



HUMBER TREATMENT PLANT

2025 Annual Report



March 31, 2026

EXECUTIVE SUMMARY

The Humber Treatment Plant (HTP) is one of four wastewater treatment facilities operated by the City of Toronto. This facility, located at 130 The Queensway, has a rated capacity of 473,000 m³/day or 473 ML/day, and serves an equivalent population of approximately 662,000. HTP discharges into Lake Ontario and operates under Amended Environmental Compliance Approval No. 9032-ABZNYQ, issued on July 21, 2016.

The average daily flow rate in 2025 was 271.8 ML/day. Influent concentrations of Biochemical Oxygen Demand (BOD), Total Phosphorus (TP) and Total Suspended Solids (TSS) averaged 260.6 mg/L, 5.5 mg/L and 316.3 mg/L, respectively.

HTP achieved the following effluent quality and loading rates in 2025 in comparison to ECA limits:

Parameter	ECA ¹	2025 Final Effluent
Total Suspended Solids (TSS)	25.0 mg/L	7.1
Carbonaceous Biochemical Oxygen Demand (CBOD ₅)	25.0 mg/L	4.6
Total Phosphorus (TP)	1.0 mg/L	0.6
Escherichia Coli (E. Coli) ²	200 CFU/100mL	17
pH	6.0-9.5	6.8
Total Residual Chlorine (TRC) (Dechlorination)	0.02 mg/L	0.01
TP Loading Rate	473.0 kg/day	150

¹ Referenced from Condition 6 and 7 of ECA No. 9032-ABZNYQ, issued on July 21, 2016.

² Arithmetic mean of monthly geometric mean data.

The HTP met the compliance limits specified in Condition 7 of the ECA throughout 2025.

Sludge generated at the HTP is transferred to the Ashbridge Bay Treatment Plant via the Mid-Toronto Interceptor (MTI) for further treatment and disposal. During 2025, an average of 3748.9 m³/day of waste activated sludge was removed from the system. Of this, 3157.3 m³/day was thickened and stabilized prior to transfer and 591.6 m³/day was transferred directly. An average of 47.48 dry tonnes of biosolids and waste activated sludge was transferred per day.

Ferrous chloride consumption for phosphorus removal totalled 263.8 tonnes as iron (Fe). There was no polymer consumption for waste activated sludge (WAS) thickening. Total sodium hypochlorite (12% w/v) consumption for disinfection totalled 3333.7 m³. Sodium Bisulphite (SBS) (38% w/w) consumption for effluent dechlorination totalled 547.3 tonnes.

There were seven (7) bypass occurrences in 2025 where each occurrence received preliminary, primary treatment, nutrient removal, as well as disinfection and dechlorination before being blended with fully treated plant effluent and exiting the plant through the plant outfall, upstream of the final effluent sampling point.

The plant continued with various capital projects. Notable projects included: Secondary Treatment Upgrades, Operations Centre Upgrades, Digesters 2 and 3 Upgrades and Repair, Primary Pumping and Scum Systems Upgrades, Security Upgrades, Gas Compressor Project, Collector Replacement Project, Biofilter Study, Blower Upgrades, Preliminary Treatment Improvements, and Plant Rehabilitation and Services Upgrades, Preliminary Conveyor Upgrades. A variety of scheduled, preventative, predictive and reactive maintenance activities was performed, including annual calibration of effluent monitoring equipment.

Total annual consumption of potable water, hydro, and natural gas was 260,575 m³, 40.2 M kWh, and 1.5 M3, respectively. Direct operating cost for 2025 totalled \$19.88 M. In 2025, the HTP had a staffing compliment of 61 employees. As of December 31, 2025, there were two (2) health and safety incidents and four (4) lost time days due to work related injuries in 2025.

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GLOSSARY OF ABBREVIATIONS

AAC	Annual Average Concentration
BOD5	Five-Day Biochemical Oxygen Demand
CBOD5	Five-Day Carbonaceous Biochemical Oxygen Demand
CEU	Continuing Education Units
CFU	Colony Forming Units
DAF	Dissolved Air Flotation
E. Coli	Escherichia Coli
ECA	Environmental Compliance Approval
Fe	Iron
HTP	Humber Treatment Plant
HRT	Hydraulic Retention Time
kg	kilogram
kWh	Kilowatt-hour
MAC	Monthly Average Concentration
MGMD	Monthly Geometric Mean Concentration
m ³	Cubic metre
m ³ /day	Cubic metre per day
mg/L	Milligrams per litre
mL	Millilitre
ML	Megalitre (million litres)
MECP	Ministry of the Environment, Conservation and Parks
O/S	Out of Service
Q	Flow Rate
RAS	Return Activated Sludge
SBS	Sodium Bisulphite
scm	Standard Cubic Meters
SS	Suspended Solids
TRC	Total Residual Chlorine
TP	Total Phosphorus
TS	Total Solids
TSS	Total Suspended Solids
TVS	Total Volatile Solids
TWAS	Thickened Waste Activated Sludge
µg/L	Micrograms per litre
WAS	Waste Activated Sludge
% w/v	Percent concentration of components of a solution expressed as weight by volume
% w/w	Percent concentration of components of a solution expressed as weight by weight

Definitions

Bypass: A bypass is defined as a diversion of sewage around one or more-unit processes within the plant with the diverted sewage flows being returned to the plant treatment train upstream of the final effluent sampling location and discharging to the environment through the plant outfall.

Overflow: An overflow is defined as a discharge to the environment from the plant at a location other than the plant outfall downstream of the final effluent sampling station.

Spill: A spill is defined within the meaning of Part X of the Environmental Protection Act. "Spill", when used in reference to a pollutant, means a discharge,

- a) into the natural environment,
- b) from or out of a structure, vehicle or other container, and
- c) that is abnormal in quality or quantity considering the discharge.

Abnormal Discharge: A discharge of a pollutant designated by the regulations at a location designated by the regulations shall be deemed to be in a quantity or with a quality abnormal at the location. R.S.O. 1990, c. E.19, s. 91 (2).

$$\text{Loading} \left(\frac{\text{kg}}{\text{day}} \right) = \text{Concentration} \left(\frac{\text{mg}}{\text{L}} \right) \times \text{Flow} \left(\frac{\text{ML}}{\text{day}} \right)$$

$$\text{Percent Removal} (\%) = 1 - \frac{\text{Concentration (Final)}}{\text{Concentration (Initial)}}$$

$$\text{Aeration Loading} = \left(\frac{\text{kg cBOD}}{\text{m}^3 \text{ aeration capacity}} \right) = \frac{(Q_{\text{Primary Effluent}} + Q_{\text{RAS}}) \times [\text{cBOD}_5_{\text{primary effluent}}]}{V_{\text{aeration Tanks}}}$$

$$\text{Solids Capture} (\%) = \frac{\text{Centrifuge Feed TS} - \text{Centrate TSS}}{\text{Centrifuge Feed TS}} \times 100$$

1 INTRODUCTION

The HTP is one of four wastewater treatment facilities operated by the City of Toronto under the responsibility of the Wastewater Treatment section of Toronto Water. The facility is located at 130 The Queensway, on the border of the old City of Toronto and former City of Etobicoke near the mouth of the Humber River. This area contains an estimated connected population of 662,000¹. The HTP has a rated capacity of 473,000 m³ per day or 473 ML/day.

Major treatment processes and equipment include screening and grit removal, primary treatment, secondary treatment, phosphorus removal with ferrous chloride, final effluent disinfection using sodium hypochlorite, and final effluent dechlorination using sodium bisulphite. Solids handling processes include stabilization by anaerobic digestion. The solids stabilized in these processes are primary (or raw) sludge as well as waste activated sludge thickened using high speed centrifuges. Treated effluent is discharged to Lake Ontario. Sludge (anaerobically digested solids and non-thickened waste activated sludge) is transferred to the Ashbridge Bay Treatment Plant for disposal via the Mid-Toronto Interceptor (MTI). Numerous auxiliary systems are required for the proper operation of plant processes and include potable water, process water, HVAC, SCADA, electrical power distribution, natural gas, and instrument air. Odour control is achieved by treating air through biofilters and granular activated carbon (GAC) filters located throughout the plant.

The Ministry of the Environment, Conservation and Parks (MECP) has classified the HTP as a Class IV wastewater treatment facility under Regulation 129/04. The facility operates under Amended Environmental Compliance Approval No. 9032-ABZNYQ (July 21, 2016).

This report is a summary of plant operations and performance in 2025. Highlights of the report include a discussion of effluent quality and summaries of plant operations and maintenance, chemical and utility consumption, capital projects, operational costs and human resources.

¹ Population estimated by sewershed delineation using 2021 census data

2 PLANT PROCESS OVERVIEW

A description of the plant process is included below. A plant process flow diagram is available in Appendix A. Additional information regarding the plant process can be found on the City of Toronto website².

2.1 Influent

Wastewater from the Queensway Sanitary Trunk Sewer and Humber Sanitary Trunk Sewer flows to the plant to a common influent channel. A portion of the HTP sewer shed consists of combined sanitary and storm sewers, causing plant influent to be sensitive to wet weather events.

2.2 Preliminary Treatment

Raw wastewater enters the Headworks for grit and screenings removal. Bar screens with 12 mm openings remove rags and debris. Ferrous chloride is applied to the distribution conduits to the Grit system for the first stage of phosphorous removal. Grit is removed in grit vortex chambers and aerated grit channels. The removed grit and screenings are hauled to a sanitary landfill site.

2.3 Primary Treatment

Primary Treatment occurs in the Primary Clarification Tanks, where the flow velocity of the wastewater is reduced to allow heavier solids to settle to the bottom and lighter solids float to the top. There are 11 Primary Clarification Tanks. Sludge collectors in the tanks sweep the settled sludge, called primary or raw sludge, into sludge hoppers. Floating solids called scum are collected from the top of the water and swept into scum hoppers. The primary sludge and scum are then pumped out for further treatment and the wastewater, called primary effluent, continues on to secondary treatment.

