



# **ASHBRIDGES BAY WASTEWATER TREATMENT PLANT 2024 Annual Report**



**March 31<sup>st</sup>, 2025**

## EXECUTIVE SUMMARY

The Ashbridges Bay Treatment Plant (ABTP) is one of four wastewater treatment facilities operated by the City of Toronto. This facility, located at 9 Leslie Street, has a rated capacity of 818,000 m<sup>3</sup>/day, or 818 ML/day, and serves an equivalent population of approximately 1,394,000. The Ashbridges Bay Treatment Plant discharges into Lake Ontario and operated under Amended Environmental Compliance Approval (ECA) Sewage No. Amended ECA No. 0574-CQ6J5H, issued on May 2, 2023.

The average daily flow rate in 2024 was 576.29 ML/day. Influent concentrations of Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Phosphorus (TP) and Total Suspended Solids (TSS) averaged 202.8 mg/L, 6.9 mg/L, and 295.8 mg/L, respectively.

Ashbridges Bay Treatment Plant achieved the following Secondary Effluent quality and loading rates in 2024 in comparison to ECA limits:

Parameter	ECA <sup>1</sup>	2024 Secondary Effluent
Total Suspended Solids (TSS)	25.0 mg/L	15.9
Carbonaceous Biological Oxygen Demand (CBOD <sub>5</sub> )	25.0 mg/L	7.3
Total Phosphorus (TP) – Monthly Average	1.0 mg/L	0.8
pH	6.0-9.5	7.1
TSS Loading Rate	20,450 kg/day	8,827
CBOD <sub>5</sub> Loading Rate	20,450 kg/day	4,079
TP Loading Rate	818 kg/day	425

<sup>1</sup> Referenced from ECA Sewage No. 0574-CQ6J5H Schedule C.

<sup>2</sup> Arithmetic mean of monthly geometric mean data.

All ECA secondary effluent limits were met with the exception of the monthly concentration limit for TP in November of 1.3 mg/L. This exceedance was due to a high rainfall event which resulted in very high plant flows and solids wash out from the plant. The plant sewershed includes combined sewers and subject to extremely high flows in wet weather. The City is undertaking significant works to capture and treat combined sewers flows and reduce the peak flows to Ashbridges Bay, enabling the plant to perform better.

During 2024, the biosolids generated at Ashbridges Bay were managed through agricultural land application, soil amendment use, pelletization, and mine reclamation. The total amount of biosolids generated at the plant in 2024 was 147,182 wet tonnes at an average of 26.05 % total solids (TS). The biosolids generated met all the metal and *E. coli* concentration requirements set out in O.Reg 267/03.

Ferrous chloride consumption for phosphorus removal totalled 1,549 tonnes as Fe. Polymer onsumption in 2024 for waste activated sludge (WAS) thickening and sludge dewatering totalled 198 and 683.376 tonnes, respectively. Total sodium hypochlorite (12% w/v) consumption for disinfection totalled 4,587 m<sup>3</sup>.

There were twenty-six secondary treatment system bypass occurrences in 2024 where portions of the flow did not receive secondary treatment, but still received primary treatment, and nutrient removal before being disinfected and discharged into Lake Ontario. Total bypassed flows were estimated to be 7,555.97 ML.

The plant continued with numerous capital projects. Notable projects included: construction of a new ultraviolet (UV) disinfection facility; construction of a new influent pumping station; construction of a new WAS thickening facility; construction of a new plant outfall; construction of D Building Phase 2; design of Secondary Treatment Upgrades, design of new Pelletizer; construction of new Hot Water Boilers and construction of Digesters 9-12 upgrade. A variety of scheduled, preventative, predictive and reactive maintenance was performed, including annual calibration of effluent monitoring equipment.

Total annual consumption for potable water, hydro, and natural gas was 628,225 m<sup>3</sup>, 134.7 GWh, and 6.0 M scm (Standard cubic meter), respectively. Direct operating costs for 2024 totalled \$73.4 M. In 2024, the Ashbridges Bay Treatment Plant had a staffing compliment of 148 full time equivalent (FTE) employees. As of February 21, 2025, there were 4 health and safety incidents and 13 lost time days due to work related injuries in 2024 (to December 31, 2024).

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>i</b>
<b>TABLE OF CONTENTS .....</b>	<b>iii</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 PLANT PROCESS OVERVIEW .....</b>	<b>2</b>
2.1 Influent .....	2
2.2 Preliminary Treatment .....	2
2.3 Primary Treatment .....	2
2.4 Secondary Treatment .....	3
2.5 Final Effluent .....	3
2.6 Solids Handling .....	4
2.7 Solids Management .....	4
<b>3 PROCESS SUMMARY .....</b>	<b>5</b>
3.1 Process Parameters .....	5
3.2 Biosolids Management .....	8
3.2.1 Agricultural Land Application .....	8
3.2.2 Third Party Process Stabilization (Soil Amendment) .....	9
3.2.3 Pelletization .....	9
3.2.4 Landfill Management of Biosolids .....	9
3.2.5 Mine Reclamation .....	9
3.3 Chemical Usage .....	10
3.4 Bypasses, Overflows, Spills, and Abnormal Discharge Events .....	10
3.4.1 Bypasses .....	10
3.4.2 Overflows .....	11
3.4.3 Spills .....	12
3.4.4 Abnormal Discharge Events .....	16
3.5 Complaints .....	16
3.6 MECP Procedures F-5-1 and F-5-5 .....	17

3.7	Effluent Quality Assurance and Control Measures .....	17
<b>4</b>	<b>CAPITAL PROJECTS.....</b>	<b>18</b>
<b>5</b>	<b>MAINTENANCE .....</b>	<b>20</b>
<b>6</b>	<b>UTILITIES .....</b>	<b>22</b>
<b>7</b>	<b>ADMINISTRATION.....</b>	<b>23</b>
7.1	Operations and Maintenance Costs.....	23
7.2	Human Resources.....	24
7.3	Occupational Health & Safety .....	25
7.4	Staff Training and Development .....	26
7.5	Utility Operator Certification .....	26
7.6	MECP Correspondence.....	26

## APPENDICES

**APPENDIX A – Plant Schematic**

**APPENDIX B – Influent and Effluent 2018 Performance Charts**

**APPENDIX C – Historical Performance Data**

**APPENDIX D - Secondary Treatment Effluent (Leachate Related)**

**APPENDIX E – Influent and Effluent Metal Concentrations**

**APPENDIX F – Biosolids Analysis**

**APPENDIX G – Maintenance Activities**

**APPENDIX H – Staff Training Courses**

## LIST OF TABLES

Table 1: Secondary Treatment and Final Effluent Parameters.....	5
Table 2: Process Parameters.....	6
Table 3: Biosolids Management Methods .....	9

Table 4: Chemical Usage Summary.....	10
Table 5: Bypass Summary .....	11
Table 6: Spill Summary.....	12
Table 7: Capital Projects .....	18
Table 8: Summary of Regulated Monitoring Equipment Calibration and Maintenance.....	20
Table 9: Average Unit and Total Utility Cost.....	22
Table 10: Plant Staffing .....	24
Table 11: Wastewater Treatment Certificates .....	26
Table 12: Correspondence submitted to the MECP and MOL.....	27

## LIST OF FIGURES

Figure 1: Annual Utility Consumption (Water, Hydro, Gas) .....	22
Figure 2: Operations and Maintenance Cost Breakdown.....	23
Figure 3: Ashbridges Bay Treatment Plant Health & Safety Injury Summary .....	25

## GLOSSARY OF ABBREVIATIONS

AAC	Annual Average Concentration
BOD5	Five-Day Biochemical Oxygen Demand
CBOD5	Five-Day Carbonaceous Biochemical Oxygen Demand
CEPT	Chemically Enhanced Primary Treatment
CEU	Continuing Education Units
CFU	Colony Forming Units
DAF	Dissolved Air Flotation
<i>E. coli</i>	<i>Escherichia coli</i>
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
MWh	Megawatt-hour
m <sup>3</sup>	Cubic metre
m <sup>3</sup> /day	Cubic metre per day
mg/L	Milligrams per litre
mL	Millilitre
ML	Million litres
MECP	Ministry of the Environment, Conservation and Parks
Q	Flow Rate
RAS	Return Activated Sludge
SBS	Sodium Bisulphite
SBS (P)	Sodium Bisulphite Presence
scm	Standard cubic metre
SS	Suspended Solids
TCR	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:** Means diversion of sewage around one or more treatment processes, excluding Preliminary Treatment System, within the Sewage Treatment Plant with the diverted sewage flows being returned to the Sewage Treatment Plant treatment train upstream of the Final Effluent sampling point(s) and discharged via the approved effluent disposal facilities.

**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 in light of 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 Ashbridges Bay Treatment Plant (ABTP) 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 9 Leslie Street, in Toronto's east end and also includes two raw sewage pump stations located north of Lake Shore Boulevard at 1091 Eastern Avenue. The Ashbridges Bay Treatment Plant services a sewershed of approximately 25,000 ha and an estimated connected population of 1,394,000<sup>1</sup>; bounded by Steeles Avenue on the north, the Humber sewershed on the west, the Highland Creek sewershed on the east, and the lakeshore on the south. The plant also provides production of biosolids for beneficial use, including the biosolids that are generated and transferred from the Humber and North Toronto Treatment Plants. The Ashbridges Bay Treatment Plant has a rated capacity of 818,000 m<sup>3</sup>/day, or 818 ML/day.

Major liquid treatment processes include screening and grit removal, primary treatment, secondary treatment, nutrient removal, and effluent disinfection. Treated effluent is discharged to Lake Ontario. Solids handling processes include waste activated sludge thickening, sludge stabilization by anaerobic digestion, dewatering using high speed centrifuges and biosolids management. Numerous auxiliary systems are required for proper operation of plant processes and include: potable water, process water (i.e. "plant water"), heating, ventilation and air conditioning (HVAC), SCADA, odour control, electrical power distribution, natural gas, chemicals, and instrument air.

The Ministry of the Environment, Conservation and Parks (MECP) has classified the Ashbridges Bay Treatment Plant as a Class IV wastewater treatment facility under Regulation 129/04. In 2024, the plant operated under Amended Environmental Compliance Approval (ECA) Sewage No. ECA No. 0574-CQ6J5H, issued on May 2, 2023.

This report is a summary of plant operations and performance in 2024. Highlights of the report include a discussion of effluent quality and summaries of process operations, maintenance, chemical and utility consumption, capital projects, operational costs and human resources.

---

<sup>1</sup> Population estimated by sewershed delineation and 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 on the plant's process can be found on the City of Toronto website<sup>2</sup>.

### 2.1 Influent

The Ashbridges Bay Treatment Plant treats wastewater flows from the Mid-Toronto, High Level, Low Level, and Lakefront Interceptor Sewers, as well as the Queen Street and Coxwell Avenue Trunk Sewers. The Mid-Toronto Interceptor flows are pumped to the plant via the Pumping Station known as "T Building". The High Level and Low Level Interceptor Sewers, and the Queen Street Trunk Sewer flows are pumped to the plant via the Pumping Station known as "M Building". The Lakefront Interceptor Sewer flows are pumped to the plant via the M Building or the T Building. The Coxwell Avenue Trunk Sewer flows come to the plant by gravity. Once wastewater enters the plant, it flows by gravity through the plant's processes.

Influent to the Ashbridges Bay Treatment Plant also includes sludge flows received from the Humber Treatment Plant and the North Toronto Treatment Plant via the Mid-Toronto Interceptor and Coxwell Sanitary Trunk Sewer, respectively.

### 2.2 Preliminary Treatment

Raw wastewater enters the Headworks (known as "P" and "D" Buildings) for grit and screenings removal. The P Building has six aerated grit channels and six mechanical screens. D Building has five mechanical screens and four aerated grit channels. The removed grit and screenings from P and D Buildings are hauled to a sanitary landfill site. Ferrous chloride is applied for nutrient removal (i.e. phosphorous removal) to the distribution conduits upstream of the aerated grit channels.

### 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. There are 12 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

---

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

and swept into scum hoppers. The primary sludge and scum are then pumped out for further treatment and the wastewater, called primary effluent, continues onto 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 10 electrically driven blowers. There are a total of 11 Aeration Tanks that employ a step feed aeration process with four passes per tank. Aeration Tank No.1 and 3 – 9 are equipped with plastic disc coarse air bubble diffusers; Aeration Tank No. 10 and 11 are equipped with stainless steel coarse bubble diffusers; and Aeration Tank No. 2 is equipped with a mix of ceramic and membrane fine bubble diffusers.

The mixed liquor from the Aeration Tanks flows to 11 large 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 in order to maintain a sufficient biomass concentration. The excess is removed as waste activated sludge (WAS).

The plant has 10 Dissolved Air Flotation (DAF) Tanks to thicken WAS with the use of air and a thickening polymer, which is used as a coagulant. The plant also has the capacity to co-settle WAS from the Final Clarification Tanks in the Primary Clarification Tanks. At the DAF facility, incoming WAS first enters an inlet splitter box, dividing the inlet flow between the DAF tanks in operations. This splitter box also contains an overflow pipe which allows the excess WAS flow to return to the Aeration Tanks.

## **2.5 Final Effluent**

Through operating and maintaining preliminary, primary, and secondary treatment processes, final effluent is treated to meet Schedule B of the ECA (No. 0574-CQ6J5H). Sodium Hypochlorite is used to disinfect and kill pathogens in the final effluent.

The final effluent is discharged to Lake Ontario through an outfall pipe equipped with diffusers and extending approximately 1000 m into the lake from the shore. During periods of wet weather flows, the plant also has the capability of discharging final effluent through the seawall gates to prevent flooding.

