of Thunder Bay's Pollution Prevention and Control Plan (Phase 2) was developed around 1999, which has been used to guide sanitary sewage system infrastructure planning and investments, including sanitary and storm system separation efforts. In 2025, approximately 200 m of storm sewers were separated, including 2 catch basins and as of 2026 we should consider no sewers remaining for separation.

In 2022, the City of Thunder Bay implemented a Restaurant Inspection Program aimed at the proactive prevention of fats, oils, and greases (FOG) discharges into the sanitary sewer system. The online reporting program is free to use for every food service establishment in the city. Through online grease interceptor reporting, routine inspections, education, and increased awareness of the risks and consequences of improper disposal, the program seeks to reduce the incidence of FOG-related sanitary sewer blockages.

Additionally, WWC operators perform routine sewer inspections to confirm the proper operation of sanitary sewers. This allows the City of Thunder Bay to identify and address issues early to avoid any potential spills or overflows.

The City of Thunder Bay is continuing to identify and disconnect roof leaders from the sanitary sewer system as part of construction projects.

# 2025

Thunder Bay | Environment Division

# Atlantic Avenue Water Pollution Control Plant

WATER POLLUTION CONTROL PLANT

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