2.4 Secondary Treatment

The primary effluent receives secondary treatment through a conventional, suspended biomass activated sludge process in the Aeration Tanks. The mixed liquor consists of primary effluent mixed with return activated sludge (RAS), which is removed from the Final Clarification Tanks and contains micro-organisms that naturally occur in wastewater and facilitate its degradation. In the presence of oxygen, these micro-organisms break down organic material in the wastewater. Air is supplied to the Aeration Tanks through nine (9) electrically driven blowers.

² <https://www.toronto.ca/services-payments/water-environment/managing-sewage-in-toronto/wastewater-treatment-plants-and-reports/>

There are a total of eight (8) Aeration Tanks each equipped with fine bubble dome diffusers. Ferrous chloride is applied at the end of the aeration tanks prior to the Final Clarification Tanks for the second and final stage of phosphorous removal.

The mixed liquor from the Aeration Tanks flows to 21 Final Clarification Tanks, where the Activated Sludge is allowed to settle. A controlled quantity of this sludge is returned to the Aeration Tanks as RAS to maintain a sufficient biomass concentration. The excess is removed as Waste Activated Sludge (WAS) and thickened using centrifuges.

2.5 Final Effluent

Sodium Hypochlorite is used to disinfect and kill pathogens in the final effluent. Sodium Bisulphite (SBS) is added after disinfection to remove excess chlorine (dechlorinate) from the wastewater, helping to protect the aquatic environment. The final effluent is discharged to Lake Ontario. The plant uses direct measurement of Total Residual Chlorine (TRC), in the final effluent for monitoring and compliance.

2.6 Solids Handling

Primary sludge and scum, from the Primary Clarification Tanks, is first fed into primary anaerobic digesters. Secondary WAS, from the Secondary Clarification Tanks, is thickened through centrifugation before it is also fed into primary digesters, where it undergoes the same process as primary sludge. Centrifugation reduces the volume of sludge by separating solids from liquid. The Thickening process consists of seven centrifuges. WAS may also be pumped directly to the ABTP via the MTI.

Anaerobic digestion is the biological degradation (stabilization) of organic materials (sludge and scum) in the absence of oxygen – it reduces volume of solids, destroys pathogens and mitigates sludge odour. The process produces digester gas, made up predominantly of methane. This gas is used as a supplementary fuel for plant needs, including process and space heating and the generation of electricity via two cogeneration engines, thereby reducing the plant's operating costs and carbon footprint. The digesters are operated in the mesophilic temperature range (34 – 38°C). The target operating temperature for the digesters is 36°C.

The resulting anaerobically digested sludge (biosolids) is subsequently transferred to the secondary digesters for storage, until it is ultimately transferred to the Ashbridge Bay Treatment Plant via the MTI for further treatment.

3 PROCESS SUMMARY

3.1 Process Parameters

In 2025, the HTP continued to produce a high-quality effluent. A summary of key final effluent parameters against the ECA objectives and limits are shown in Table 1. Regulated parameters are highlighted. Influent and effluent performance charts are available in Appendix B. Historical performance data is included in Appendix C.

Table 1: Final Effluent Parameters

Parameter	cBOD ₅ (mg/L)	TSS (mg/L)	TP (mg/L)	Chlorine Residual (mg/L)	E-Coli (count/100mL)	pH	
						Min	Max
January	6.1	8.9	0.6	0.01	10	6.6	7.8
February	6.3	8.4	0.7	0.01	5	6.6	7.2
March	6.1	7.6	0.3	0.01	40	6.7	7.1
April	5.2	8.0	0.4	0.01	14	6.6	7.6
May	3.3	4.8	0.3	0.01	3	6.6	7.6
June	3.6	7.8	0.5	0.02	9	6.5	7.1
July	4.5	6.7	0.6	0.00	18	6.6	7.0
August	3.2	5.2	0.6	0.01	2	6.4	7.0
September	3.7	7.3	0.7	0.01	13	6.6	7.3
October	4.2	7.5	0.7	0.01	37	6.6	7.0
November	3.9	5.7	0.5	0.01	6	6.5	7.0
December	5.0	8.0	0.8	0.01	38	6.5	7.4
Annual Average	4.6	7.1	0.6	0.01	17.	6.8	
Loading ¹ (kg/d)	1241	1935	150.1	N/A	N/A	N/A	N/A
Removal Efficiency ² (%)	98%	98%	90%	N/A	N/A	N/A	N/A
ECA Requirements^{3,4}							
Effluent Objective	ACC: 15.0 mg/L	ACC: 15.0 mg/L	MAC: 0.9 mg/L	MAC: Non- detectable	MGMD: 150 CFU/100 mL	6.5 - 8.5	
Effluent Limit	ACC: 25.0 mg/L	ACC: 25.0 mg/L	MAC: 1.0 mg/L	MAC: 0.02 mg/L	MGMD: 200 CFU/100 mL	6.0 - 9.5	
Effluent Loading Limit			473 kg/day	N/A	N/A	N/A	

¹Loading is calculated based on the flow rates as provided in Table 2.

²CBOD = 0.8 * BOD assumed for removal efficiency calculations

³Referenced from Amended Environmental Compliance Approval No. 9032-ABZNYQ, issued on July 21, 2016.

⁴AAC refers to Annual Average Concentration, MAC refers to Monthly Average Concentration, MGMD refers to Monthly Geometric Mean Density, and AAL refers to Annual Average Daily Loading.

Influent and Final effluent concentrations of 11 select heavy metals have been included in Appendix D. Any discharge into City sewers must meet the sewer use By-law limits. Final effluent concentrations are presented to assess the treatment plant's removal capacity.

A summary of the annual averages of process parameters over the past three years are shown in Table 2.

Table 2: Process Summary

Parameter	Units	2025	2024	2023	2022
Influent Parameters					
Flow	ML/day	271.8	286.5	280.3	255.6
Total Annual Flow	ML	99,206	104,872	102,591	93,312
Total Suspended Solids (TSS)	mg/L	316.3	304.6	350.1	386.3
Biological Oxygen Demand (BOD)	mg/L	260.6	239.4	247.2	279.4
Total Kjeldahl Nitrogen (TKN)	mg/L	41.9	34.5	37.3	39.0
Total Phosphorus (TP)	mg/L	5.48	5.3	5.2	5.3
Preliminary Treatment					
Grit and Screenings	Tonnes/day	2.2	2.9	2.7	2.8
Primary Treatment					
TSS	mg/l	89.16	89.9	109.7	105.7
cBOD5	mg/L	149.5	136.1	125.3	151.3
Secondary Treatment					
Aeration Loading	kg CBOD ⁵ /m ³ ·day	0.44	0.42	0.38	0.42
Mixed Liquor Suspended Solids	mg/L	2894	3221	3321	3734
Solids Handling					
Primary Sludge Treated	m ³ /day	1,945	2,418	2,473	2,241
Primary Sludge TS	%	2.5	2.1	2.0	2.2
Primary Sludge TVS	%	82.8	81.3	70.0	73.6
WAS to Thickening	m ³ /day	3,157	3,713	2,567	5,609
WAS transferred to Ashbridges Bay	DT/day	5	3	8	2
Biosolids Transferred to Ashbridges Bay	DT/day	43	54	64	70
Biosolids TS	%	1.51	1.70	1.97	2.27
WAS SS	mg/L	8,330	9,055	8,669	7,839
TWAS TS	%	3.3	3.8	3.4	4.4
TWAS TVS	%	80.9	78.8	78.7	79.2
TWAS Treated	m ³ /day	818	612	477	680
Volume to Digestion	m ³ /day	2763	3030	2949	2,921
Digester Hydraulic Retention Time	days	13.7	16.5	12.9	13.0
Organic Loading to Digesters	TVS/m ³ /day	1.9	1.9	1.5	1.9
Digester Gas Volume	m ³ /day	31,242	31,551	31,612	31,640

¹Flow monitoring is provided by influent flow meters. There are no effluent flow meters due to infrastructure limitations. There is no appreciable difference between influent and effluent flow rates at the HTP.

Influent flow to the HTP decreased by 5.4% in 2025. The influent quality showed a slight increase – TS, TP, TKN and BOD increased by 3.8%, 4.2%, 10.3% and 8.9% respectively.

Final effluent annual average concentration for cBOD, TSS, and TP were 4.6 mg/L, 7.1 mg/L, and 0.6 mg/L, respectively, and met the compliance limits specified in Condition 7 of the ECA throughout 2025. The final effluent annual average for e. Coli monthly geometric mean density in 2025 was 17 CFU/100 mL. Final effluent pH remained between the range of 6.0 – 9.5 throughout the course of 2025.

The HTP encountered no chronic operating problems and continued to produce quality effluent through the continued improvement of operations and maintenance of treatment processes.

3.2 Biosolids Management

All sludge generated at the HTP is transferred to the Ashbridges Bay Treatment Plant (ABTP) for further treatment. The sludge generated (WAS and biosolids) and transferred to ABTP during 2025 averaged 47.48 dry tonnes per day. The quantity of sludge generated in 2026 is anticipated to be +/- 10% of the 2025 value. A summary of the digested sludge parameter analysis is included in Appendix E.

3.3 Chemical Usage

Several chemicals are used during the treatment process at the plant. Table 3 outlines the chemical consumption for the current and previous years. Costs listed include applicable taxes. The unit cost for sodium hypochlorite decreased and the cost for ferrous chloride increased substantially in 2025 compared to 2024.