## **2.6 Solids Handling**

All primary sludge, thickened WAS (TWAS), co-settled WAS from the Primary Clarification Tanks, and scum from the Primary and Secondary Clarification Tanks, collectively called "sludge", is treated, handled and disposed of in a similar manner, consisting of anaerobic digestion, dewatering and then hauled or pelletized.

Anaerobic digestion is the biological degradation (stabilization) of organic materials 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, thereby reducing the plant's operating costs and carbon footprint. The digesters are operated in the mesophilic temperature range (34 – 38°C). The Digestion process at Ashbridges Bay Treatment Plant consists of 20 primary digesters.

The resulting anaerobically digested sludge, called "biosolids", is subsequently conditioned with a polymer and dewatered by centrifugation. Twelve solid bowl dewatering centrifuges are used to dewater the biosolids. The resulting biosolids "cake" is pumped either to the plant's Truck Loading Facility, or to the onsite pelletizer facility.

## **2.7 Solids Management**

The dewatered biosolids are managed in a number of ways, including agricultural land application, third party process stabilization, pelletization, landfilling, and mine reclamation.

### 3 PROCESS SUMMARY

#### 3.1 Process Parameters

A summary of key secondary treatment effluent and final effluent parameters against the ECA objectives and limits are shown in Table 1. Influent and effluent performance charts are available in Appendix B. Historical performance data is included in Appendix C.

Table 1: Secondary Effluent Parameters

Parameter	cBOD <sub>5</sub> <sup>1</sup> , mg/L	TSS, mg/L	TP, mg/L	Total Residual Chlorine, mg/L	E-Coli, count/100mL	pH Min	pH Max
Secondary Effluent							
January	8.4	16.3	0.8	0.70	191	6.7	7.2
February	10.4	19.0	0.8	0.69	90	6.8	7.2
March	5.9	9.8	0.5	0.71	123	6.7	7.2
April	8.8	16.6	0.7	0.74	54	6.8	7.3
May	7.2	14.5	0.7	0.71	111	7.1	7.4
June	6.1	16.2	0.8	0.71	144	7.0	7.3
July	8.0	22.0	0.8	0.72	220	6.9	7.3
August	6.3	11.0	0.6	0.73	31	7.0	7.4
September	7.0	10.7	0.7	0.71	128	6.9	7.8
October	5.3	7.6	0.5	0.72	195	6.9	7.2
November	8.7	29.7	1.3	0.73	814	7.0	7.3
December	6.3	17.8	0.93	0.80	51	6.7	7.2
Annual Average Effluent Concentration	7.3	15.9	0.8	0.72	179	7.1	
Loading <sup>2</sup> , kg/d	4079	8827	425	N/A	N/A	N/A	N/A
Removal Efficiency, %	95%	94%	89%	N/A	N/A	N/A	N/A
ECA Requirements <sup>4,5</sup>							
Final Effluent Objective	AAC: 25.0 mg/L	AAC: 25.0 mg/L	MAC: 1.0 mg/L	N/A	N/A	6.5-8.5	
Secondary Treatment Effluent Objective	AAC: 15.0 mg/L	AAC: 15.0 mg/L	MAC: 0.9 mg/L	N/A	N/A	6.5-8.5	
Secondary Treatment Effluent Limit	AAC: 25.0 mg/L	AAC: 25.0 mg/L	MAC: 1.0 mg/L	N/A	N/A	6.0-9.5	
Average Waste Loading Limit <sup>3</sup>	AAL: 20,450 kg/d	AAL: 20,450 kg/d	AAL: 818 kg/d	N/A	N/A	N/A	

## ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2024 ANNUAL REPORT

<sup>1</sup> cBOD = 0.8 \* BOD assumed for removal efficiency calculations.

<sup>2</sup> Loading is calculated based on the flow rates as provided in Table 2.

<sup>3</sup> Loading is calculated based on the flow rates as provided in Table 2.

<sup>4</sup> Referenced from ECA Sewage 0574-CQ6J5H, issued on May 2, 2023.

<sup>5</sup> AAC 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 eleven select heavy metals have been included in Appendix E. 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 average of process parameters over the past three years is shown in Table 2.

Table 2: Process Parameters

Parameter	Units	2024	2023	2022
<b>Influent Parameters</b>				
Flow <sup>1</sup>	ML/day	576.3	610.2	570.4
Total Annual Flow <sup>1</sup>	ML	210,921	222,626	208,083
Total Suspended Solids (TSS)	mg/L	295.8	302.2	324.1
Biological Oxygen Demand (BOD <sub>5</sub> )	mg/L	202.8	195.5	203.1
Total Phosphorus (TP)	mg/L	6.9	6.5	6.5
Transfer from Humber TP: liquid biosolids	Dry tonnes/day	54.5	63.7	69.9
Transfer from Humber TP: WAS	Dry tonnes/day	3.4	7.8	1.9
Transfer from North Toronto TP: sludge (primary sludge, WAS, and scum)	ML/day	0.43	0.56	0.46
<b>Preliminary Treatment</b>				
Grit and Screenings	Tonnes/day	6.5	6.1	5.1
<b>Primary Treatment</b>				
TSS	mg/l	126.2	206.9	250.8
cBOD <sub>5</sub>	mg/L	203.7	111.7	118.6
<b>Secondary Treatment</b>				
Aeration Loading	kg CBOD <sub>5</sub> /m <sup>3</sup> ·day	0.38	0.36	0.36
Mixed Liquor Suspended Solids	mg/L	3,065	2,908	3,003
Flow through Seawall Gates	ML	3452	4727	2101
<b>Solids Handling</b>				
Primary Sludge Treated	m <sup>3</sup> /day	3,979	4,298	3,822
Primary Sludge TS	%	2.1	2.2	2.5

## ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2024 ANNUAL REPORT

Parameter	Units	2024	2023	2022
Primary Sludge TVS	%	73.1	70.9	70.1
WAS to Primary Treatment and Excess Was to Aeration	m <sup>3</sup> /day	5,729	4,059	4,778
WAS to Thickening	m <sup>3</sup> /day	9,509	9,099	8,222
WAS TS	%	1.02	0.98	1.00
TWAS Treated	m <sup>3</sup> /day	2,594	2,494	2,258
TWAS TS	%	3.9	3.9	3.8
TWAS TVS	%	73.0	72.0	70.4
Volume to Digestion	m <sup>3</sup> /day	6,572	6,792	6,080
Digesters Hydraulic Retention Time	days	19.3	18.1	20.2
Organic Loading to Digesters	TVS / m <sup>3</sup> /day	1.1	1.1	1.0
Digester Gas Volume	m <sup>3</sup> /day	51,066	56,288	54,497
Dewatering Centrifuge Feed TS	%	1.85	1.83	1.87
Dewatered Biosolids TS	%	26.05	27.07	28.02
Centrate Quality	mg/L	1,057.6	753.7	474.9
Solids Capture Rate	%	94.3	95.8	97.4
Centrifuge Run-time	hours	49,340	49,030	48,372

Influent flow to the Ashbridges Bay Treatment Plant decreased by 5.6% in 2024. Influent strength of BOD, TP & TKN increased by 3.72%, 5.99% and 7.32% while TSS decreased by 2.14%.

Final effluent annual average concentration for cBOD, TSS, and TP was 8.8 mg/L, 18.19 mg/L, and 0.79 mg/L, respectively and met the average effluent concentration specified in Schedule B of the ECA throughout 2024, with the exception of TP in November, for the reasons noted below.

The secondary effluent annual average for e. Coli monthly geometric mean density in 2024 was 179 CFU/100 mL. Secondary effluent pH remained between the range of 6.0 – 9.5 throughout the course of 2024.

This exceedance was driven primarily by rainfall and the subsequent high plant flows occurring on one specific evening - November 20th. Rainfall on this evening (and stretching into the early morning of Nov. 21st) was 16.6mm. As the Ashbridges Bay Treatment Plant is on a partially combined collection system, this event led to plant flows (2588MLD at peak) exceeding rated secondary clarifier design capacity necessitating a secondary treatment bypass. Even with a secondary bypass, secondary effluent quality was severely impaired on this day – resulting in very high secondary effluent TP of 368mg/L. As a direct result of the high solids, the corresponding TP value was also significantly elevated at 12.0 mg/L.

For a long-term solution - addressing the root cause of high flow conditions due to combined sewer infrastructure remains the priority. The City of Toronto continues progress on the Don River and Central Waterfront & projects – the \$3B program that will not only virtually eliminate combined sewer overflows throughout the collection system, but also reduce and attenuate peak storm flows at the Ashbridges Bay facility that can lead to reduced treatment efficacy and instances of non-compliance, such as this one.

There was no deviation from the monitoring schedule in 2024. In 2024, *E. Coli* sample was scheduled on every Wednesday. *E. coli* sampling is conducted weekly, so it has been moved to Thursday in 2025. All other parameters specified in *Schedule D - Monitoring Program* of the ECA exceed the sampling frequency of 3 times/week specified by Condition 9(1)(b), negating the requirement for future sampling forecasts and scheduling.

### **3.2 Biosolids Management**

The flow projections for 2025 do not exceed the plant rated capacity of 818 ML/day and are expected to generate a sludge volume that will be +/- 5% of the volume generated in 2024.

Biosolids analysis are included in Appendix F and compared against *Ontario Regulation 267/03* under the *Nutrient Management Act*, which governs the maximum acceptable metal concentration in biosolids that are applied to land. The average metal and *E. coli* concentrations met all criteria as designated in O. Reg 267/03.

Biosolids management from the Ashbridges Bay Treatment Plant in 2024 totalled 147,182 wet tonnes and was managed as follows.

#### **3.2.1 Agricultural Land Application**

A total of 43,418 tonnes of biosolids were sent to approved agricultural land application sites in Ontario. During the 2024 land application season, the City contracted an independent field inspector to monitor the practices of the City's land appliers. The independent field inspector observed the application of biosolids on numerous agricultural land sites in Ontario. The inspector was responsible for ensuring the Nutrient Management Act and accompanying Regulations were adhered to, site specific requirements were followed, and monitoring and recording of odour measurements were taken before, during and after application.



### 3.2.2 Third Party Process Stabilization (Soil Amendment)

In 2024, a total of 25,451 wet tonnes of biosolids were further processed off-site by licensed external service providers and beneficially used as Class A biosolids and soil amendments.

### 3.2.3 Pelletization

The operation and maintenance of the Ashbridges Bay Treatment Plant Pelletizer facility and marketing of pellets is managed by an outside contractor. 68,793 wet tonnes of biosolids were processed by the on-site pelletizer in 2024. Pellet quality in 2024 met the standards set out by the Canadian Fertilizers Act.

### 3.2.4 Landfill Management of Biosolids

No biosolids were transported to landfill sites in 2024.

### 3.2.5 Mine Reclamation

A total 9,520 wet tonnes of biosolids was utilized at mine reclamation sites. *Table 3* below summarizes the biosolids management methods utilized and the total amount of biosolids sent to each management option.

*Table 3: Biosolids Management Methods*

Biosolids Management Method / Wet Tonnes	2024	2023	2022
Agricultural Land Application	43,418	42,397	41,268
Alkaline Stabilization	25,451	29,739	37,804
Pelletization	68,793	72,765	68,248
Landfill	0	0	0
Mine Reclamation	9,520	7,176	8,283
<b>TOTAL</b>	<b>147,182</b>	<b>152,077</b>	<b>155,604</b>

### 3.3 Chemical Usage

Several chemicals are used during the treatment process at the plant. *Table 4* outlines the chemical consumption for the current and previous year. Costs listed exclude applicable taxes.

*Table 4: Chemical Usage Summary*

Process	Chemical	Parameters	2024	2023	2022
Phosphorus Removal	Ferrous Chloride as Fe	Dosage (mg/L)	7.47	7.53	8.18
		Consumption (tonnes)	1,549	1,678	1,722
		Cost (\$)	\$1,935,951	\$2,074,253	\$1,927,101
Disinfection <sup>1</sup>	Sodium Hypochlorite (12% w/v)	Dosage (mg/L)	2.59	2.23	2.22
		Consumption (m3)	4,587	4,110	3,842
		Cost (\$)	\$2,657,745	\$4,118,946	\$790,122
WAS Thickening	Polymer	Dosage (kg/DT)	5.61	4.57	5.49
		Consumption (tonnes)	198.00	148.50	165.00
		Cost (\$)	\$1,111,604	\$710,561	\$753,889
Biosolids Dewatering	Polymer	Dosage (kg/DT)	16.80	15.00	13.57
		Consumption (tonnes)	683	644	608
		Cost (\$)	\$4,522,944	\$4,563,089	\$4,165,652
CEPT	Ferric Chloride as FE	Dosage (kg/DT)		0.20	0.20
		Consumption (tonnes)	105.39	44	40.83
		Cost (\$)	\$309,952	\$129,459	\$107,619
CEPT	Polymer	Dosage (kg/DT)	N/A	N/A	N/A
		Consumption (tonnes)	4.50	1.50	2
		Cost (\$)	\$28,757	\$9,586	\$8,929

### 3.4 Bypasses, Overflows, Spills, and Abnormal Discharge Events

#### 3.4.1 Bypasses

There were twenty six bypass events in 2024; all were secondary treatment bypasses. The total volume of bypass flow was 7,556 ML, or 3.72 % of the annual flow. Table 5 summarizes the bypass events that occurred in 2024.

Bypass flows do not receive secondary treatment (i.e. the Aeration Tanks) but receive preliminary, primary treatment, nutrient removal, as well as disinfection before the final effluent sampling point. All bypass flows are blended with fully treated plant effluent prior to discharge. Secondary bypasses result from high wet weather flows that exceed the plant's secondary treatment capacity. Each instance was reported to the MECP Spills Action Center and recorded

in the plant's Monthly report. Total precipitation in the Toronto area<sup>3</sup> was 929.6 mm in 2024, an 27.8% increase compared to 2023.