Table 3: Chemical Usage and Chemical Cost Summary

Process	Chemical		2025	2024	2023
Phosphorus Removal	Ferrous Chloride as Fe	Dosage as Fe (mg/L)	2.7	3.4	3.7
		Consumption (tonnes)	263.8	355.4	377.6
		Cost (\$)	693,900	433,575	460,700
Disinfection	Sodium Hypochlorite (12% w/v)	Dosage as Cl (mg/L)	4.48	4.49	4.73
		Consumption (m3)	3333.7	3532.3	3639.5
		Cost (\$)	1,871,195	1,978,088	3,603,112
Dechlorination	Sodium Bisulphite (38% w/w)	Dosage (mg/L)	2.10	2.57	1.96
		Consumption (tonnes)	547.3	710.4	527.9
		Cost (\$)	209,621	271,525	200,603

3.4 Bypasses, Overflows, Spills, and Abnormal Discharge Events

3.4.1 Bypasses

There were 7 secondary bypass events in 2025. The total volume of bypass flow was 360.0ML, or 0.36% of the annual flow. A bypass is defined as a diversion of sewage around one or more unit processes within the plant with the diverted sewage flows being returned to the plant treatment train upstream of the final effluent sampling location and discharging to the environment through the plant outfall. All bypass flow received preliminary, primary treatment, nutrient removal, as well as disinfection and dechlorination and exited the plant through the plant outfall upstream of the final effluent sampling point. Each instance was reported to the MECP Spills Action Center and recorded into the plant's monthly report. Secondary bypasses occur due to high wet weather flows that exceed the plant's secondary treatment capacity. Total precipitation in the Toronto area³ was 706.2 mm in 2025, 18% lower than 2024, and the bypass volume decreased by 34% from the 2024 volume of 1056.5 ML.

³ Adapted from http://climate.weather.gc.ca/historical_data/search_historic_data_e.html, Toronto City Station

Table 4: Bypass Summary

Date	Start of Event	End of Event	Active Duration	Duration (hr)	Volume (m ³)
03-05-2025	18:47	20:10	1.4	1.4	8,195
03-16-2025	14:02	22:30	8.5	8.5	49,016
04/02/2025	20:43	15:15	18.5	18.5	188,593
05/16/2025	6:35	7:16	0.7	0.7	5,000
07/20/2025	5:15	8:00	2.8	2.8	27,048
09/24/2025	21:20	0:05	2.7	2.7	46,550
12/28/2025	21:42	3:30	5.8	5.8	92,853

¹In wet weather the plant may bypass intermittently. The active duration is the period for which the bypass was actively occurring, whereas the duration is the total duration for the event.

3.4.2 Overflows

There were no overflow events at the HTP in 2025. An overflow is defined as a discharge to the environment from the plant at a location other than the plant outfall or into the plant outfall downstream of the final effluent sampling station.

3.4.3 Spills

There were no spills reported to the MECP in 2025. A spill is defined within the meaning of Part X of the Environmental Protection Act.

3.4.4 Abnormal Discharge Events

There were no abnormal discharge events at the HTP in 2025.

3.5 Complaints

The HTP received several complaints related to odour. The first odour complaint was received on June 25, 2025. During investigations, the causes of odours could not be identified within the plant and most likely originated from outside the facility. Later in the year a group of residents reported multiple odour complaints over the course of two months (Sep 17 to Nov 18). All complaints were investigated and the source of odours was not found. 3rd party odour sampling has been undertaken to verify odour control system parameters although no report has yet been received.

All complaints were recorded, investigated by Toronto Water Staff, reported to the MECP. The complainants were advised of the findings of the investigations.

A table of correspondence related to complaints can be found in Table 10.

3.6 Effluent Quality Assurance and Control Measures

Analytical tests to monitor required parameters are performed by the Toronto Water Laboratory which is accredited to ISO/IEC 17025 by Canadian Association for Laboratory Accreditation Inc. Plant operation and performance is monitored by licensed operators as well as by the facility management team. Standard Operation Procedures, emergency plans, equipment preventative and predictive maintenance, and a network of support staff, help ensure a rapid and effective response to issues, and maintain the high quality of the effluent and biosolids. An Integrated Quality Management System emphasizing environmental, and health and safety objectives is also in the early implementation stages across Toronto Water and is expected to further standardize facility operations and improve facility performance.

4 CAPITAL PROJECTS

Under Toronto Water’s capital program, the HTP commenced or continued with the capital works projects and studies listed in Table 5: Capital Projects for 2025.

Table 5: Capital Projects

Project Name	Project Description	Project Stage (Dec 31, 2025)	Estimated Completion (Year)
South Secondary Process Upgrades	Refurbishment of south aeration system including expanded return activated sludge pumping station, new plant water pumping station, new phosphorus removal system.	Completed	2025
Primary Scum and Sludge Upgrades	Upgrade of north primary treatment sludge and scum systems.	Completed	2025
TW Operations Centre	Expansion of the operations centre to meet current and future needs.	Completed	2025
Biofilter Study	Study regarding replacement and upgrades to Humber biofilters and odour scrubbers	Completed	2025
Preliminary Treatment Improvements	Upgrades to odour control grit removal systems.	Completed	2025
Rehabilitation and Services Upgrades	A comprehensive project to rehabilitate and upgrade plant wide process and maintenance support services at the HTP. This will include, the plant hot water system, HVAC, digesters, sludge thickening, south primary treatment, headhouse, north grit, new maintenance shop, secondary treatment and other miscellaneous required upgrades.	Construction	2030
Security Upgrades	Various plant wide upgrades to security including replacement of the exterior fence and CCTVs, upgrades to building access control system and security network.	Construction	2029
Gas Compressor Project	Replacement of all gas compressors, refurbishment of gas compressor building. Replacement of gas compressor electrical distribution	Design	2026
Collector Replacement Project	Refurbishment and replacement of south primary collector equipment	Design	2025
North Secondary Upgrades	A comprehensive project to upgrade north secondary treatment plant end of life equipment.	Design	2031

Blowers Upgrades	Upgrades to air blower system to increase process and cost efficiency.	Design	2030
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5 MAINTENANCE

Staff from the HTP performed a variety of scheduled, preventative, predictive and reactive maintenance activities on a diverse spectrum of equipment. Equipment availability and reliability ensures operational requirements are achieved.

The annual calibration and maintenance records of flow meters and on-line analysers for regulated parameters was completed in 2025 and found to be within acceptable limits. A summary of effluent monitoring equipment calibration and maintenance performed in 2025 is included in Table 6.

Table 6: Summary of Regulated Monitoring Equipment Calibration and Maintenance

Calibration and/or Maintenance Record	Completion Date
Influent Flow Meter THR-PLT-FIT-2001A - Verification	August 23, 2025
Influent Flow Meter THR-PLT-FIT-2003A - Verification	August 23, 2025
Influent Flow Meter THR-PLT-FIT-1012 - Verification	August 19, 2025
Effluent pH analyzer THR-EPS-AIT-0055 - Calibration	Weekly
Effluent temperature analyzer THR-EPS-TIT-0053 - Verification	Weekly
HACH DR3900 Spectrophotometer THR-ELS-INQ-3900 - Calibration	March 6, 2025
Effluent Autosampler THR-FT-SP-0001 - Calibration	Monthly
Influent Auto sampler THR-PLT-SP-0001 - Calibration	Monthly
Aeration Flow Meter- THR-AER-FIT-0105 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0205 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0305 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0402 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0505 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0602 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0702 - Verification	May 24, 2025
Aeration Flow Meter- THR-AER-FIT-0802 - Verification	May 24, 2025

In 2025, there were a total of 13,106 work orders completed; refer to Appendix G for a summary of maintenance activities as per Conditions 10(6)(c) of the ECA. None of the maintenance activities undertaken at the plant fell under Limited Operational Flexibility; as a result, no Notices of Modifications were submitted to the Water Supervisor as per Condition 10(6)(j) of the ECA. Regular safety inspections and preventative maintenance was performed on the life safety systems at the plant in 2025.

6 UTILITIES

A summary of monthly utility consumption for the previous three years at HTP is provided in Figure 1. Table 7 below summarizes the total cost and average unit cost for water, hydro, and natural gas. Total annual consumption of potable water, hydro, and natural gas was 260,575 m³, 40.2M kWh, and 1.5M m³, respectively.

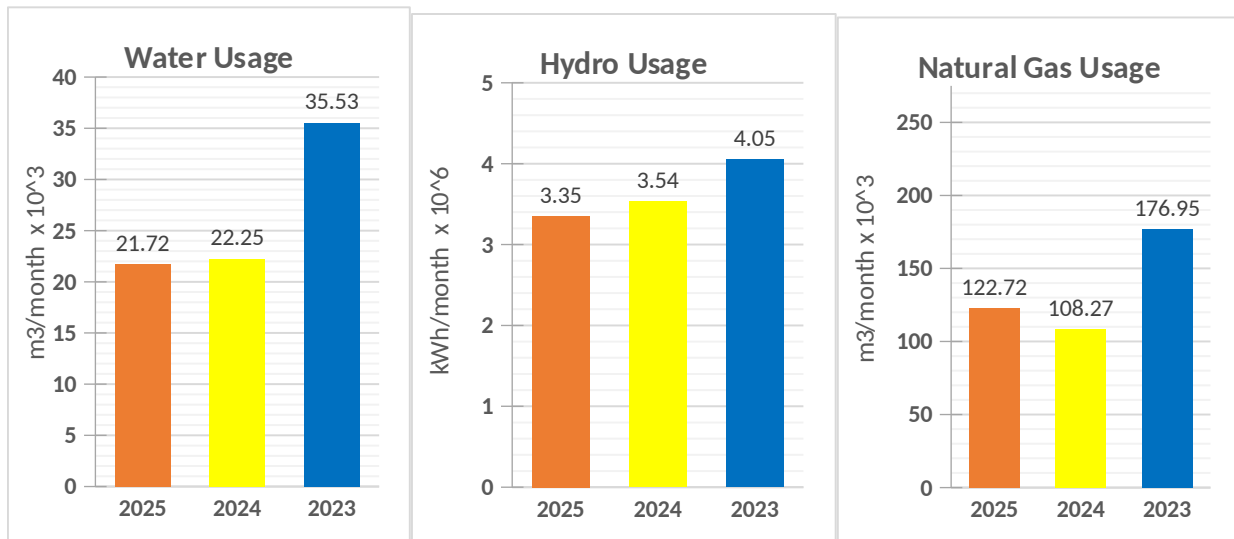


Figure 1: Annual Utility Consumption (Water, Hydro, Gas)

Table 7: Average Unit and Total Utility Cost

Utility	2025	2024	2023
Water Unit Cost (\$/m ³)	\$4.93	\$4.76	\$4.62
Water Total Cost (\$M/year)	\$1.29	\$1.27	\$1.97
Hydro Unit Cost (\$/kWh)	\$0.13	\$0.11	\$0.10
Hydro Total Cost (\$M/year)	\$5.15	\$4.80	\$4.88
Natural Gas Unit Cost (\$/m ³)	\$0.43	\$0.42	\$0.41
Natural Gas Total Cost (\$M/year)	\$0.64	\$0.55	\$0.86

7 ADMINISTRATION

7.1 Operations and Maintenance Costs

The 2025 plant direct operational costs are broken down into five categories: Salaries and Benefits, Materials and Supplies, New Equipment, Services and Rents, and Inter-Divisional Charges. Materials and Supplies is further segregated into Utilities, Machine & Equipment Parts, Chemicals and Other Materials and Supplies. A breakdown of annual operations and

maintenance costs for the past three years is illustrated in Figure 2. Overall, operational costs decreased by 1% from 2024. The cost is similar to the previous year.

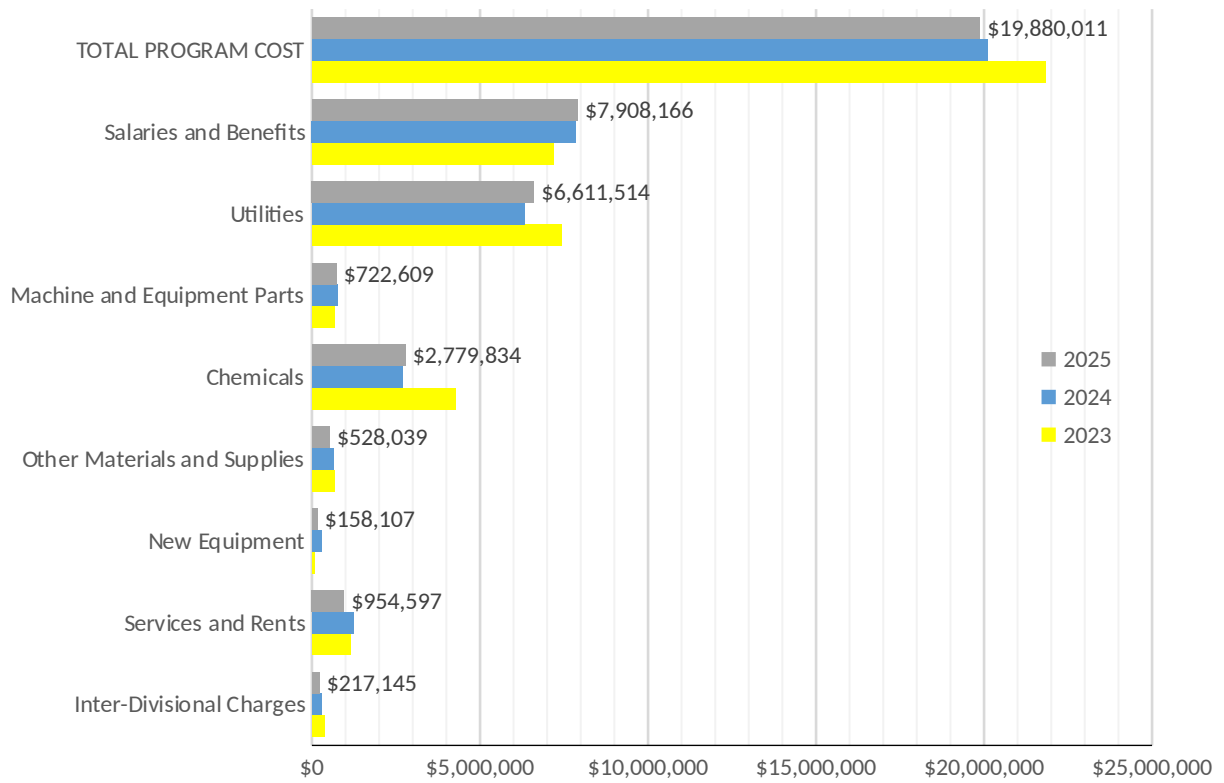


Figure 2: Operations and Maintenance Cost Breakdown

7.2 Human Resources

Plant Staffing at the HTP in 2025 is shown in Table 8.

Table 8: Plant Staffing

Position	Number of FTE
Plant Manager	1
Senior Engineer	1
Engineer	1
Area Supervisors	4
Electrical & Instrumentation Specialist	1
Plant Technicians	18
Industrial Millwrights	17
Millwright Apprentice	2
Co-Op Students	0
Electrical Instrumentation Control Technicians	8
Wastewater Treatment Plant Worker	4
Support/Materials Management Assistants	3
Engineering Technologist	1
Total FTE Positions	61

¹ FTE refers to Full Time Equivalent staff. Seasonal staff are considered 0.5 FTE staff.

7.3 Occupational Health & Safety

Continuous efforts are made to ensure a safe working environment at the HTP. The Joint Health and Safety Committee (JHSC) assists management in resolving issues through regular meetings and monthly workplace inspections. Plant Health and Safety statistics for the HTP are included in Figure 3.

As of December 31, 2025, there were two (2) health and safety incidents, and four (4) lost time days due to work related injuries.

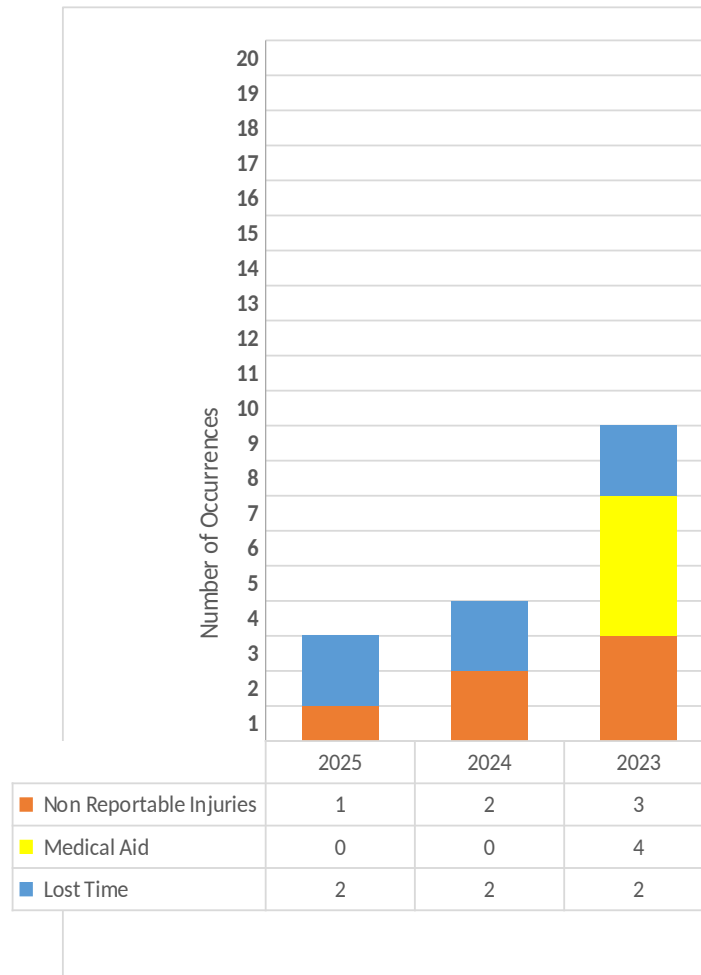


Figure 3: HTP Health & Safety Injury Summary

7.4 Staff Training and Development

The Strategic Planning and Workforce Development unit of Toronto Water facilitates a comprehensive training program for all staff.

Training attended by HTP operations and skilled trades staff in 2025 includes the list of courses shown in Appendix H. Some of these courses were eligible for Continuing Education Units (CEU's) as specified by the Ontario Water and Wastewater Certification Office. Additional training related to the start-up and commissioning of new equipment/systems installed as part of the capital program was provided as required.

7.5 Utility Operator Certification

Toronto Water trains and provides the required resources to ensure all operators achieve and maintain Class IV certifications. In addition, all skilled trade positions are required to achieve and maintain a Class I operator's licence. As part of this initiative, general operational/process

training was delivered to prepare staff for any certification examination that they need to write. Table 9 summarizes the status of operator certification at the HTP in 2025.