Table 5: Bypass Summary

No.	Date	Start of Event	End of Event	Duration (hrs)	Volume (m <sup>3</sup> )	Average Chlorine Dose (mg/L)
1	January 9 – 10 <sup>th</sup>	4:54 PM	2:40 AM	9.766	415,000	9.99
2	January 13 <sup>th</sup>	7:30 AM	2:05 PM	6.583	135,410	9.96
3	January 26 <sup>th</sup>	6:40 AM	4:26 PM	9.767	346,000	9.98
4	February 27 – 28 <sup>th</sup>	3:33 PM	10:05 AM	7.5833	290,330	13.6
5	March 9 <sup>th</sup>	8:23 AM	3:18 PM	6.9166	128,940	9.91
6	March 14 – 15	8:46 PM	1:16 AM	4.5	178,910	9.94
7	April 3 – 4 <sup>th</sup>	10:49 AM	11:49 PM	37	1,605,810	9.97
8	April 12 – 13 <sup>th</sup>	7:43 AM	1:30 AM	17.7833	473,700	9.98
9	April 14 <sup>th</sup>	9:54 AM	3:00 PM	5.1	88,680	9.96
10	April 18 <sup>th</sup>	12:44 AM	3:20 AM	2.5833	107,530	9.93
11	May 27 <sup>th</sup>	3:39 AM	8:58 PM	12.7119	468,040	9.97
12	June 7 <sup>th</sup>	2:50 PM	4:50 PM	2	61,140	9.92
13	June 20 <sup>th</sup>	5:56 AM	9:33 AM	3.6166	90,000	16
14	June 29 <sup>th</sup>	9:25 AM	1:51 PM	4.4333	170,720	9.97
15	July 10 <sup>th</sup>	8:40 AM	7:07 PM	10.4333	477,960	9.88
16	July 15 <sup>th</sup>	4:58 PM	10:10 PM	5.2	222,510	9.97
17	July 16 <sup>th</sup>	10:22 AM	10:08 PM	11.7666	859,900	9.76
18	July 24 <sup>th</sup>	3:26 PM	6:39 PM	3.2166	135,880	9.88
19	August 5 <sup>th</sup>	5:42 PM	11:58 PM	6.25	266,000	9.97
20	August 17 – 18 <sup>th</sup>	5:25 PM	12:05 AM	6.65	239,320	9.96
21	September 10 <sup>th</sup>	10:30 AM	1:05 PM	0.7833	50	65
22	September 23 <sup>rd</sup>	6:58 AM	11:52 AM	4.9	200,080	9.97
23	September 25 <sup>th</sup>	2:57 AM	5:20 AM	2.3666	55,740	9.92
24	November 20 – 21 <sup>st</sup>	9:32 PM	1:57 AM	4.4175	196,930	9.97
25	December 16 – 17 <sup>th</sup>	10:48 PM	1:34 AM	2.7722	71,100	9.94
26	December 29 <sup>th</sup>	1:30 PM	8:38 PM	7.1317	270,290	9.97

### 3.4.2 Overflows

There were no overflow events at the Ashbridges Bay Treatment Plant in 2024. 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.

<sup>3</sup> Adapted from [http://climate.weather.gc.ca/historical\\_data/search\\_historic\\_data\\_e.html](http://climate.weather.gc.ca/historical_data/search_historic_data_e.html), Toronto City Station

### 3.4.3 Spills

There were 14 spills reported to the MECP in 2024; they are summarized below.

*Table 6: Spill Summary*

Date	Volume (m <sup>3</sup> )	Nature of event	Description
Feb. 28th, 2024	0.2	Wet weather.	On Feb. 28th, 2024, plant staff noticed raw influent leaking from between the sandbags that had previously been placed around the hatch at the northwest corner of D building. It did not enter any drains or catch basins. This spill was suspected of being caused by a sudden surge of flow into the plant during a rain event on Feb. 28th, 2024. The spilled material has been vacuumed up and taken offsite for appropriate disposal. Additional sandbags were put down around the hatch, and the affected area was disinfected with sodium hypochlorite on the same day.
Mar. 6 <sup>th</sup> , 2024	Minimal	Emergency shut down for trouble shooting	Digester 9-12 were facing occasional pressure -rise issues during startup/ commissioning. To identify the root cause of high pressure, a valve for digester gas pressure was required to be installed for troubleshooting purposes. The emergency discharge lasted for 15 to 20 seconds.
March 12 <sup>th</sup> , 2024	< 1	Accident	Around 08:00hrs on March 12th, 2024, plant staff noticed a mixture of plant water and influent was accidentally discharging from the D building sump pit by a portable pump into a catch basin within the vicinity of D building. The discharge stopped once the plant staff turned off the portable pump at 08:30 am. To reduce the volume of spilled material going into the affected catch basin, the plant staff put down some absorbent materials. The spilled material was pumped out, and the affected area was disinfected in the afternoon on the same day.

## ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2024 ANNUAL REPORT

Date	Volume (m <sup>3</sup> )	Nature of event	Description
Mar.29 <sup>th</sup> , 2024	0.06	Equipment failure	At approximately 15:30 hours, some liquid came out from a sump pit between the Blower Building and the Dewatering Building and went in a catch basin southwest of the Blower building. This spill was due to a failed sump pump within Blower building. Upon noticing this spill, plant staff plugged in a portable sump pump and were able to stop the spill in 10 minutes. After this spill event, the sump pump within Blower Building was fixed.
May 27 <sup>th</sup> , 2024	48	Faulty Control Logic	<p>Around 11:30hrs on May 27<sup>th</sup>, 2024, a plant staff was notified of raw sewage spill from the northside of D building on to the North Service Road within the facility property and it was due to faulty control logic and a failure for the one of the diversion gates to close in AUTO mode. Accordingly, the plant staff took the faulty gate in MANUAL mode and closed the gate around 11:50hrs thus stopping the spill.</p> <p>The cleaning up and disinfection of the affected area was completed on May 27<sup>th</sup> and MECP was informed accordingly.</p> <p>The storm sewer outfall was inspected and no floatable sewage or discoloring water was observed leaving the outfall.</p>
June 26 <sup>th</sup> , 2024	NA	Planned spill	Planned shutdown of odor control system of aeration tanks due to electrical works required by capital projects approved in ECA. MECP grant consent for the planned shutdown.

Date	Volume (m <sup>3</sup> )	Nature of event	Description
July 16 <sup>th</sup> and July 24 <sup>th</sup> , 2024	100 respectively	Wet weather and interlock control	<p>On July 16th, 2024, around 14:00hrs, a plant staff was notified of a raw sewage spill which had escaped from the top of a structure related to the D building split flow conduit onto a grassy area, a gravel area, the North Service Road and into three catch basins within the facility property. This spill was caused by an interlock which had opened a sluice gate when the flow level reached a high level setpoint in the channel during a storm event on July 16th. The gate was in computer manual mode at that time. The plant staff manually closed the gate and stopped the spill. The spilled material was vacuumed and put back into the treatment process. This gate was put into Local Control Mode to prevent a reoccurrence.</p> <p>On July 24th, a similar spill occurred due to the storm on that day at the same location. This spill was caused by the gate which was put into Local Control Mode after July 16th spill event. Even though the gate was in Local Control Mode, a hardwired interlock over-rode the local control which resulted in the opening of the gate.</p> <p>To prevent these situations from occurring in the future, the gate is now de-energized, and the hardwired interlock has been removed.</p>

Date	Volume (m³)	Nature of event	Description
August 15, 2024	1	Inappropriate spill containment	In the morning on August 15, 2024, it was noticed that some silty water was leaking from a muck pile containment area within the construction site. Majority of the spill was on the road and made its way to nearby catch-basins in the vicinity. The affected catch-basins were hydro-vacuumed and flushed, and the affected roadway was pressure washed. All material was vacuumed into the hydrovac truck and disposed offsite at an approved facility. The cleaning up was completed on the same day when the spill occurred.
August 26, 2024	NA	Planned spill of odor due to capital project	Planned shutdown of odor control system of aeration tanks due to electrical works required by capital projects approved in ECA. MECP grant consent for the planned shutdown.
September 13, 2024	1	Inappropriate spill containment	In the morning on September 13, 2024, it was noticed that some silty water was leaking from a muck pile containment area within the construction site. Majority of the spill was on the road and made its way to nearby catch-basins in the vicinity. The affected catch-basins and roadway was cleaned-up on the same day when the spill occurred.  The activity that caused this spill was completed and this muck pile containment area was dismantled.
September 19, 2024	NA	Planned spill of odor due to capital project	Planned shutdown of odor control system of aeration tanks due to electrical works required by capital projects approved in ECA. MECP grant consent for the planned shutdown.

Date	Volume (m <sup>3</sup> )	Nature of event	Description
Oct. 31, 2024	NA	Planned spill of odor due to capital project	Planned shutdown of odor control system of aeration tanks due to electrical works required by capital projects approved in ECA. MECP grant consent for the planned shutdown.
November 20, 2024	<0.1	Leaking plant water hydrant	Around 07:40hrs on Nov. 20th, 2024, plant staff noticed a very slow stream of plant water was discharging to the underground from a plant water hydrant at the end of Final Clarifier #4 when this plant water hydrant was open for tank cleaning purpose. The discharge stopped once the hydrant was turned off around 10:30hrs. The plant water is disinfected final effluent and no need to disinfect the affected area. This plant water hydrant is out of service and marked off until the leak is repaired.

### 3.4.4 Abnormal Discharge Events

There were no abnormal discharge events at the Ashbridges Bay Treatment Plant in 2024. An abnormal discharge event is defined within the meaning of Part X of the Environmental Protection Act. For additional information, please refer to Section 7.6 – MECP/MOL Correspondence.

### 3.5 Complaints

The Ashbridges Bay Treatment Plant investigated 29 odour related complaint in 2024 and found 15 were not related to plant operation. There were no noise related complaints received in 2024. All complaints were recorded, investigated by Toronto Water staff, reported to MECP, and when possible, followed up with the complainant.



### **3.6 MECP Procedures F-5-1 and F-5-5**

Condition 11 (4)(m) of the ECA describes requirements to summarize efforts to achieve conformance with MECP Procedure F-5-1 – Determination of Treatment Requirements for Municipal and Private Sewage Works and MECP Procedure F-5-5 – Determination of Treatment Requirements for Municipal and Private Combined and Partially Separated Sewer Systems.

In reference to procedure F-5-1, the plant utilizes the activated sludge treatment process to meet secondary or equivalent treatment and consistently achieves effluent quality at or beyond the objectives outlined in the ECA.

Furthermore, Toronto Water is committed to efforts to control the frequency and volume of CSO discharges and bypass events referenced in Procedure F-5-5. The City is currently implementing a 25 year plan related to its Wet Weather Flow Master Plan (WWFMP), which aims to reduce and eliminate the adverse impacts of storm water runoff and CSO discharges associated with wet weather events. It is expected that the on-going implementation of capital projects related to the City's WWFMP will eliminate CSO discharges and ultimately improve plant effluent.

### **3.7 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 Ashbridges Bay Treatment Plant commenced or continued with the capital works projects and studies listed in Table 7 in 2024.

*Table 7: Capital Projects*

Project Name	Project Description	Project Stage (Dec 31, 2024)	Estimated Completion
Digester 9-12, II	Complete upgrade of Digester 9-12 cluster, including replacement of the mixing system and sludge recirculation pumps and sludge transfer pumps.	Completed	2024
D Building Phase 2 Upgrade	Upgrades to existing systems including screening handling and ferrous chloride dosing. Includes chemically enhanced primary treatment and upgrades to enhance maintainability of equipment.	Construction	2027
D Building Solar Roof	Installation of solar energy cells on the roof of D Building.	Construction	2025
Effluent Disinfection	New UV disinfection facility. Also includes new secondary west bypass conduits, plant water station upgrades, seawall substation upgrades, and seawall gate refurbishment.	Construction	2025
IPS	Preliminary civil work for the future IPS, replacement of M&T pumping station with new Integrated sewage/wet weather flow pumping station located South of Lakeshore.	Construction	2036
Outfall	New plant outfall that includes a new effluent drop shaft, new outfall pipe with diffusers.	Construction	2025
Polymer Upgrades	Replacement of dewatering polymer system, dewatering centrifuges, upgrades to sludge feed system, centrate storage, as well as the WAS polymer system.	Design	2030
WAS Thickening and South Station Upgrades	New WAS thickening facility using centrifuges and overhaul of South Substation.	Construction	2028
Heating and Air Systems - Contract 1	Replacement of hot water boilers	Construction	2025
Heating and Air Systems - Contract 2	Replacement of compressors, dryers and chillers	Design	2030
Cross Collector Pilot	Pilot test of new technology on final tank 2.	Completed	2024
Pelletizer 2.0	Construction of a new Pelletizer based on Pelletizer Design project.	Design	2033

ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2024 ANNUAL REPORT

Project Name	Project Description	Project Stage (Dec 31, 2024)	Estimated Completion
Secondary Treatment Upgrades	Addition of 2 new secondary treatment trains including aeration tanks and final tanks, conversion of tank 11 to fine bubble with complete replacement of associated equipment, new blower building and air header, misc. upgrades to supporting systems and installation of blower 12.	Design	2035
Elevator Modernization Project	Upgrade of existing elevators.	Design	2027
Digester 1-4 Cleaning	Cleaning and rehabilitation of Digesters 1 to 8. Upgrade associated equipment as needed.	Design	2028
Digester 5-8 Cleaning	Cleaning and rehabilitation of Digesters 1 to 8. Upgrade associated equipment as needed.	Design	2031
Old PS Upgrades	Complete upgrade of the original primary sedimentation tank 1 to 6, including process equipment replacement, scum and sludge pumping stations upgrade to improve working and operating conditions.	Design	2030
Digester Capacity Study	Evaluate the Digester Capacity at ABTP by identifying and assessing alternatives to upgrade, intensify and/or expand the capacity of the existing Anaerobic Digesters for long-term stability of the plant's biosolids management program.	Design	2026
M Building Critical Repairs III	Refurbishment/ repair of critical infrastructure in M Building such as Pumps, isolation valves/gates, check valves	Tender	2026
Landform	Landform Project is intended to provide erosion and sediment control in Ashbridges Bay and new ABTP property for the construction of a future combined sewer overflow High Rate Treatment Facility.	Construction	2025
Grit Study	Study seeks to understand the performance of the grit removal system by computational fluid dynamics (CFD) modeling and field grit sampling.	Construction	2025
T Building Pump Refurbishment Project	Refurbishment of T Building Pumps to extend life until IPS is fully commissioned.	Design	2029

## 5 MAINTENANCE

Staff from the Ashbridges Bay Treatment Plant performed a variety of scheduled, preventative, predictive and reactive maintenance activities on a diverse spectrum of equipment. Equipment availability and reliability ensures operational objectives are achieved.