Table 9: Wastewater Treatment Certificates

Class Level	Licensed
Class IV	16
Class III	2
Class II	1
Class I	22
O.I.T.	11
Total	52

7.6 MECP Correspondence

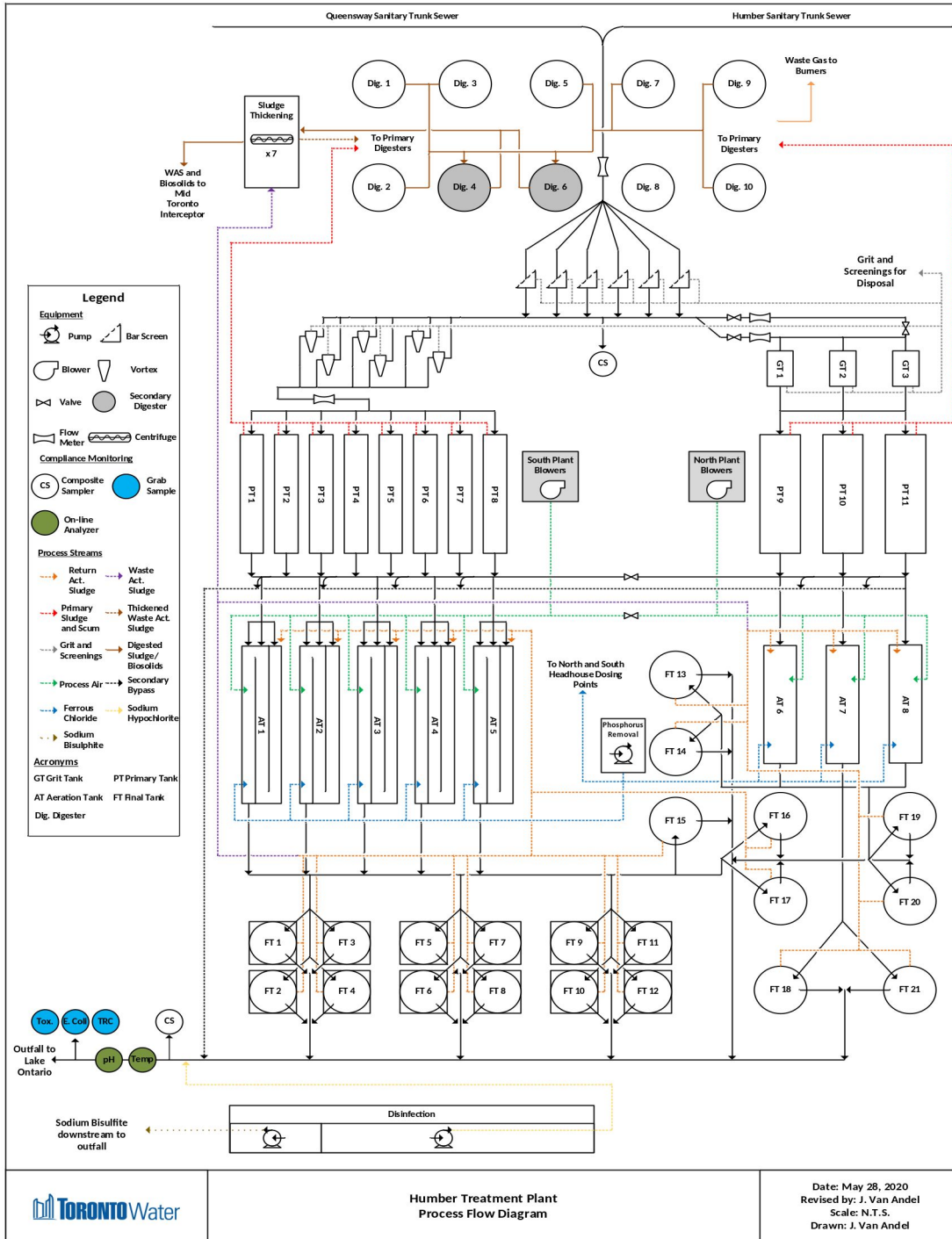
There were no orders issued by the MECP.

Table 10 summarizes the correspondence submitted to the MECP for the HTP. Correspondence related to spills and bypasses can be referenced in Section 3.4.

Table 10: Correspondence submitted to the MECP

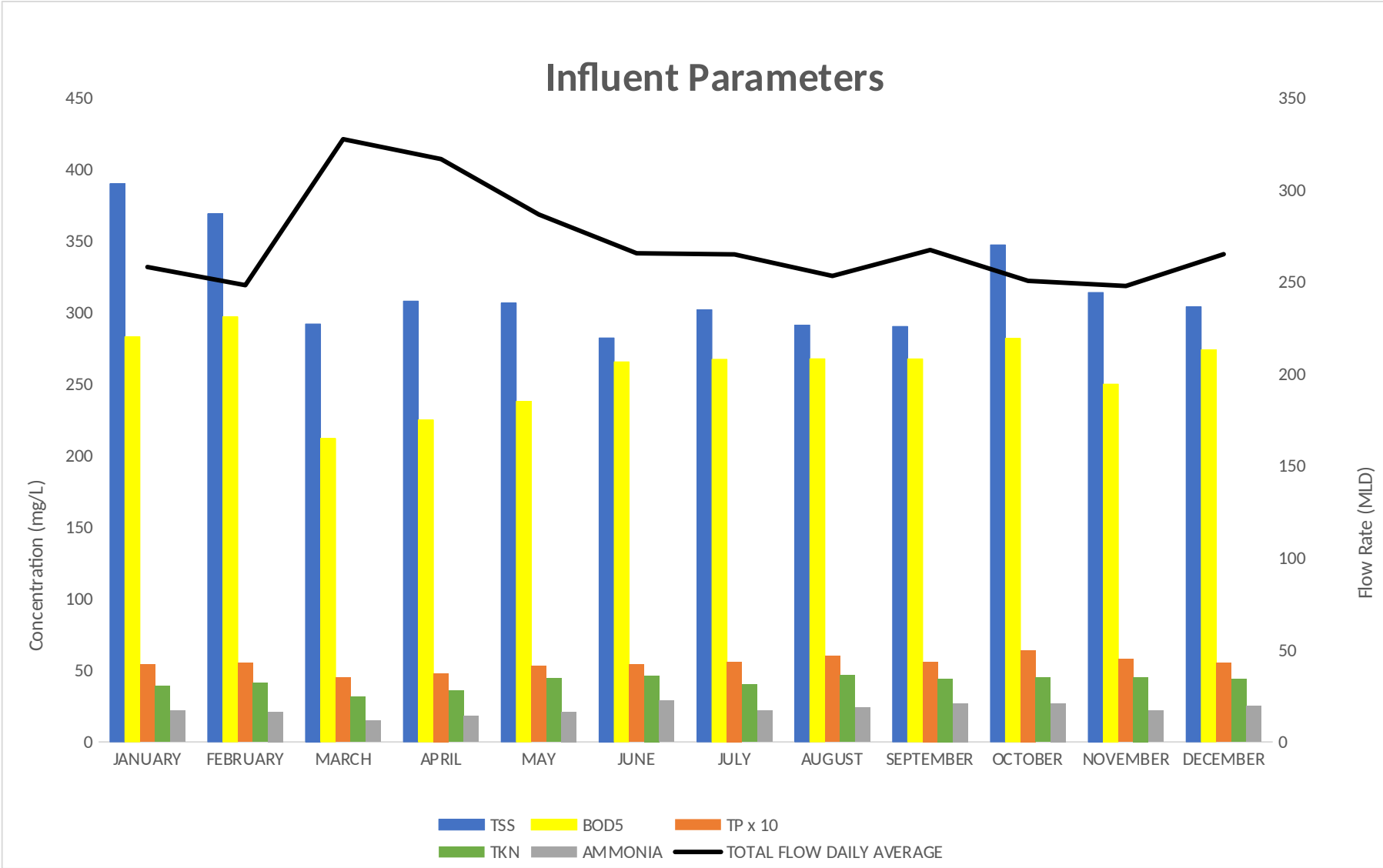
Event Date	Type	Description	Resolution	Resolution Date
25-Jun-25	Odour	Not attributed to the Plant	N/A	June 25, 2025
Sept 17 to Nov 18, 2025	Odour	Group of residents reporting multiple odour complaints over the course of a month. All complaints were investigated and the source of odours was not found. 3rd party odour sampling underway to verify odour control system parameters.	N/A	N/A

APPENDIX A – Plant Schematic

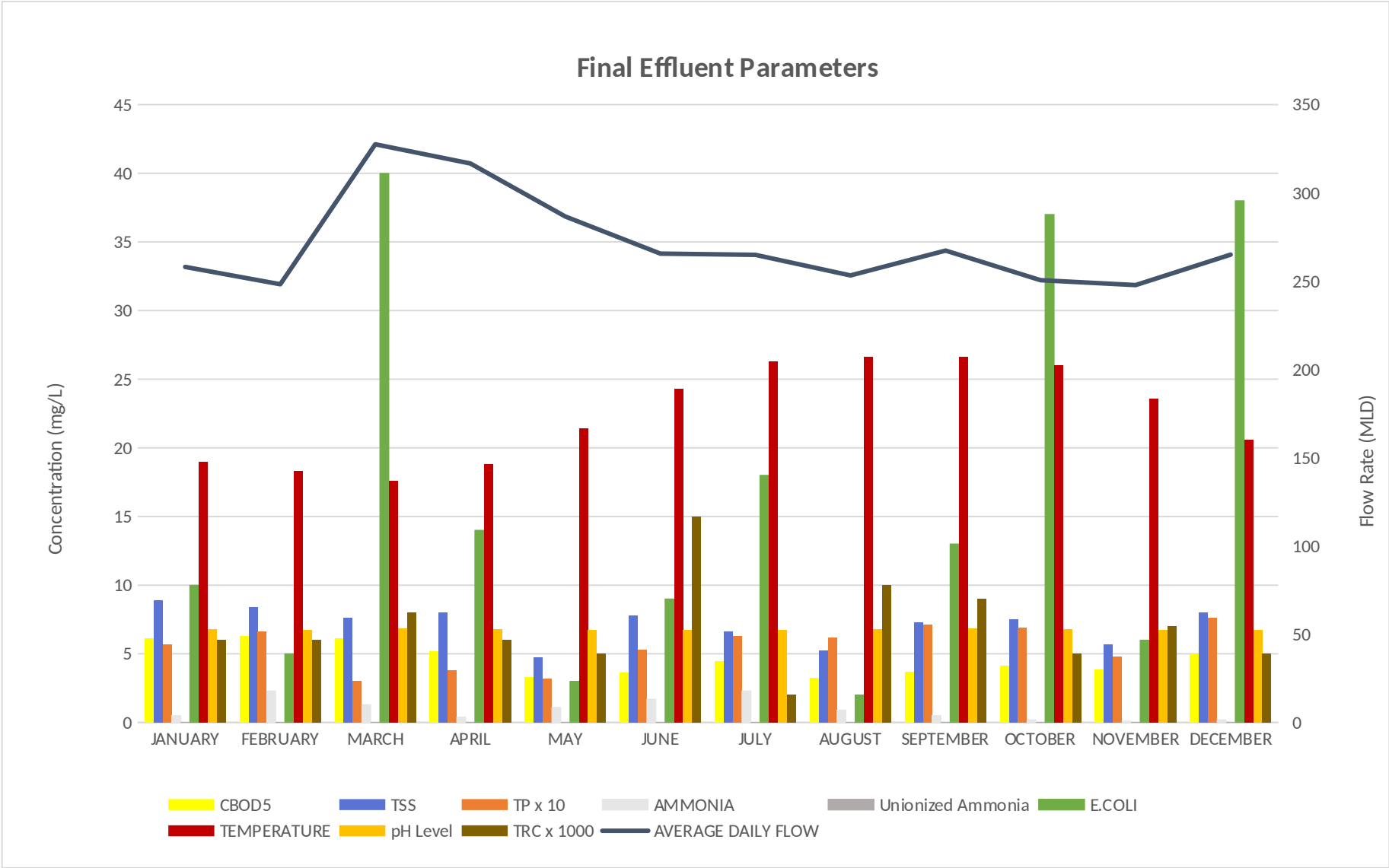


APPENDIX B – Influent and Effluent 2025 Performance Charts

**APPENDIX B - Influent and Effluent 2025
Performance Charts**



**APPENDIX B - Influent and Effluent 2025
Performance Charts**



APPENDIX C – Historical Performance Data

APPENDIX C - Historical Performance Data

	Units	2025	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013
Influent Parameters														
Flow	ML/day	271.80	286.54	280.30	255.65	249.88	371.45	313.88	286.07	331.70	257.30	269.00	280.50	312.00
Total Annual Flow	ML	99,206	104,872	102,591	93,312	91,204	135,952	114,566	104,417	121,062	94,168	98,174	102,364	113,709
Total Suspended Solids (TSS)	mg/L	316.29	304.58	350.13	386.33	366.25	308.75	293.26	280.75	301.20	331.00	369.00	356.00	318.00
Biochemical Oxygen Demand (BOD ₅)	mg/L	260.64	239.42	247.19	279.42	287.17	254.79	247.57	247.83	255.20	299.00	318.00	295.00	238.00
Total Phosphorus (TP)	mg/L	5.48	5.26	5.17	5.26	5.23	4.97	5.30	5.24	5.30	5.80	5.80	5.00	4.40
Total Kjeldahl Nitrogen (TKN)	mg/L	41.94	38.01	37.26	39.03	41.17	38.14	40.64	40.02	39.80	45.20	42.70	38.40	39.31
Preliminary Treatment														
Grit and Screenings	tonnes/day	1.96	2.95	2.74	2.85	2.86	2.78	3.66	4.10	2.10	1.60	2.20	2.10	3.40
Primary Treatment														
TSS	mg/L	89.16	89.87	109.70	105.68	103.58	84.72	89.80	95.70	102.00	94.00	97.00	101.00	151.00
Carbonaceous Biochemical Oxygen Demand (cBOD ₅)	mg/L	149.47	136.11	125.29	151.30	162.75	157.25	152.12	140.90	118.30	158.00	156.00	138.00	142.00
Secondary Treatment														
Aeration Loading	kg CBOD ₅ / m ³ .day	0.44	0.42	0.38	0.42	0.44	0.63	0.52	0.44	0.41	0.38	0.39	0.37	0.40
Mixed Liquor Suspended Solids	mg/L	2,893.5 ₃	3,221.49	3,321.22	3,734.17	3,405.3 ₁	3,395.01	3,109.27	2,839.32	2,842.00	2,953.0 ₀	2,838.00	2,998.00	2,885.00
Final Effluent														
Final Effluent Daily Average Flow	ML/day	270.64	284.45	278.62	218.90	248.78	366.49	312.49	284.83	320.59	257.00	268.40	275.50	305.83
TSS	mg/L	7.14	8.81	13.90	10.62	10.98	10.43	9.70	11.00	13.00	13.00	11.00	12.00	13.00
TSS Loading Rate	kg/day	1,934.9 ₀	2,524.96	3,906.29	2,712.69	2,742.4 ₀	3,869.27	3,042.16	3,157.47	4,322.00	3,341.0 ₀	2,952.40	3,306.00	4,050.00
cBOD ₅	mg/L	4.58	5.13	6.68	6.25	6.35	5.72	5.36	5.90	6.60	5.70	5.40	4.80	6.00
cBOD ₅ Loading Rate	kg/day	1,240.8 ₇	1,469.55	1,876.76	1,596.95	1,586.7 ₂	2,121.76	1,681.26	1,677.78	2,202.00	1,464.9 ₀	1,449.36	1,322.40	1,869.00
TP	mg/L	0.55	0.55	0.64	0.65	0.67	0.58	0.44	0.60	0.80	0.70	0.77	0.67	0.65
TP Loading Rate	kg/day	150.12	158.29	179.26	165.66	168.04	216.51	139.52	178.00	250.00	180.00	210.00	210.00	202.00
Escherichia Coli (E. Coli)	CFU/100 mL	16.37	42.81	34.25	128.17	94.25	54.98	82.91	67.80	72.00	29.00	52.00	30.00	31.00
pH	-	6.77	6.71	6.56	6.47	6.51	6.66	6.85	7.00	8.00	7.20	7.40	7.00	7.00
Total Residual Chlorine	mg/L	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	SBS (P) / 0.009	SBS (P)	SBS (P)	SBS (P)	-
Total Kjeldahl Nitrogen	mg/L	2.52	2.23	2.73	3.37	4.28	2.63	2.65	3.30	3.20	2.66	2.24	2.10	1.95

APPENDIX C - Historical Performance Data

(TKN)														
Total Ammonia Nitrogen	mg/L	0.95	0.85	1.20	1.89	3.28	1.07	1.18	1.70	1.60	1.22	1.40	0.85	0.66
Temperature	degrees Celsius	22.44	21.92	21.43	21.31	22.07	21.39	20.12	20.00	15.80	17.60	18.90	18.70	20.00
Solids Handling														
Primary Sludge Treated	m ³ /day	1,945.3 6	2,417.85	2,472.61	2,240.55	2,169.3 6	2,577.29	2,564.37	2,627.10	2,813.00	2,689.0 0	2,723.00	3,495.00	2,639.00
Primary Sludge Total Solids (TS)	%	2.49	2.12	2.00	2.16	2.00	1.41	1.49	2.10	1.90	-	-	-	-
Primary Sludge Total Volatile Solids (TVS)	%	82.82	81.32	70.03	73.65	73.45	66.69	69.16	76.70	73.60	-	-	-	-
Waste Activated Sludge (WAS) to Thickening	m ³ /day	3,157.2 7	3,712.70	2,566.80	5,608.50	5,010.9 8	3,218.32	5,107.50	3,697.00	3,776.00	3,573.0 0	3,135.00	3,782.00	2,984.00
WAS SS	mg/L	8,330.3 8	9,055.37	8,669.38	7,838.56	8,356.6 5	7,823.97	9,301.79	9,499.00	8,806.00	8,630.0 0	9,448.00	8,863.00	10,391.00
Thickened WAS (TWAS) TS	%	3.28	3.76	3.42	4.44	3.39	3.38	3.47	3.70	4.60	4.00	4.20	4.40	5.30
TWAS VS	%	80.89	78.77	78.68	79.19	77.60	77.28	76.56	74.90	77.60	75.00	78.60	78.00	79.00
TWAS Treated	m ³ /day	818.05	611.89	476.76	679.99	674.11	545.02	548.63	m3/day	714.00	598.00	350.00	512.00	464.00
Digested Solids to ABTP	DT/day	42.55	54.49	63.81	69.93	53.05	60.10	64.57	72.88	80.00	59.00	57.00	64.00	57.00
WAS to ABTP	DT/day	4.93	3.38	7.78	1.92	4.28	7.61	2.69	4.90	4.90	5.00	17.00	11.70	5.80
Digester Gas Generated	10 ³ m ³ /day	31.24	31.55	31.61	31.64	27.75	22.79	23.85	26.70	26.20	28.10	25.40	24.60	20.30

APPENDIX D – Influent and Effluent Metal Concentrations

APPENDIX D – Influent and Effluent Metal Concentrations

Influent (Daily Composite tested once/month for metals)