The annual calibration and maintenance records of flow meters and on-line analysers was completed in 2024 and found to be within acceptable limits. A summary of calibration and maintenance of regulated monitoring equipment performed in 2024 is included in Table 8.

*Table 8: Summary of Regulated Monitoring Equipment Calibration and Maintenance*

Calibration and/or Maintenance Record	Completion Date
Pocket Colorimeter II Chlorine System - TAB-DIS-METR-3017 Calibration	01/02/2024
Pocket Colorimeter II Chlorine System - TAB-DIS-METR-3016 Calibration	01/02/2024
Online Chlorine Analyzer (CL 17sc) - North - Calibration	01/02/2024
Online Chlorine Analyzer (CL 17sc) - South - Calibration	01/02/2024
pH Analyzer: TAB-DIS-AIT-3006 Calibration -	02/08/2024
pH Analyzer: TAB-DIS-AIT-3003 Calibration	02/08/2024
Online pH Analyzer (CL 17sc) - TAB-DIS-AIT-3004 - North - Calibration	02/08/2024
Online pH Analyzer (CL 17sc) - TAB-DIS-AIT-3003 - South - Calibration	02/08/2024
Effluent Flow Meter - South Conduit - TAB-STR-FIT-8003 - Verification	05/07/2024
Effluent Flow Meter - North Conduit - TAB-STR-FIT-8004 - Verification	05/07/2024
Online Chlorine Analyzer (CL 17sc) - North - Calibration	07/17/2024
Online Chlorine Analyzer (CL 17sc) - South - Calibration	07/17/2024
pH Analyzer: TAB-DIS-METR-3018 - Calibration	08/08/2024
Effluent Flow Meter - South Conduit - TAB-STR-FIT-8003 - Verification	08/14/2024
Effluent Flow Meter - North Conduit - TAB-STR-FIT-8004 - Verification	08/14/2024
Effluent Flow Meter - South Conduit - TAB-STR-FIT-8003 - Verification	10/23/2024
Effluent Flow Meter - North Conduit - TAB-STR-FIT-8004 - Verification	10/23/2024
Influent Flow Meter - P Building - Grit Diversion- TAB-PLT-FIT-0033 - Verification	12/02/2024
Influent Flow Meter - P Building – Screening Diversion - TAB-PLT-FIT-0031 - Verification	12/02/2024
Bypass Flow Meter - West - TAB-STR-PIT-0004X - Verification	12/02/2024
Bypass Flow Meter - East - TAB-STR-PIT-0003X - Verification	12/02/2024
Influent Flow Meter - D Building - Channel 11 - TAB-PLT-FIT-1103 - Verification	12/20/2024
Influent Flow Meter - D Building - Channel 10 - TAB-PLT-FIT-1003 - Verification	12/20/2024
Influent Flow Meter - D Building - Channel 09 - TAB-PLT-FIT-0903 - Verification	12/20/2024
Influent Flow Meter - D Building - Channel 08 - TAB-PLT-FIT-0803 - Verification	12/20/2024
P Building - Grit Tank Flow Meter - Tank 1 - TAB-PLT-FIT-0101 - Verification	12/20/2024
P Building - Grit Tank Flow Meter - Tank 2 - TAB-PLT-FIT-0201 – Verification	12/20/2024
P Building - Grit Tank Flow Meter - Tank 3 - TAB-PLT-FIT-0301 - Verification	12/20/2024

Calibration and/or Maintenance Record	Completion Date
P Building - Grit Tank Flow Meter - Tank 4 - TAB-PLT-FIT-0401 – Verification	12/20/2024
P Building - Grit Tank Flow Meter - Tank 5 - TAB-PLT-FIT-0501– Verification	12/20/2024
P Building - Grit Tank Flow Meter - Tank 6 - TAB-PLT-FIT-0601– Verification	12/20/2024
Final Effluent - Autosampler - North - TAB-STR-SP-3132 Verification	Monthly
Final Effluent - Autosampler - South - TAB-STR-SP-3334 Verification	Monthly
Autosampler - West Bypass - TAB-STR-SP-4001 - Verification	Monthly
Autosampler - East Bypass - TAB-STR-SP-3001 - Verification	Monthly
Influent Sampler - TAB-PLT-SP-0500 - D Building - Calibration	Quarterly
Influent Sampler - TAB-PLT-SP-0500 - D Building - Calibration	Quarterly
Influent Sampler - TAB-PLT-SP-0041 - P Building - Calibration	Quarterly
Influent Sampler - TAB-PLT-SP-0041 - P Building - Calibration	Quarterly

In 2024, there were a total of 36,049 work orders completed on routine maintenance and emergency repairs; refer to Appendix H for a summary of major maintenance activities as per Condition 11(4) of the ECA.

One of the maintenance activities undertaken at the plant fell under Limited Operational Flexibility. A summary of the Notice of Modifications is shown in Section 7.6 MECP/MOL Correspondence.

## 6 UTILITIES

A summary of monthly utility consumption for the previous three years at Ashbridges Bay Treatment Plant is provided in Figure 1. Table 9 below summarizes the total cost and average unit cost for water, hydro, and natural gas. Total annual consumption for potable water, hydro, and natural gas was 628,225 m<sup>3</sup>, 134.2 GWh, and 6.0 M scm, respectively.

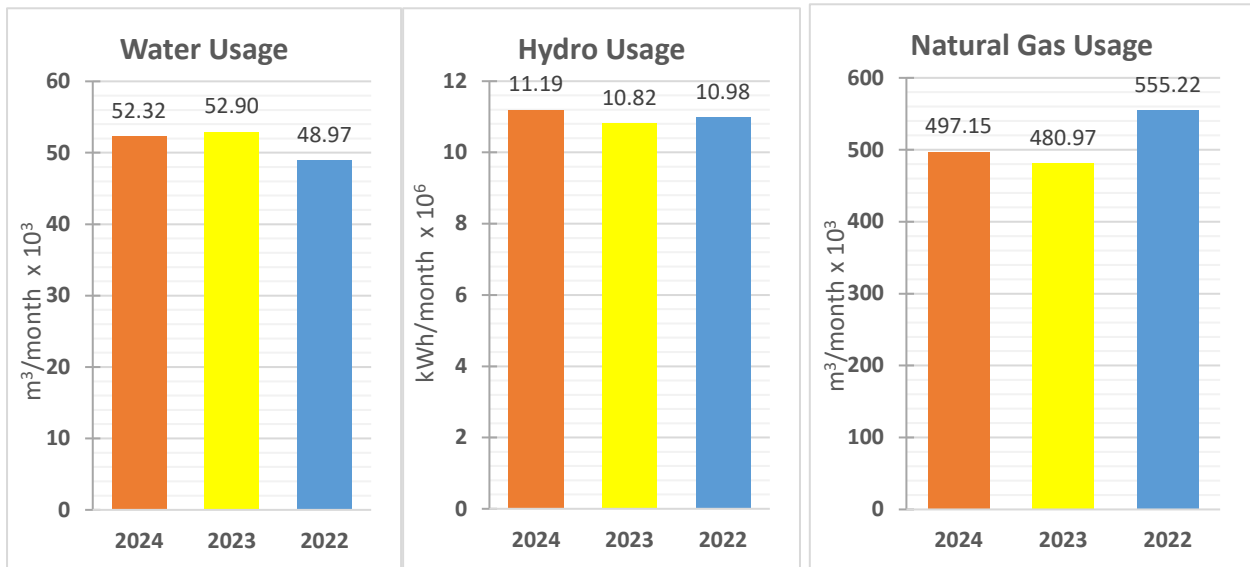


Figure 1: Annual Utility Consumption (Water, Hydro, Gas)

Table 9: Average Unit and Total Utility Cost

Utility	2024	2023	2022
Water Unit Cost (\$/m³)	\$4.76	\$4.62	\$4.48
Water Total Cost (\$/year)	\$2.99M	\$2.92M	\$2.63M
Hydro Unit Cost (\$/kWh)	\$0.10	\$0.10	\$0.10
Hydro Total Cost (\$/year)	\$13.19M	\$12.3M	\$13.1M
Natural Gas Unit Cost (\$/m³)	\$0.42	\$0.41	\$0.32
Natural Gas Total Cost (\$/year)	\$2.48M	\$2.39M	\$2.1M

## 7 ADMINISTRATION

### 7.1 Operations and Maintenance Costs

The 2024 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 increased by 0.4 % from 2023. Over half of the increased operations and maintenance cost was due to an increase in the cost of chemicals

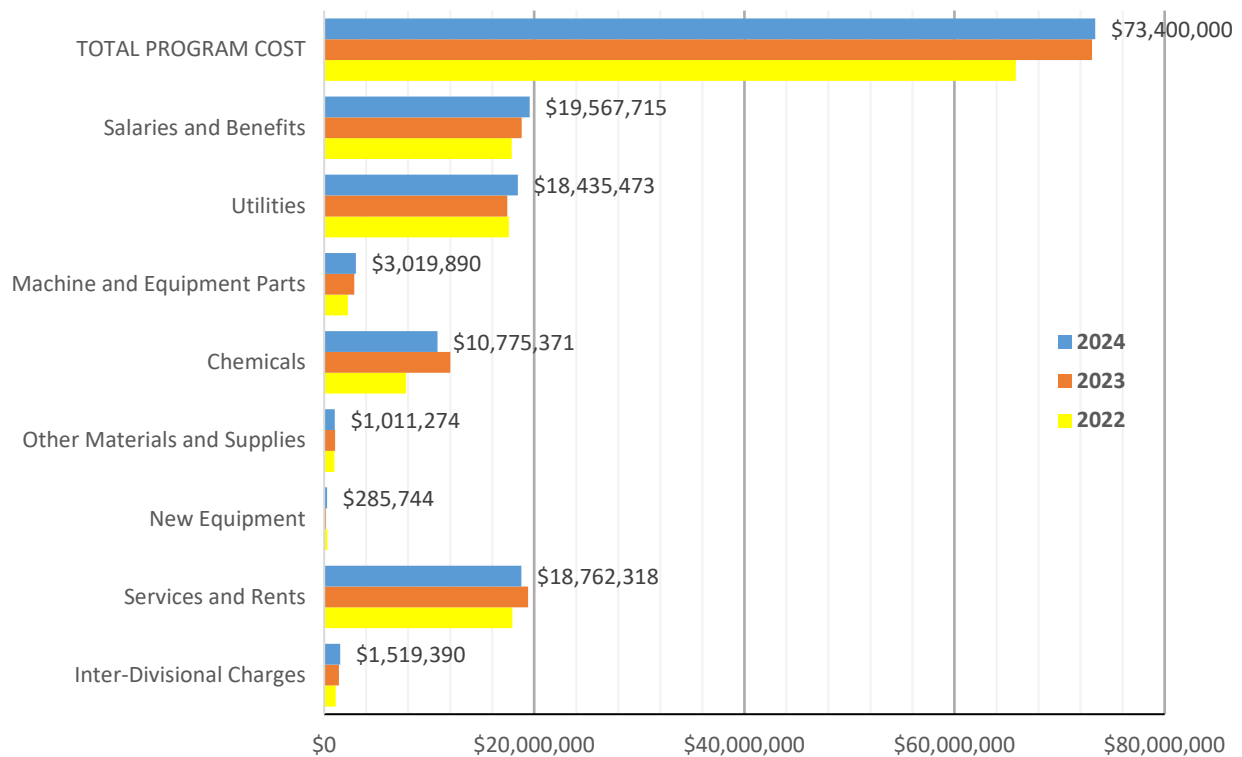


Figure 2: Operations and Maintenance Cost Breakdown

## 7.2 Human Resources

Plant Staffing at the Ashbridges Bay Treatment Plant in 2024 is shown in Table 10.

*Table 10: Plant Staffing*

Position	Number of FTE 2024
Sr. Plant Manager	1
Manager, Engineering Services	2
Superintendent, Plant Process and Operations	2
Senior Engineer	3
Engineer	1
Area Supervisor Plant Operations and Maintenance	8
Supervisor, Operational Support	1
Co-Ordinator Business Support	1
Supervisor, Operating Engineers A/R-C	1
Stationary Engineer Operator	11
Electrical Instrumentation Specialist	2
Engineering Technologist Technician	2
Plant Technician/Wastewater	37
Industrial Millwrights	42
EICT	23
Support Assistant	2
Wastewater Plant Worker	5
Administration Trainee	0.5
Technical Trainee	0.3
Labourer 2	3.2
<b>Total FTE Positions</b>	<b>148</b>

<sup>1</sup> 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 Ashbridges Bay Treatment Plant. 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 Ashbridges Bay Treatment Plant are included in Figure 3<sup>4</sup>.