Parameter	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
January	0.005	0.002	0.00589	0.002	0.107	1.09	0.0025	0.0597	0.00005	0.00844	0.147
February	0.005	0.002	0.00618	0.002	0.0934	1.19	0.0025	0.0592	0.00005	0.00922	0.142
March	0.005	0.002	0.0045	0.002	0.0872	1.19	0.0025	0.0647	0.00005	0.0078	0.119
April	0.005	0.002	0.0049	0.002	0.0855	1.24	0.0025	0.0665	0.00005	0.0089	0.119
May	0.005	0.002	0.0065	0.002	0.137	1.29	0.0025	0.0691	0.00005	0.0089	0.137
June	0.005	0.002	0.0103	0.002	0.105	1.26	0.0025	0.0726	0.00005	0.0103	0.164
July	0.005	0.002	0.0063	0.002	0.122	1.37	0.0025	0.0725	0.000141	0.0077	0.162
August	0.005	0.002	0.0081	0.002	0.131	1.36	0.0051	0.0733	0.00005	0.0114	0.188
September	0.005	0.002	0.0052	0.002	0.109	1.09	0.0059	0.0624	0.00005	0.0089	0.14
October	0.005	0.002	0.0126	0.002	0.128	1.38	0.0063	0.0705	0.00005	0.0148	0.183
November	0.005	0.002	0.0064	0.002	0.0953	0.986	0.0025	0.0629	0.00005	0.0113	0.131
December	0.005	0.002	0.0074	0.002	0.131	1.2	0.0052	0.0677	0.00005	0.012	0.167
Annual Average	0.005	0.002	0.007	0.002	0.111	1.221	0.0035	0.067	0.00006	0.0100	0.150

Data in red with an asterisk prefix is half the MDL

APPENDIX D - Influent and Effluent Metal Concentrations

Final Effluent (Daily Composite tested once/month for metals)

Parameter	Arsenic	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Nickel	Zinc
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
January	0.005	0.002	0.002	0.002	0.0136	0.273	0.0025	0.0324	0.00005	0.0025	0.0474
February	0.005	0.002	0.002	0.002	0.0119	0.249	0.0025	0.0344	0.00005	0.00519	0.0408
March	0.005	0.002	0.002	0.002	0.0108	0.261	0.0025	0.0302	0.00005	0.0025	0.0354
April	0.005	0.002	0.002	0.002	0.0115	0.283	0.0025	0.0266	0.00005	0.005	0.0391
May	0.005	0.002	0.002	0.002	0.0105	0.183	0.0025	0.0389	0.00005	0.0025	0.0369
June	0.005	0.002	0.002	0.002	0.0116	0.229	0.0025	0.0326	0.00005	0.0025	0.0397
July	0.005	0.002	0.002	0.002	0.0124	0.226	0.0025	0.0312	0.00005	0.0025	0.0423
August	0.005	0.002	0.002	0.002	0.0119	0.159	0.0025	0.0255	0.00005	0.0025	0.0375
September	0.005	0.002	0.002	0.002	0.0123	0.226	0.0025	0.0347	0.00005	0.005	0.0352
October	0.005	0.002	0.002	0.002	0.0127	0.204	0.0025	0.0267	0.00005	0.0063	0.0426
November	0.005	0.002	0.002	0.002	0.0127	0.186	0.0025	0.0222	0.00005	0.0067	0.0401
December	0.005	0.002	0.002	0.002	0.0152	0.212	0.0025	0.0267	0.00005	0.0066	0.0531
Annual Average	0.005	0.002	0.002	0.002	0.0123	0.2243	0.0025	0.03018	0.00005	0.0041	0.0408

Data in red with an asterisk prefix is half the MDL

APPENDIX E – Digested Sludge Analysis

	Arsenic	Cadmium	Cobalt	Chromium	Copper	Mercury	Molybdenum	Nickel	Lead	Selenium	Zinc
<i>Limit (1)</i>	170	34	340	2800	1700	11	94	420	1100	34	4200
January	2.3	0.980	6.90	47.000	683	0.250	8.500	32.900	28.300	2.30	614.00
February											
March											
April	4.3	1.94	7.9	45.1	770	0.2	8.30	41.9	40.1	2.6	713
May											
June											
July	3.28	1.10	7.5	57.3	689	0.2	10.90	33.9	26.6	4.9	743
August											
September											
October	3.33	0.99	7.4	65.6	730	0.3	10.90	43.6	29.0	4.2	724
November											
December											
Annual Average	3.31	1.25	7.43	53.75	717.85	0.24	9.65	38.08	31.00	3.50	698.45

¹As per MOECC regulations for sludge utilization on agricultural lands. All sludge from HTP received further treatment at Ashbridges Bay Treatment Plant.

All values are expressed in terms of mg metal / kg digested sludge dry weigh

APPENDIX F – Maintenance Activities

APPENDIX F – Maintenance Activities

Solids Handling (Work Area 1)

Work Area 1 includes WAS thickening centrifuges, anaerobic digesters and gas collection, compression, and burner systems. A total of 3,100 work orders were closed in this work area in 2025. The following maintenance on major structures, equipment, apparatus, mechanism, or thing forming the Works was completed by Work Area 1 in 2025:

- **Monthly activities**
 - Valve exercises
 - Centrate pump valves
 - Centrifuge feed pump and flushing water valves
 - Digester scum feed valves
 - Digester sampling valves
 - Digester sludge recirculation valves
 - MTI Line isolation valves
 - TWAS Transfer Pump valves
 - Waste gas burner pressure regulating valves
 - Scum Tanks and hoppers, chute and paddle cleaning
 - Inspections
 - Sealing oil reservoir tank
 - Standby gas compressor inspection and operational testing
 - Portable eyewashes, fire extinguishers and first aid kits

- **Quarterly activities**
 - Scum tanks and hoppers cleaning
 - Inspections
 - Waste gas burners
 - TWAS transfer pumps
 - MTI transfer pumps
 - Centrate transfer pump
 - Centrifuge feed pumps
 - Sludge recirculating pump
 - Hot water recirculating pump
 - Digester gas compressor and accumulator
 - Centrifuge motor bearing vibrational analysis

- **Bi-annual activities**
 - Centrate pump valve exercises
 - Digester flame arrestors and gas stack valve cleaning
 - Lubrication
 - Sludge transfer and recirculation pumps bearings
 - MTI transfer pump bearings
 - Digester gas booster compressor bearings
 - Actuator valve stems
 - TWAS transfer pump motor

APPENDIX F – Maintenance Activities

- MTI transfer pump motor and bearings
- Inspections:
 - Digester dome valves
 - Digester gas stack valves and flame arrestors
 - Natural gas pilot pressure regulating valve
 - Digester valves
 - Waste gas burners
- **Annual activities**
 - Valve Exercises
 - Scum Tank, hopper and pump valves
 - Sludge flowmeter valves
 - Centrifuge isolation valves
 - Waste gas header isolation valves (including lubrication)
 - Waste gas burner valves
 - Digester routing and sample valves (including lubrication)
 - Scum valves (including inspection)
 - TWAS feed valves (including lubrication)
 - Digester discharge valves (including inspection)
 - Condensate and sediment tank valves (including inspection)
 - Cleaning
 - Condensate and sediment tanks (including inspection)
 - Digester Gas burner regulating valves (including calibration)
 - Inspections/maintenance:
 - Centrate pump valve isolation exercise and drive sheaves
 - Digester gas compressors and boosters (including lubrication)
 - Standby gas compressor
 - Centrifuge flushing valves and flexible chute connections
 - Centrifuge feed pumps isolation and flushing valve exercises.
 - Sludge recirculation and transfer pumps and valves
 - Coffin box valves (including lubrication)
 - WAS storage tank mixers
 - Backflow preventers
 - MTI transfer pumps
 - TWAS pumps

Liquid Primary Treatment (Work Area 2)

Work Area 2 encompasses preliminary treatment processes including influent bar screens, aerated grit chambers, vortex grit chambers, and primary clarifiers. A total of 2,660 work orders were closed in this work area in 2025. The following maintenance on major structures, equipment, apparatus, mechanism, or thing forming the Works was completed by Work Area 2 in 2025:

APPENDIX F – Maintenance Activities

- Bi-weekly inspection and lubrication of bar screen switch and bushings
- **Monthly activities**
 - North Plant bridge lubrication
 - Inspections
 - Grit blowers air inlet and inverter filters (including replacement)
 - Scum transfer pump
 - Vortex slewing gear (including lubrication)
 - Portable eyewashes, fire extinguishers and first aid kits
 - AED and SCBA
 - 2 month bar screen pillow block lubrication
 - 2 month plant wide SCBA training exercise
- **Quarterly activities**
 - Grit pump pinch valves inspection
 - Bar screen carriage drive chains lubrication
 - Ultrasonic testing of vortex pumps, grit pumps and scum pumps
 - Vibrational testing of sludge pumps and vortex blowers
- **Bi-annual activities**
 - Valve exercises
 - Grit channel sluice gates (including lubrication)
 - Primary sluice gates (including lubrication)
 - Vortex sluice gates (including lubrication)
 - Inspection
 - Ultrasonic testing of vortex pumps
 - Bar screen conveyers and compactors
 - Grit and screenings conveyors
 - Conveyor and scum collector gear box oil analysis
 - Grit de-watering pump
 - Classifiers and cyclones
 - Vortex pumps
 - Primary scum pump (including lubrication)
 - Sludge transfer pump seal water line
 - Ladders
 - Scum collector cleaning and lubrication
 - Preliminary treatment bypass valve stem lubrication
- **Annual activities**
 - Sludge pumps and header isolation valve exercises
 - Scum and sludge long and cross collector gearbox lubrication check
 - Inspections
 - Primary collector drives
 - Primary cross collector gear box lubrication
 - North primary bridges
 - Sludge transfer pumps (and valve exercise).

APPENDIX F – Maintenance Activities

- Backflow preventer
- Grit tank conveyor
- Primary sluice gate inlet and actuator (including lubrication)

Support Services (Work Area 3)

Work Area 3 includes support services around the plant, process air blowers and the electrical system. A total of 3,993 work orders were closed in this work area in 2025. The following maintenance on major structures, equipment, apparatus, mechanism or thing forming the Works was completed by Work Area 2 in 2025:

- **Weekly activities**
 - Inspections
 - Emergency generator
 - Dechlorination analyzers
 - Chlorine analyzer probe check (including cleaning)
 - Monitor of air compressor motor temperature
 - Biweekly verification of boiler low level trip circuits

- **Monthly activities**
 - Inspections
 - Boiler exhaust valve actuator (visual)
 - Screen channel level alarms
 - Air dryers and receivers
 - Blower and blower air inlet filters
 - Substation
 - Plant wide emergency lighting
 - Sprinkler system alarm and fire water valves
 - Control room paging modulator alarm system
 - Portable eyewashes, fire extinguishers and first aid kits
 - Cleanings
 - Bio-filter beds (Summer months)
 - Venturi ports
 - Chlorine analyzer probe (including calibration)
 - Repositioning of cogeneration engine crankshaft
 - Test and verify emergency generator on load
 - Elevator guide door cleaning and testing

- **Quarterly activities**
 - Inspections
 - 600 V MCC room
 - Gallery cooling water pumps
 - Waste gas burners
 - Phosphorus removal system pumps
 - Glycol pumps

APPENDIX F – Maintenance Activities

- Primary loop hot water pumps and PRVs
 - Glycol pump gland filter replacement
 - Vibrational testing of hot water recirculation pump motor bearings
- **Bi-annual activities**
 - Inspections
 - Dechlorination pump VFD drives, cabinets and fans
 - Plant wide supply and exhaust fans (including cleaning)
 - Electrical and mechanical generators
 - Chilled water pumps and skid
 - Control panels
 - WAS and sludge pumps (including motor bearing lubrication)
 - Sludge thickening scrubbers
 - Air compressor (including cleaning)
 - Gallery Air curtain
 - Glycol skids
 - Pneumatic positioner air filters
 - WAS pump and motor (including bearing lubrication)
 - Plant wide air handling unit and HVAC (including maintenance)
 - Calibrations/Verifications
 - Temperature transmitters
 - pH, DO analyzers
 - Raw sludge densitometer (including cleaning)
 - Hazardous gas detectors, alarms and portable gas meters
 - Control valves and actuators
 - Blower discharge and bypass valves
 - Blower axial trip alarms
 - Lubrication of hot water recirculation pumps
 - Digester gas compressor building ventilation fan testing
 - Testing of the blower motor bearings and auxiliary oil pump.
- **Annual activities**
 - Inspections
 - Gas compressor flow, pressure and temperature circuits
 - Heat tracing on sodium bisulphate piping and waste gas burners
 - Waste gas burner instrumentation
 - Glycol pressure relief valve and skid
 - RAS and WAS pump motor and VFD
 - Sludge recirculation pumps and instrumentation
 - Digester gas boosters and instrumentation
 - Hot water recirculation pumps
 - Centrifuge electrical and instrumentation checks
 - Calibrations/Verifications
 - Digester pump discharge and seal oil water switches
 - Digester PLC, RPU functionality testing

APPENDIX F – Maintenance Activities

- Primary collector shutdown torque switch
- RAS, WAS, primary sludge and waste gas burner flow meters
- Effluent sampling pump flow transmitter
- Scum transfer pump control panel and instrumentation
- Digester floating cover sensor
- TWAS and WAS storage level transmitter sensors
- Final effluent disinfection transmitters
- Palace pier level switches
- Sludge recirculation pumps and instrumentation
- Bar screen rake drive motor emergency shutdown circuit
- Digester dome and tank instrumentation
- o Maintenance/cleaning
 - Plant wide wall and roof mounted exhaust fans
 - TWAS pump motor (including calibration)
 - Centrate pump motor and pressure switches
- o Electrical and instrumentation checks of centrifuges and gas compressor

Liquid Secondary Treatment (Work Area 4)

Work Area 4 encompasses secondary treatment processes including aeration, phosphorus removal and final clarification. A total of 3,353 work orders were closed in this work area in 2025. The following maintenance on major structures, equipment, apparatus, mechanism, or thing forming the Works was completed by Work Area 4 in 2025:

APPENDIX F – Maintenance Activities

- **Monthly activities**
 - Inspections
 - Effluent sampling pumps
 - Portable eyewashes, fire extinguishers and first aid kits
 - WAS and RAS pumps
 - Plant water backwash air regulator seat
 - Sodium Hypochlorite tanks (detection holes and stove joints)
 - Final clarifying tanks scum collector mechanisms
 - Air driers and receivers
 - Filtered plant water pumps, piping and isolation valves
 - Sodium hypochlorite sump drain valve exercises
- **Quarterly activities**
 - Cleaning of sodium hypochlorite dosing pump inlet strainer
 - Inspections
 - Air driers and receivers
 - Plant water sump pump
 - Plant water filter cell trash basket
 - trainer brushes and blades on dechlorination discharge line
 - Effluent discharge mixers lubricant level
 - Lubrication of filtered plant water pumps and motors
 - Vibrational testing
 - RAS, WAS and filtered plant water pumps
 - Aeration blowers and cogeneration burner fans (including oil analysis)
- **Bi-annual activities**
 - Scum pump lubrication, hopper flushing water solenoid verification and seal inspection
 - Inspections
 - Sodium hypochlorite control valve
 - Scum and sludge collector gearbox oil level
 - Final clarifying tanks drainage pumps
 - Chlorine analyzer sample line
 - Air compressor (including cleaning)
 - Scum tank cleaning and trough flushing
 - Testing of sodium bisulphate containment area level switch
 - Verification/calibration of chlorine gas analyzer
- **Annual activities**
 - Lubricate and exercise filtered plant water pump isolation valves
 - Lubrication of final clarifying tanks inlet gate valve stem and inspect actuator oil level
 - Inspections
 - Backflow preventers
 - Replacement of process air regulator diaphragm

APPENDIX G – Staff Training Courses

APPENDIX G – Staff Training Courses

Training attended by HTP operations and skilled trades staff in 2025 includes the list of courses below.

- WORKPLACE HARASSMENT (TORONTO WATER'S July 2025 Mandatory Tailgate)
- UNCONSCIOUS BIAS FOR PEOPLE LEADERS
- IN-SERVICE HEALTH & SAFETY ORIENTATION
- CONTENT SERVER - eDOCS
- ARC FLASH FOR NON-QUALIFIED PERSONS (CEU)
- PPE – HARD HATS (Toronto Water February Mandatory Tailgate 2025)
- LABORATORY PROCEDURES FOR WASTEWATER OPERATORS
- WORKPLACE VIOLENCE LEGISLATION & POLICY REVIEW
- EMERGENCY EQUIPMENT (FIRST AID KIT, EYE WASH, FIRE EXTINGUISHER) November 2025 Mandatory Tailgate for Toronto Water
- STANDARD FIRST AID LEVEL 'C' CPR & AED - 2 Day (FAST Rescue)
- CONFINED SPACE RESCUE UPGRADE
- SEWAGE WORKS AND SURFACE WATER SPILL RESPONSE
- WORKING AT HEIGHTS (2022-2025)
- TRAFFIC CONTROL ROADWAY WORK (CEU) - 2025
- FALL PROTECTION IN AN INDUSTRIAL WORK SETTING (CEU)
- Retirement Planning Seminars
- Indigenous Awareness Training: Truth and Reconciliation
- TROUBLESHOOTING WASTEWATER TREATMENT PLANT
- CHAINSAW SAFETY AWARENESS (CEU)
- LEARNING AND LEADING WITH HUMAN RIGHTS
- Employee Assistance Program (EAP) Orientation Session
- SCAFFOLD SAFETY TRAINING (2023-2025)
- FIRE SAFETY AND EXTINGUISHER USE (CEU)
- GE MULTILIN TRAINING
- CONFINED SPACE AWARENESS 1/2 DAY (CEU)
- LOCK OUT, TAG OUT & TEST AWARENESS (CEU) -2025
- Respirators: Selection, Fit, Use, and Maintenance (Toronto Water Mandatory Tailgate - Aug 2025)
- FUNDAMENTALS OF LADDER SAFETY AWARENESS (CEU)
- WWT-MECP EXAM PREP FOR WASTEWATER TREATMENT LEVEL 3 AND 4
- Preventing Heat Stress (Toronto Water's May 2025 Mandatory Tailgate)
- CONFLICT RESOLUTION & NEGOTIATION SKILLS
- ELECTRICAL SAFETY AWARENESS (CEU)
- City Benefit and Pension Seminars
- Control Valves Seminar
- Confronting Anti-Black Racism Training -Half day
- SAP Ariba - Client Division: Sourcing Request
- Influencing Skills for Non-Managers VILT
- BASIC VIBRATION ANALYSIS
- CONFINED SPACE ENTRY AND RESCUE - 2 DAY (CEU)
- MMR – SELF-CONTAINED BREATHING APPARATUS (CEU) -(2022-2025)

APPENDIX G – Staff Training Courses

- BACKFLOW PREVENTION AWARENESS (CEU) - 2025
- RIGGING SAFETY AWARENESS (2022-2025)
- Accommodations Essentials for Managers
- Power Transformer Technologies
- City of Toronto Fire Warden/Supervisory Staff Training
- QUICK CUT SAW SAFETY AWARENESS (CEU)
- AIR PURIFYING RESPIRATORS (2023) CEU
- CHLORINE SAFETY / B KIT -CEU (2022-2025)
- ARC FLASH AWARENESS (CEU)
- Excel M365: Tips & Tricks - Virtual Instructor Led Training (VILT)
- RESPECT IN OUR WORKPLACE
- WORKING AT HEIGHTS REFRESHER (CEU) 2022-2025
- CENTRIFUGAL AND POSITIVE DISPLACEMENT PUMP OPERATION (2025)
- Protective Relay Training - Basic
- COPING WITH SHIFT WORK
- Building your Emotional Intelligence VILT
- VALVE ACTUATOR (CEU)
- (INACTIVE) Indigenous Awareness Training: Truth and Reconciliation