As of December 31st, 2024, there were 4 health and safety incidents, and a total of 13 lost time days due to work related injuries.

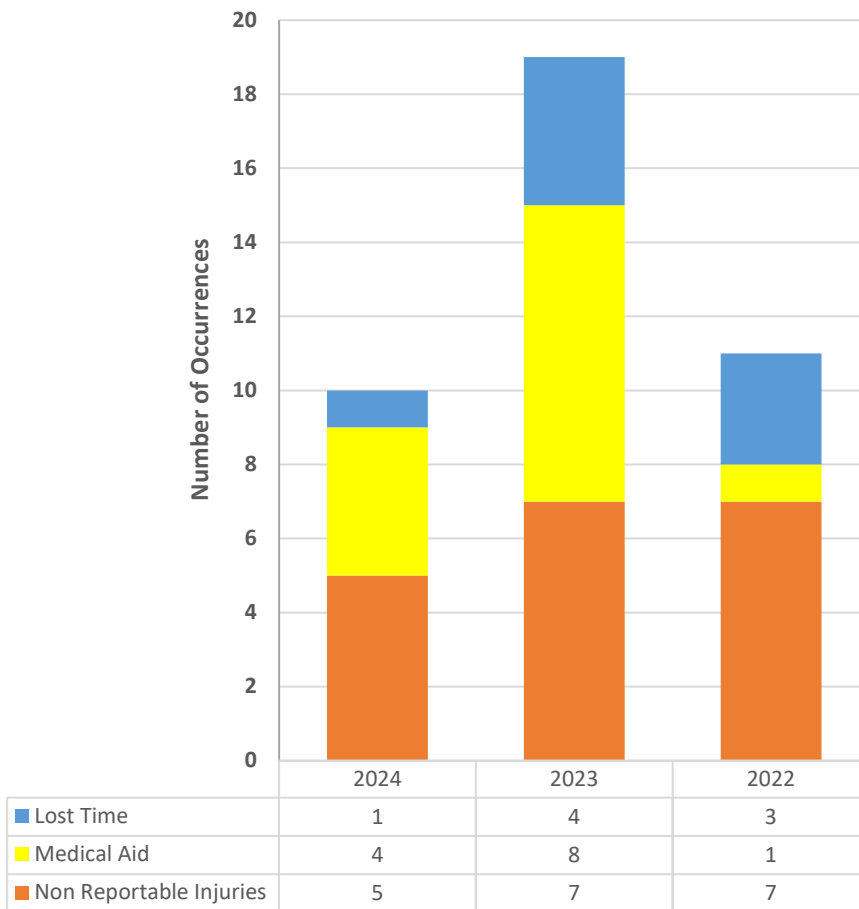


Figure 3: Ashbridges Bay Treatment Plant Health & Safety Injury Summary

<sup>4</sup> The previously reported values for 2023 and 2022 have been changed to reflect the status of those WSIB claims as of February 21<sup>st</sup>, 2025

## 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 Ashbridges Bay Treatment Plant operations and skilled trades staff in 2024 includes the list of courses shown in Appendix I. 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 license. As part of this initiative, general operational/process training was delivered in order to prepare staff for any certification examination that they need to write. Table 11 summarizes the status of operator certification at the Ashbridges Bay Treatment Plant in 2024.

*Table 11: Wastewater Treatment Certificates*

Class Level	Licensed
Class I	53
Class II	6
Class III	6
Class IV	34
OIT	28
<b>Total</b>	<b>127</b>

## 7.6 MECP Correspondence

There were no orders issued by the Ministry of the Environment, Conservation and Parks (MECP).

Table 12 summarizes the correspondence submitted to the MECP for the Ashbridges Bay Treatment Plant. Correspondence related to spills and bypasses can be referenced in Section 3.4.

Table 12: Correspondence submitted to the MECP

Event Date	Type	Description	Resolution	Resolution Date
<b>Complaints</b>				
May 1 <sup>st</sup> , 2024	Odor complaint	An odour complaint was received on May 1 <sup>st</sup> , 2024. An investigation was completed and no possible source of odour was identified at the plant.	NA	NA
May 2 <sup>nd</sup> , 2024	Odor complaint	An odour complaint was received on May 2 <sup>nd</sup> , 2024. An investigation was completed, and no possible source of odour was identified at the plant.	NA	NA
May 4 <sup>th</sup> , 2024	Odor complaint	An odour complaint was received on May 4 <sup>th</sup> , 2024. An investigation was completed, and no possible source of odour was identified at the plant.	NA	NA
May 5 <sup>th</sup> , 2024	Odor complaint	An odour complaint was received on May 5 <sup>th</sup> , 2024. The possible source was identified Pelletizer process. However, the specific source was in the process of investigation.	NA	NA
May 8 <sup>th</sup> , 2024	Odor complaint	An odour complaint was received on May 8 <sup>th</sup> , 2024. An investigation was completed, and no possible source of odour was identified at the plant.	NA	NA
May 9 <sup>th</sup> , 2024	Odor complaint	An odour complaint was received on May 9 <sup>th</sup> , 2024. An investigation was completed, and it might be due to a pin hole in one of Pelletizer process equipment.	The equipment has since been shut down and maintenance was being performed on the equipment	May 9 <sup>th</sup> , 2024
May 16 <sup>th</sup> , 2024	Odor complaint	An odour complaint was received on May 16 <sup>th</sup> , 2024. An investigation was completed, and no possible source of odour was identified at the plant.	NA	NA
June 12 <sup>th</sup> , 2024	Odor complaint	An odour complaint was received on June 12 <sup>th</sup> , 2024. An investigation was completed, and no possible source of odour was identified at the plant.	NA	NA
June 17 <sup>th</sup> , 2024	Odor complaint	On June 17 <sup>th</sup> , ABTP staff received two odor complaints. 1 <sup>st</sup> odor complaint came in the morning and no possible source of odor was identified. 2 <sup>nd</sup> odor complaint came in around 11:00 am and it might be due to Pelletizer re-start.	The startup was short lived and the odour was noted as resolved by the time Plant staff reconnected with the original complainant in the afternoon.	NA

ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2024 ANNUAL REPORT

Event Date	Type	Description	Resolution	Resolution Date
July 3 <sup>rd</sup> / July 4 <sup>th</sup> , 2024	Odor complaint	The plant received one odor complaint on July 3 <sup>rd</sup> and one odor complaint on July 4 <sup>th</sup> from the same address. The plant staff conducted investigations for both odor complaints, however, no specific source of odor was identified at the plant. The complainant was followed up with the outcome of investigations. The complainant advised that the odours were intermittent (non continuous between the two complaints) and both were short lived, and were resolved within an hour of the complaint.	NA	NA
July 12 <sup>th</sup> , 2024	Odor complaint	The plant received an odor complaint on July 12 <sup>th</sup> and the possible source was identified as high sludge level at one primary tank.	The sludge was pumped down at regular basis.	NA
July 15 <sup>th</sup> , 2024	Odor complaint	The plant received an odor complaint on July 15 <sup>th</sup> and the possible source was identified as Pelletizer emergency shutdown.	Pelletizer stayed shutdown and was in process of repairing.	NA
July 21 <sup>st</sup> , 2024	Odor complaint	The plant received an odor complaint on July 21, 2024. An investigation was conducted and no possible source of odor within the plant was identified. The complainant was provided with investigation result.	NA	NA
July 26 <sup>th</sup> , 2024	Odor complaint	The plant received an odor complaint on July 26, 2024. Investigation was conducted both off-site and on site. The off-site investigation indicated smell of primary effluent, however, no smell noticed on site around primary tanks.	NA	NA
August 1, 2024	Odor complaint	The plant received an odor complaint on August 1 <sup>st</sup> , 2024. The plant staff investigated both on site and off site, and no possible source of plant related odor identified. The complainant was updated with the investigation result.	NA	NA

## ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

2024 ANNUAL REPORT

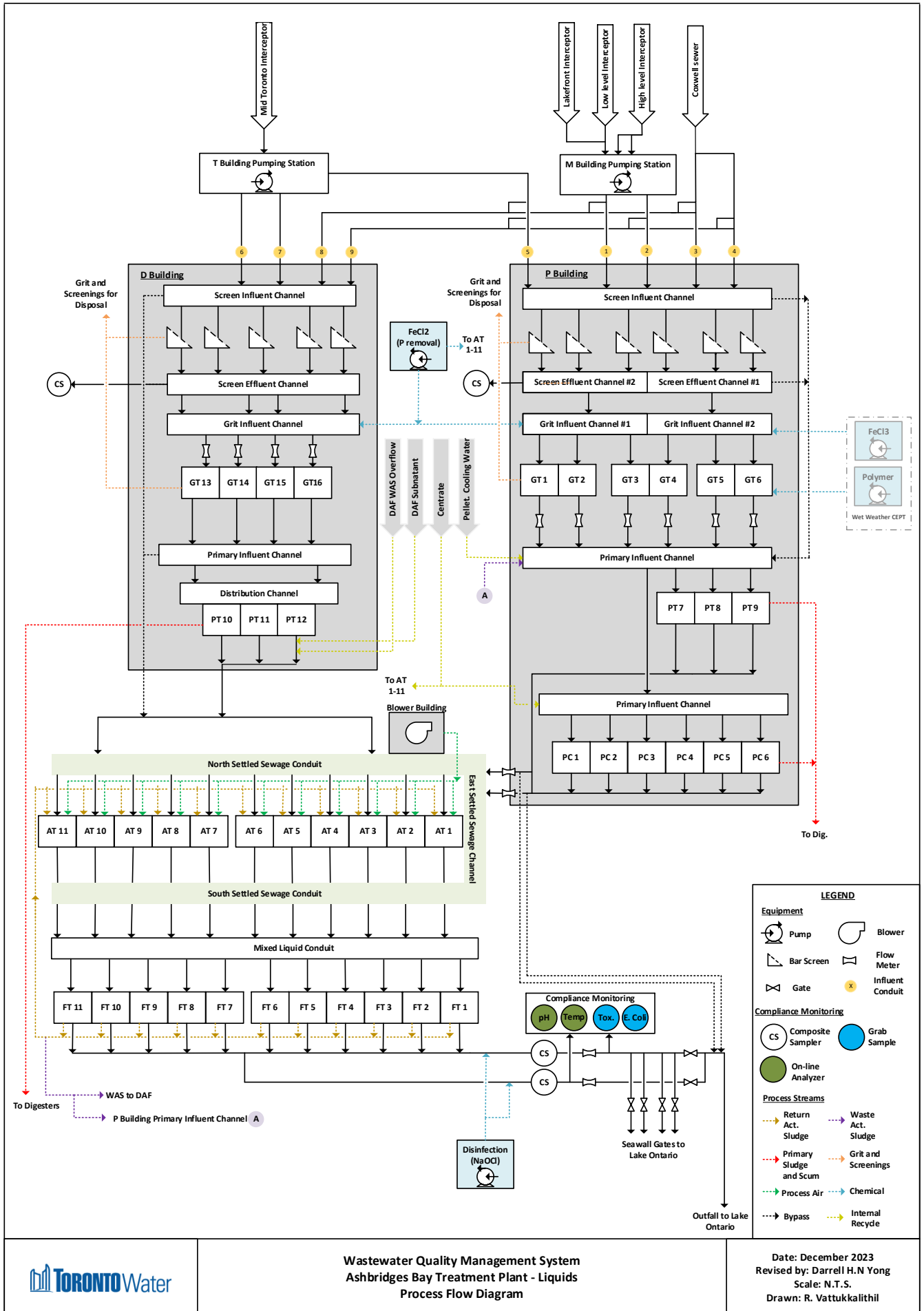
Event Date	Type	Description	Resolution	Resolution Date
October 3 <sup>rd</sup> , 2024	Odor complaint	The plant received an odor complaint on Oct. 3 <sup>rd</sup> , 2024. Plant staff conducted investigation and the possible source of odor was identified as Pelletizer shutdown/re-start due to burner fault.	NA - it was a rare fault and not an on-going issue	NA
Oct. 23 <sup>rd</sup> , 2024	Odor complaint	Ashbridges Bay Treatment Plant received an odor complaint via office of Councillor Brad Bradford on Oct. 23 <sup>rd</sup> , 2024. Once the complaint received yesterday afternoon, Ashbridges Bay facility staff did investigate – both attending to the address as well as checking facility odour control equipment and process conditions. At the time of investigation, there was not detectable or noticeable odour in the area of Queen st. East. All facility parameters were normal, and all odour control equipment was in good operating condition.  The plant management staff has responded to the office of Councillor via email and provided investigation outcomes.	NA	NA
Dec. 23 <sup>rd</sup> , 2024	Odor complaint	Ashbridges Bay Treatment Plant received an odor complaint on Dec. 23 <sup>rd</sup> , 2024. The plant staff did investigation, and the possible source of odor was identified as Pelletizer sump pump issue. The complainant was contacted with investigation outcome and actions taken to eliminate the possible source of odor.	Pelletizer operations verified that sump pumps were operational.	NA
<b>Consent Letters</b>				
July 7 <sup>th</sup> , 2024	Request for Consent	Planned releases of primary effluent due to bypass gates annual maintenance.	Consent was granted.	July 11 <sup>th</sup> , 2024
<b>Notice of Modification to Sewage Works</b>				

## ASHBRIDGES BAY WASTEWATER TREATMENT PLANT

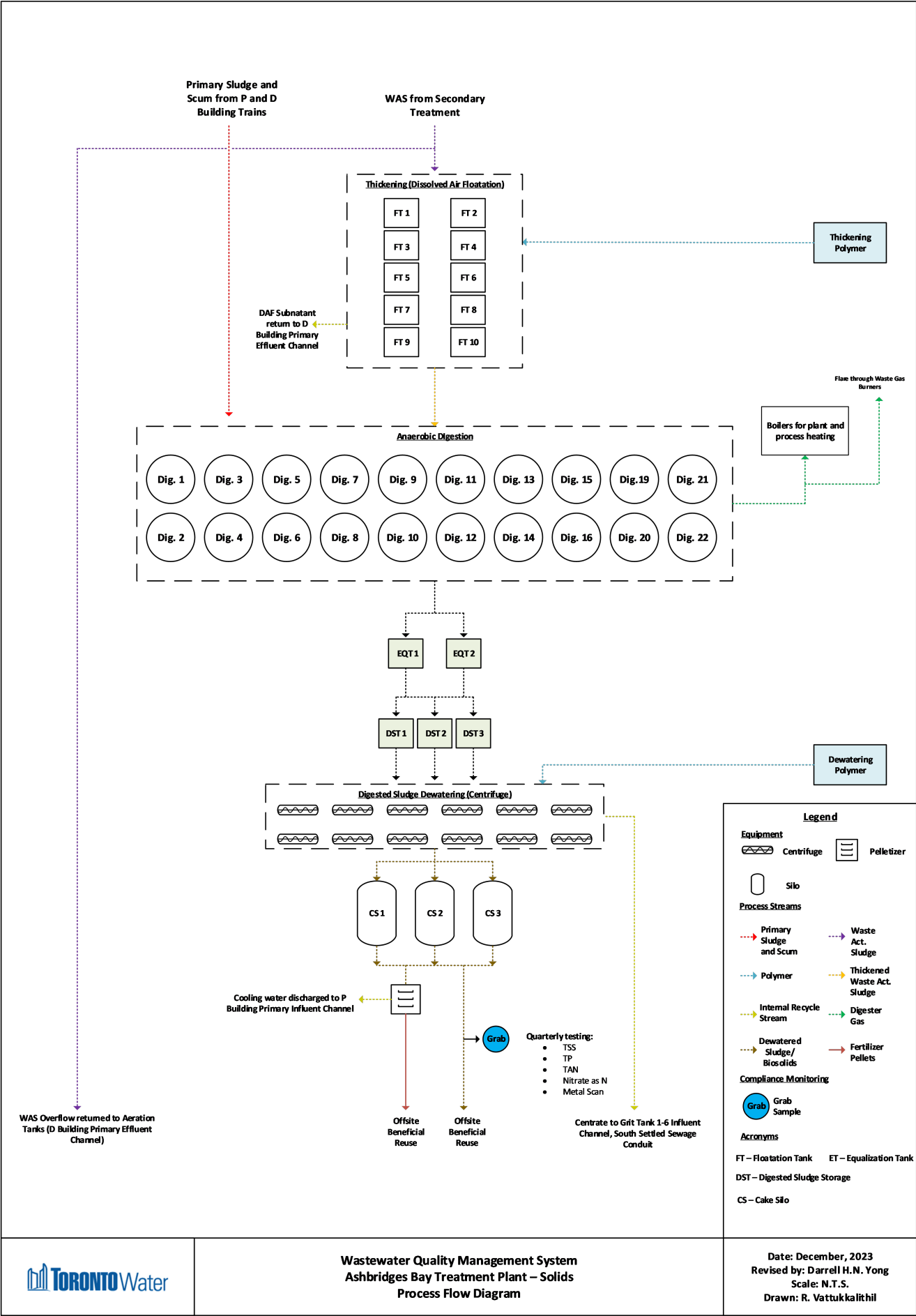
2024 ANNUAL REPORT

Event Date	Type	Description	Resolution	Resolution Date
August 20th, 2024	Notice of Modification to Sewage Works	The purpose of the temporary modifications to the existing SH dosing lines is to provide continuous final effluent disinfection during testing of the new UV disinfection system in the newly constructed UV Disinfection building. Once this new disinfection system is successfully commissioned, the relocated temporary SH dosing system will be decommissioned and removed.	Pending construction	TBD
<b>Notification on Construction of Proposed Works</b>				
NA	NA	NA	NA	NA
<b>Notification on Commissioning</b>				
NA	NA	NA	NA	NA
<b>Notification on Completion of Proposed Works</b>				
May 10 <sup>th</sup> , 2024	Notification on Completion	Statement for completion of construction of the Proposed Works for Refurbishment of Digester 9 to 12 at Ashbridges Bay Treatment Plant which has been certified by a Professional Engineers as per Condition 3.2 under the Current ECA (0574-CQ6J5H).	NA	NA
<b>MECP Inspection</b>				
Dec. 3 <sup>rd</sup> , 2024	MECP inspection	NA	No action required.	NA

## APPENDIX A – Plant Schematic

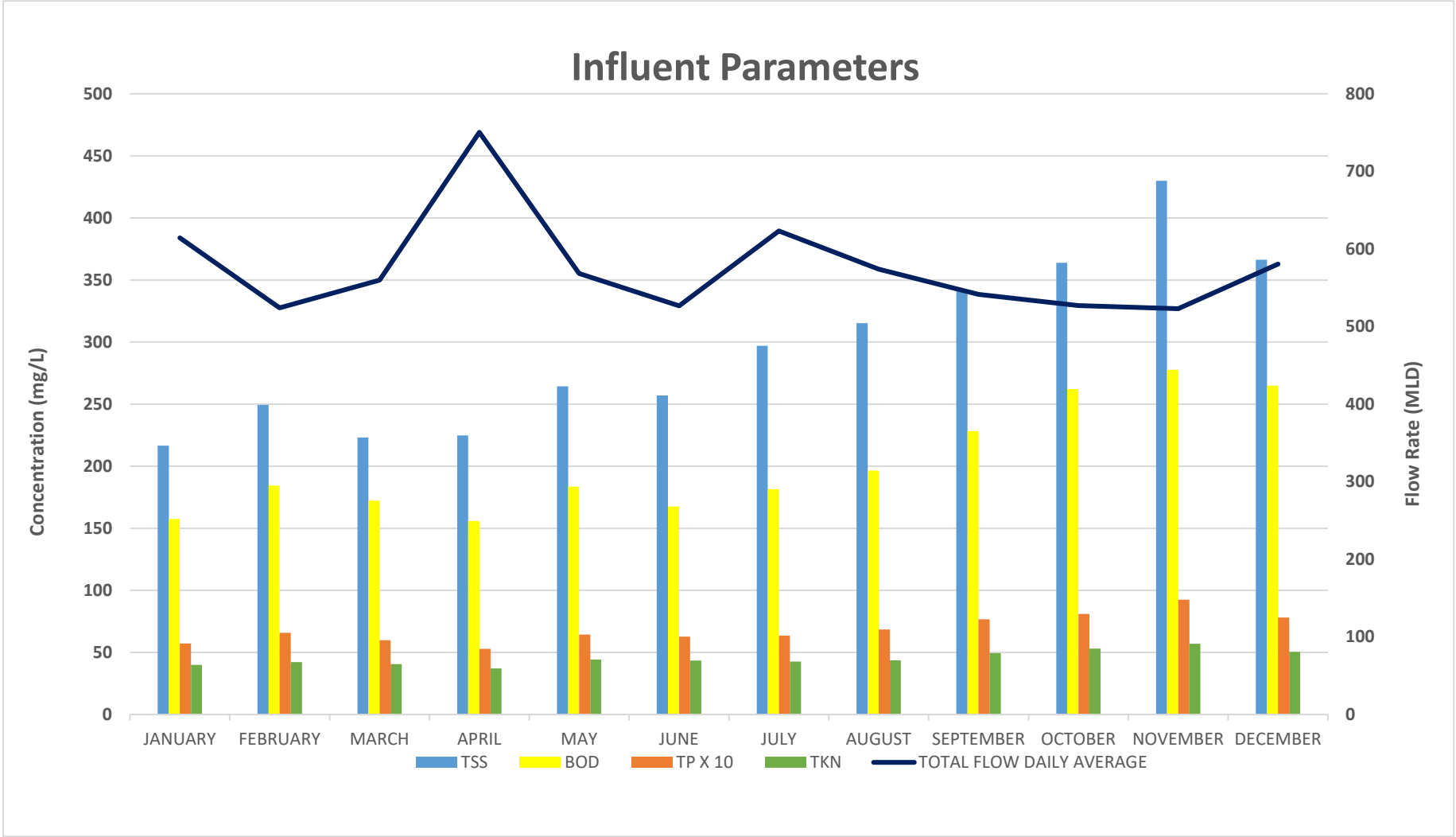




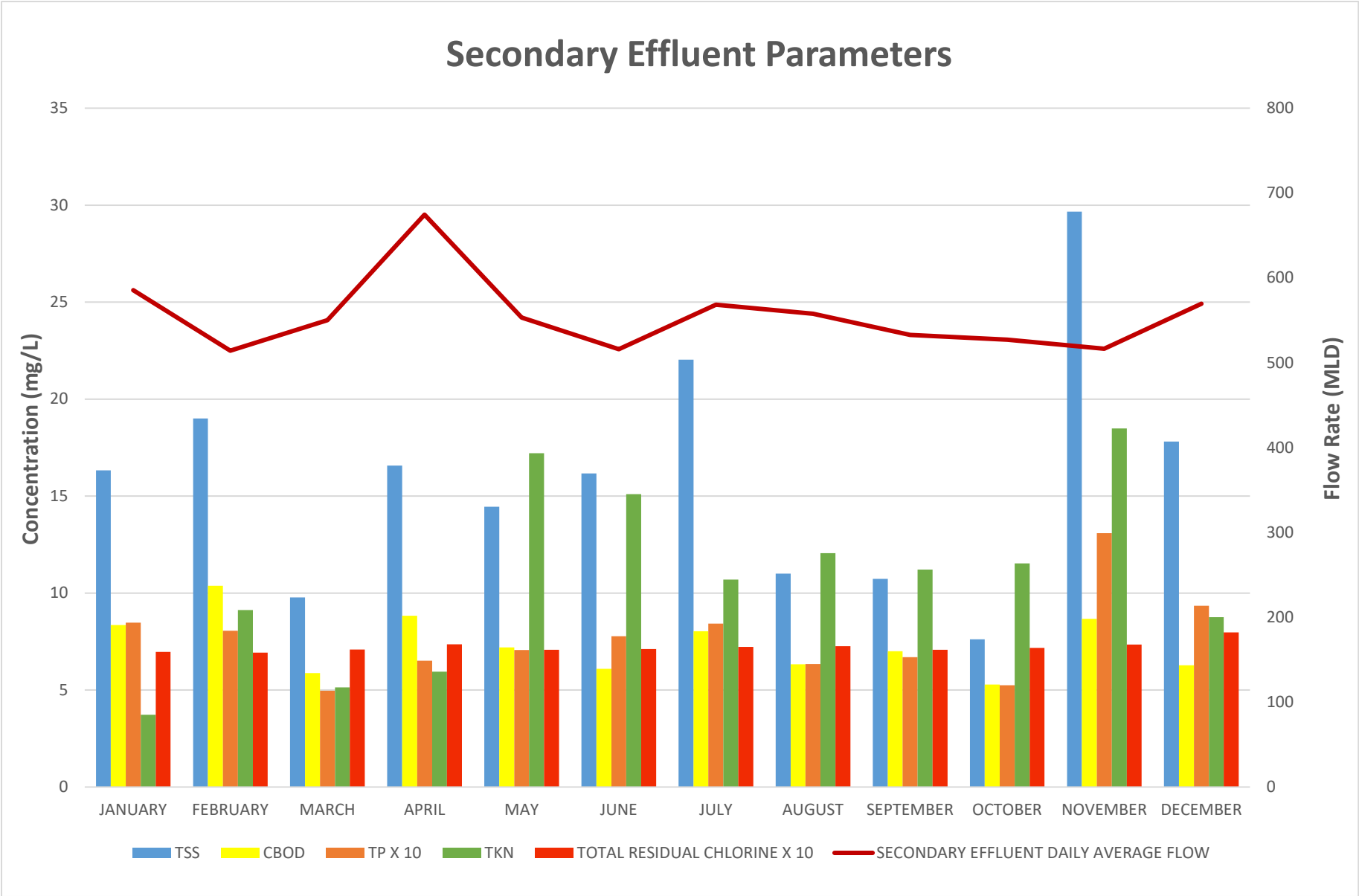


## APPENDIX B – Influent and Effluent 2024 Performance Charts

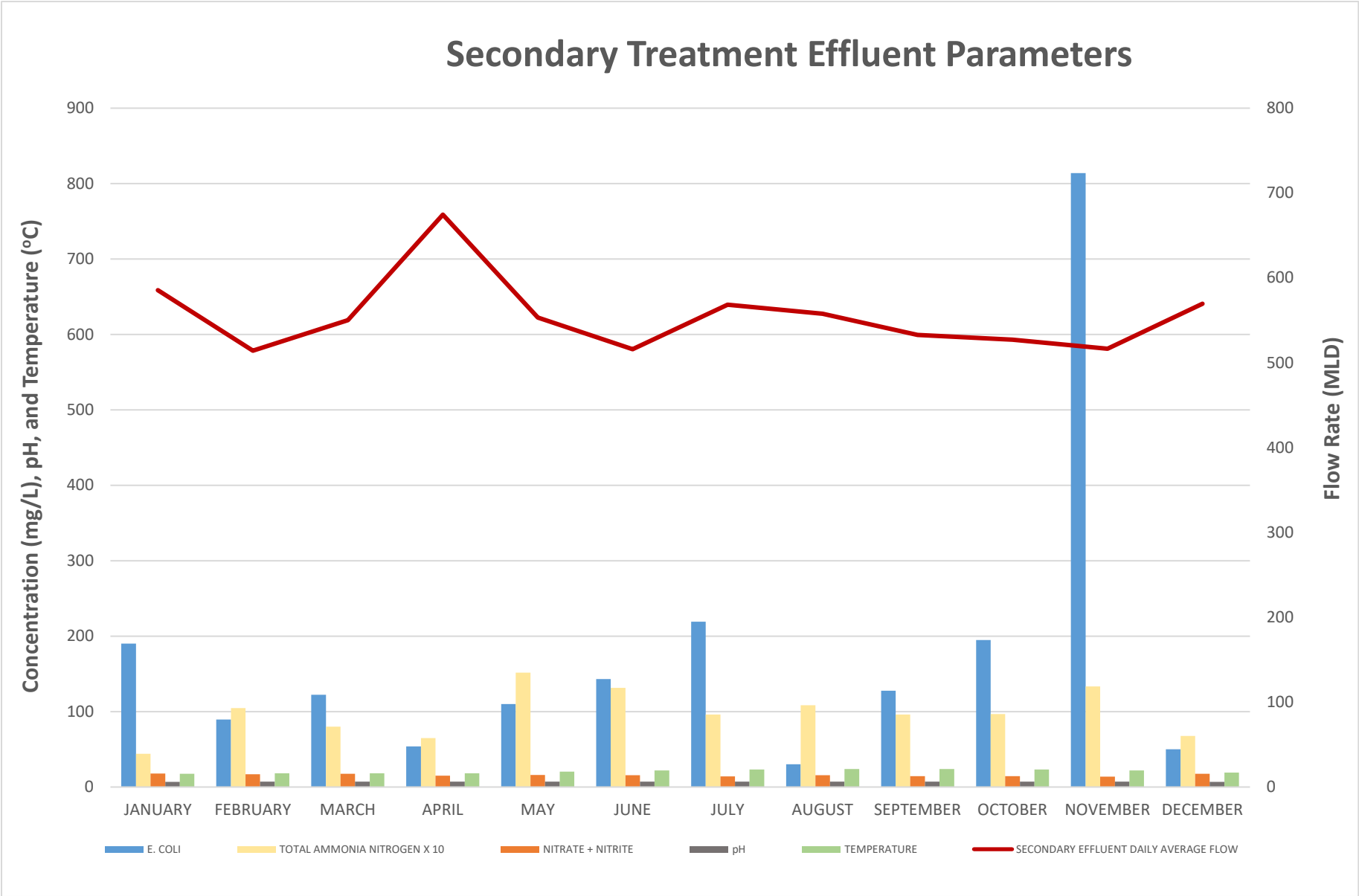
APPENDIX B – Influent and Effluent 2024 Performance Charts



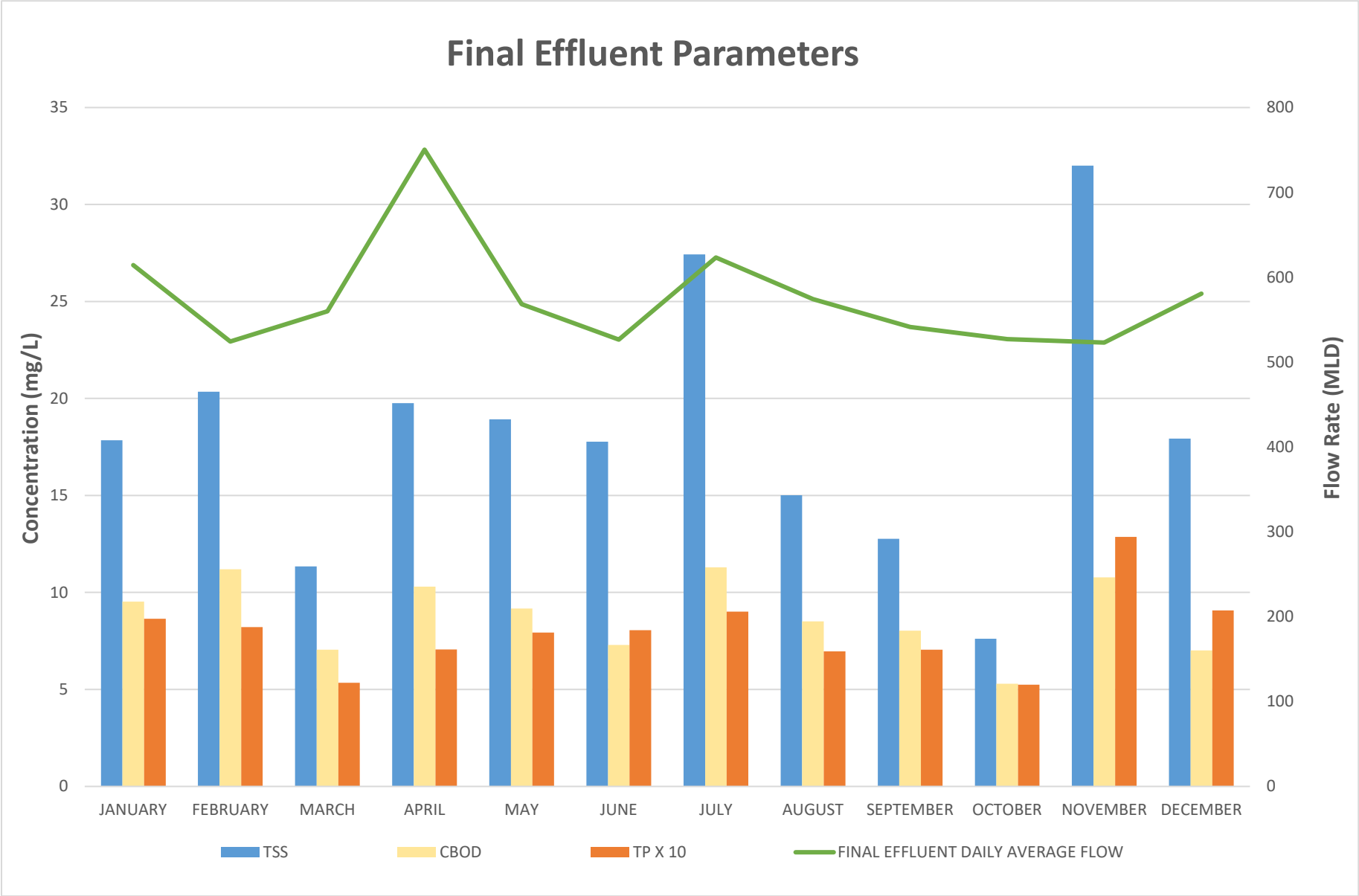
APPENDIX B – Influent and Effluent 2024 Performance Charts



APPENDIX B – Influent and Effluent 2024 Performance Charts



APPENDIX B – Influent and Effluent 2024 Performance Charts



## APPENDIX C – Historical Performance Data

APPENDIX C – Historical Performance Data

Parameters	Units	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Influent														
Flow	ML/day	576.3	610.2	570.4	512.8	556.3	651.5	563.9	659.8	549.8	585.2	638.4	631.6	576.1
Total Annual Flow	ML	210,921	222,626	208,083	187,270	203,657	237,723	205,750	240,817	201,229	212,831	232,932	230,456	210,834
Total Suspended Solids (TSS)	mg/L	295.8	302.2	324.1	329.7	252.9	207.8	303.7	279.5	318.6	334.6	328.5	271.2	275.2
Biochemical Oxygen Demand (BOD <sub>5</sub> )	mg/L	202.8	195.5	203.1	218.5	179.3	153.8	207.9	201.9	244.6	274.9	258.3	174.9	178.2
Total Phosphorus (TP)	mg/L	6.9	6.5	6.5	6.3	5.6	4.9	6.3	6.4	7.5	7.5	6.6	5.9	6.2
Total Kjeldahl Nitrogen (TKN)	mg/L	45.4	42.3	44.9	42.8	38.2	37.2	42.6	40.3	45.4	43.7	44.7	46.6	47.7
Preliminary Treatment														
Grit and Screenings	tonnes/day	6.5	6.1	5.1	5.0	4.7	4.6	4.9	5.5	5.7	5.6	11.0	13.0	9.2
Primary Treatment														
TSS	mg/L	203.7	206.9	250.8	246.2	186.0	99.8	89.3	142.9	123.9	233.3	205.9	162.7	216.1
Carbonaceous Biochemical Oxygen Demand (cBOD <sub>5</sub> )	mg/L	126.2	111.7	118.6	132.5	117.0	99.8	89.3	68.7	84.3	98.9	92.9	90.3	113.3
Secondary Treatment														
Aeration Loading	kg CBOD <sub>5</sub> /m <sup>3</sup> .day	0.38	0.36	0.36	0.37	0.35	0.35	0.27	0.25	0.25	0.32	0.32	0.32	0.53
Mixed Liquor Suspended Solids	mg/L	3065	2,908	2994	2899	2933	3,285	3389	2,372	2,643	2,969	2,696	1,830	1,467
Flow through Seawall Gates	ML	3452	4727	2101	1462	1732	3,834	3278	3,187	2,004	2,908	4,751	5,227.9	-
Secondary Treatment Effluent														
Secondary Effluent Daily Average Flow	ML/day	555.6	597.5	562.5	509.3	549.5	637.3	559.6	654.9	548.7	576.9	632.4	625.7	571.2
TSS	mg/L	15.9	12.9	13.5	13.2	11.8	14.7	8.0	5.2	6.4	10.1	8.2	8.0	8.4
TSS Loading Rate	kg/day	8827	7732	7567	6732	6465	9,336	4453	3,415	3,489	5,021	5,021	4,981	4,810
cBOD5	mg/L	7.3	6.6	5.8	5.5	4.6	7.3	4.7	4.1	4.3	5	4.6	8.5	6.9
cBOD5 Loading Rate	kg/day	4079	3963	3257	2814	2509	4,668	2627	2,668	2,381	2,838	2,837	5,262	3,926
TP	mg/L	0.8	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.8	0.6	0.6
TP Loading Rate	kg/day	425	415	407	368	359	487	376	458	365	495	495	330	330
Escherichia Coli (E. Coli)	CFU/100 mL	179.0	112.0	60.0	29.0	17.0	32.0	25.6	53	36.8	66.5	7.4	90.0	31.3
pH	-	7.1	7.2	7.1	7.0	6.9	7.1	7.0	6.8	6.8	7.0	7.0	7.2	7.2



APPENDIX C – Historical Performance Data

Parameters	Units	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Total Residual Chlorine	mg/L	0.7	0.6	0.5	0.5	0.55	0.54	0.59	0.60	0.60	0.50	0.80	1.00	0.60
Total Kjeldahl Nitrogen (TKN)	mg/L	10.7	8.0	6.6	4.4	3.8	10.4	6.2	5.0	3.8	6.7	7.3	14.5	14.4
Total Ammonia Nitrogen	mg/L	9.8	7.5	5.9	3.2	3.0	10.9	6.0	4.6	3.3	5.3	5.9	11.2	13.8
Nitrate + Nitrite	mg/L	15.8	17.5	19.1	17.8	17.5	14.4	17.4	17.1	18.5	17.0	16.3	13.1	17.1
Temperature	degrees Celsius	20.9	20.4	20.8	18.8	20.8	19.7	21.0	20.2	20.9	20.1	19.5	20.2	19.7
Final Effluent														
TSS	mg/L	18.2	14.9	13.8	13.7	11.9	15.0	8.1	5.4	6.5	10.4	9.2	-	-
cBOD5	mg/L	8.8	7.7	6.4	5.6	4.7	7.9	4.7	4.1	4.4	5.2	5.0	-	-
TP	mg/L	0.8	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.8	-	-
Solids Handling														
Primary Sludge Treated	m³/day	3,979	4,298	3,822	3,357	4,874	5,429	5,978	5,640	6,420	4,440	4,292	5,067	5,546
Primary Sludge Total Solids (TS)	%	2.1	2.2	2.5	1.9	2.4	2.3	2.3	2.5	2.6	3	3.05	2.9	2.72
Primary Sludge Total Volatile Solids (TVS)	%	73.1	70.9	70.1	69.1	73.7	71.6	73.9	73	73.8	73.5	72.9	62.9	74.9
Waste Activated Sludge (WAS) co-settled in Primary Clarification Tanks or excess WAS to Aeration	m³/day	5,729	4,059	4,778	3,430	1,816	1,795	911	1,260	2,130	1,240	2,405	8,800	14,523
WAS to Thickening	m³/day	9,509	9,099	8,222	8,266	7,787	7,910	6,944	7,380	7,360	8,470	8,163	10,469	9,665
WAS TS	mg/L	1.0	1.0	1.0	1.1	0.9	0.9	0.8	0.7	0.7	0.8	0.82	0.54	0.49
Thickened WAS (TWAS) Treated	m³/day	2,594	2,494	2,258	2,527	2,257	2,119	1,952	1,440	1,600	2,090	2,366	876	677
TWAS TS	%	3.9	3.9	3.8	3.3	3.4	3.5	3.6	3.7	3.4	3.3	3.4	4.8	4.6
TWAS TVS	%	73.0	72.0	70.4	70.4	70.7	73.8	73.9	73.2	71.6	71	72.9	69.1	72.0
Volume to Digestion	m³/day	6,572	6,556	6,080	5,885	7,131	7,548	7930	7,080	8,020	6,530	6,658	5,933	6,222
Digesters Hydraulic Retention Time	days	19.3	18.1	20.2	20.9	17.3	20.0	19.3	20.2	18.1	23.3	23.1	21.8	21.1
Organic Loading to Digesters	TVS per m3 of digester capacity per day	1.1	1.1	1.0	0.8	1.1	1.0	1.0	0.9	1.1	1.0	1.0	2.1	1.3
Digester Gas Volume	m³/day	51,066	56,288	54,497	52,682	59,945	65,698	61,856	61,640	62,330	64,560	65,921	77,781	115,174
Dewatering Centrifuge Feed TS	%	1.9	1.8	1.9	1.7	1.8	1.7	1.6	1.7	1.8	1.8	1.8	1.8	1.7
Dewatered Biosolids TS	%	26.1	27.1	28.0	27.0	26.9	27.7	27.9	27.9	28.1	27.7	26.5	27.8	28.3

APPENDIX C – Historical Performance Data

Parameters	Units	2024	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014	2013	2012
Centrate Quality	mg/L	1058	754	475	985	635	626	428	299	319	665.32	2091	1959	1196
Solids Capture Rate	%	94	96	97	94	96	96	97	98	98	96.44	88	77	96
Centrifuge Run Time	hours	49,340	49,030	48,372	48,347	47,578	51,226	52,790	52,400	52,329	48,049	43,507	51,451	102,922
Biosolids Management	wet tonnes/year	147,182	152,077	155,604	140,518	148,357	154,656	155,756	159,288	149,733	145,321	143,190	142,908	139,562

<sup>1</sup>Due to TKN methodology issues at the Toronto Water lab, some early 2024 results are being removed from the database, increasing TNK by ~1 mg/L. However, due to time constraints, this correction is not reflected in the reported value.

## APPENDIX D – Secondary Treatment Effluent Parameters (Leachate Related)

## APPENDIX D – Secondary Treatment Effluent Parameters (Leachate Related)

Quarterly Average	Boron	Cobalt	Magnesium	Manganese	Potassium	Strontium	Bis(2-ethylhexyl) Phthalate
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L
Q1	0.139	<0.004	10.1	0.0543	11.4	0.248	<0.25
Q2	0.134	<0.004	10.8	0.0583	11.7	0.24	<0.25
Q3	0.117	<0.004	12.6	0.0994	14.9	0.254	<0.25
Q4	0.0823	<0.004	11.1	0.0513	13.8	0.214	<0.25

Values in red are half the MDL

Units are mg/l except for Bis Phthalate which is ug/l

## APPENDIX E - Influent and Effluent Metal Concentrations

## APPENDIX E - Influent and Effluent Metal Concentrations

### *Influent (Daily Composite tested once/month for metals)*

Parameters Units	Arsenic mg/L	Cadmium mg/L	Chromium mg/L	Cobalt mg/L	Copper mg/L	Iron mg/L	Lead mg/L	Manganese mg/L	Mercury mg/L	Nickel mg/L	Zinc mg/L
January	0.005	0.002	0.00416	0.002	0.0863	1.88	0.0025	0.0539	0.00005	0.0025	0.115
February	0.005	0.002	0.00419	0.002	0.0921	2.55	0.0025	0.0631	0.00005	0.00548	0.113
March	0.005	0.002	0.002	0.002	0.1	1.95	0.0025	0.0565	0.00005	0.0025	0.108
April	0.005	0.002	0.00542	0.002	0.0901	2.29	0.00574	0.0592	0.00005	0.00528	0.137
May	0.005	0.002	0.00559	0.002	0.108	3.11	0.00528	0.065	0.00005	0.0025	0.134
June	0.005	0.002	0.00589	0.002	0.11	3.23	0.0025	0.0652	0.00005	0.00561	0.141
July	0.005	0.002	0.00563	0.002	0.139	3.54	0.00691	0.0717	0.00005	0.00585	0.169
August	0.005	0.002	0.00626	0.002	0.144	3.52	0.00611	0.0764	0.00016	0.0064	0.184
September	0.005	0.002	0.00621	0.002	0.177	4.32	0.00672	0.0786	0.00012	0.0071	0.198
October	0.005	0.002	0.00584	0.002	0.14	3.24	0.00503	0.0648	0.00005	0.00592	0.17
November	0.005	0.002	0.00871	0.002	0.189	5.14	0.00798	0.0877	0.00011	0.00786	0.218
December	0.005	0.002	0.0061	0.002	0.17	3.79	0.00528	0.0747	0.00005	0.00566	0.18
Annual Average	0.005	0.002	0.002	0.002	0.0097658	0.8508333	0.0025	0.06256	0.0000500	0.00299	0.0345

Data in red are half the MDL

## APPENDIX E - Influent and Effluent Metal Concentrations

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

Parameters Units	Arsenic mg/L	Cadmium mg/L	Chromium mg/L	Cobalt mg/L	Copper mg/L	Iron mg/L	Lead mg/L	Manganese mg/L	Mercury mg/L	Nickel mg/L	Zinc mg/L
January	0.005	0.002	0.002	0.002	0.00904	0.627	0.0025	0.0543	0.00005	0.0025	0.0265
February	0.005	0.002	0.002	0.002	0.00867	0.847	0.0025	0.0573	0.00005	0.0025	0.0281
March	0.005	0.002	0.002	0.002	0.00902	0.572	0.0025	0.0569	0.00005	0.0025	0.0267
April	0.005	0.002	0.002	0.002	0.0108	0.808	0.0025	0.0535	0.00005	0.0025	0.0279
May	0.005	0.002	0.002	0.002	0.00722	0.928	0.0025	0.0583	0.00005	0.0025	0.0271
June	0.005	0.002	0.002	0.002	0.00968	0.969	0.0025	0.0617	0.00005	0.0025	0.0403
July	0.005	0.002	0.002	0.002	0.0112	1.39	0.0025	0.0994	0.00005	0.0025	0.0365
August	0.005	0.002	0.002	0.002	0.0078	0.7	0.0025	0.0733	0.00005	0.0025	0.0431
September	0.005	0.002	0.002	0.002	0.00991	0.772	0.0025	0.0669	0.00005	0.00561	0.0431
October	0.005	0.002	0.002	0.002	0.00595	0.403	0.0025	0.0513	0.00005	0.0025	0.0304
November	0.005	0.002	0.002	0.002	0.0154	1.31	0.0025	0.0603	0.00005	0.00521	0.0485
December	0.005	0.002	0.002	0.002	0.0125	0.884	0.0025	0.0575	0.00005	0.0025	0.0358
<b>Annual Average</b>	<b>0.005</b>	<b>0.002</b>	<b>0.002</b>	<b>0.002</b>	<b>0.0098</b>	<b>0.8508</b>	<b>0.0025</b>	<b>0.0626</b>	<b>0.0001</b>	<b>0.003</b>	<b>0.0345</b>

Data in red are half the MDL

## APPENDIX F – Biosolids Analysis



## Appendix F – Biosolids Analysis

### Ashbridges Bay Treatment Plant - Summary of Dewatered Biosolids Analysis for 2024

Dewatered Cake	January	February	March	April	May	June	July	August	September	October	November	December	Max Allowable Dry Wt Conc mg/Kg <sup>1</sup>	Annual Average
TKN	47,600	51,650	51,900	54,350	55,550	56,150	49,500	59,650	54,500	62,450	67,250	60,450		55,917
Ammonia(N)	5,840	6,370	6,325	5,765	6,450	5,475	6,200	5,600	5,660	6,055	5,495	6,440		5,973
Nitrate as N	0.25	0.25	0.38	0.87	0.59	0.25	0.25	0.54	0.25	0.25	0.25	0.25		0
Nitrite as N	0.35	0.62	0.66	0.72	0.35	0.35	0.84	0.35	0.35	0.35	0.35	0.35		0
As	1.84	1.65	1.00	1.62	2.31	1.57	1.60	1.00	1.56	1.95	1.00	1.00	170	2
B	28.5	18.9	19.8	19.0	16.4	16.2	17.6	20.3	20.4	24.9	26.1	20.7		21
Cd	0.50	0.50	0.50	0.50	0.50	0.50	0.80	0.50	0.78	1.13	1.06	0.82	34	1
Cr	70.6	67.6	71.5	74.9	77.7	68.6	75.4	70.1	62.6	57.4	62.6	61.3	2,800	68
Co	3.76	3.81	3.88	4.33	4.82	3.82	3.92	3.39	3.46	2.93	2.97	3.18	340	4
Cu	691	657	684	723	667	652	668	629	676	679	679	661	1,700	672
Pb	29.4	31.5	32.0	31.9	33.9	33.7	34.0	37.6	33.5	30.1	26.1	28.2	1,100	32
Mn	266	308	312	367	347	288	268	238	257	250	222	246		281
Hg	0.52	0.40	0.52	0.43	0.41	0.46	0.53	0.46	0.48	0.32	0.84	0.50	11	0
Mo	9.7	9.8	8.9	9.4	8.9	8.6	10.3	8.9	9.3	10.4	12.9	10.1	94	10
Ni	30.0	27.0	30.6	29.0	28.8	24.9	25.4	23.0	25.0	22.5	23.4	23.6	420	26
Total P	33,150	35,550	31,550	33,650	35,000	31,950	31,200	27,750	32,100	33,050	30,300	27,500		31,896
K	1,220	1,090	1,115	1,205	1,170	1,215	1,210	1,150	1,190	1,205	1,215	1,105		1,174
Se	4.34	3.46	3.04	4.20	4.21	4.24	5.50	3.89	3.82	4.81	5.83	4.12	34	4
Zn	657	627	651	685	679	660	737	663	698	657	684	647	4,200	670
TS%	26.1	25.9	26.0	26.7	26.2	26.2	26.8	27.1	26.7	26.0	24.3	25.2		26
VS%	67.0	63.6	65.7	65.0	64.5	65.0	64.7	62.8	63.2	65.6	67.2	67.3		65
E. Coli <sup>2</sup>	710,770	550,097	439,984	1,403,383	304,945	810,479	222,875	627,166	494,608	404,507	696,406	249,043	2,000,000	576,188

Values in red are 1/2 or less than MLD values.

<sup>1</sup>As per MECP Regulations for Biosolids Utilization on Agricultural lands.

<sup>2</sup>CFU/g dry weight.

## APPENDIX G – Maintenance Activities

## **APPENDIX G – Maintenance Activities**

### **Raw Sewage Pumping, Preliminary and Primary Treatment**

Preliminary and Primary Treatment includes two raw sewage pumping stations (M and T Buildings), preliminary treatment areas (P and D Buildings), and three primary treatment areas (Primary Clarification Tanks No. 1 to 6, Tanks No. 7 to 9, and Tanks No. 10 to 12). The following maintenance was completed in 2023.

#### **Raw Sewage Pumping:**

##### **Bi-Weekly activities:**

- Calibration of level transmitters
- Perform an IR temperature reading of the capacitor bank connections.
- Check pump motor coupling bolt for looseness.
- Check the pump speed controller cable connections, pump speed controller control cabinet relay contacts, control wiring connections for looseness.
- Check the pump volute for wear and clean the pump speed controller control cabinet.
- Inspect the pump bearing cooling lines, pump motor windings and pump speed controller.
- Perform a megger test of the motor winding insulation.
- Service the pump speed controller contact and test the pump motor E-Stop push button.
- Visual inspection of the pump coupling assembly inserts for separation

##### **Monthly activities:**

- Inspection of Submersible Pump discharge check valves, discharge line, pump suction, sump pump control panel Inspection, sump pump cable inspection and test of mechanical floats
- Calibrate the oil level and pressure switch for hydraulic fluid reservoir.
- Exercise and lubricate manual valves.
- Combustible Gas detectors & Alarm Testing
- Inspect Odour Control Fans and Charcoal Filters in M & T Bldg
- Check and clean the grit chamber screen.
- Functional test of the hydraulic oil reservoir low level switch and temperature probe.
- Inspection of the capacitor bank cabinet for dust and dirt.

##### **Quarterly:**

- Testing of Biofilter Media moisture content, and pH
- Functional test of the scrubber fan E-stop function and fan inlet pressure gauge alarms
- Inspect the scrubber motor/blower bearings.
- Visual inspection of the scrubber drive belts.
- Zero check the media differential pressure gauge.
- Calibration of the pressure transmitter.
- Dry well foundation inspection.
- Functional test of the scrubber system
- Test and check the UPS for RPU- M&T Bldg
- Verify the emergency and exit lighting operation.

## **APPENDIX G – Maintenance Activities**

### **Bi-annual activities:**

- Calibration of the air flow transmitter
- Clean soft start controller and check for electrical connections for looseness
- Inspection and lubrication of the soft start controller internal components
- M Bldg and T Bldg Knife Gate Valve Exercise
- Sample and test scrubber media
- Check the oil level in the hydraulic fluid reservoir.
- Visual inspection of the hydraulic hoses and fittings
- Visual inspection of the reservoir sight glass banjo fittings

### **Annual activities:**

- Busbar/MCC Panel Single line Diagram Update Inspection
- Test the local controls for starting, stopping and speed adjust of all Raw Sewage Pumps

### **Preliminary:**

### **Weekly activities**

- Inspection of aeration blower air and drive motor inlet filter for build up of dirt.
- Inspection of Washer Compactor
- Screen Spray water line Y Strainer cleaning
- Grit Tank and Channel Blowers Weekly Inspection
- Grit Conveyor and Classifier Inspection
- Perforated Plate Screen Inspection and lubrication

### **○ Monthly activities**

- Screw Conveyor Inspection and Maintenance.
- Pneumatic Actuated Knife Gate Valves Exercise.
- Exercise and inspect actuated sluice gates.
- Perforated Plate Screen Inspection & Lubrication and Spray Nozzle Cleaning
- Screen Actuated Sluice Gate Exercise and Inspection
- P Building - Elevator routine inspection and maintenance
- Grit Tank and Channel Blower Inspection & Maintenance
- Solenoid Valve testing and inspection
- Dewatering Pump Inspection & Maintenance
- Grit and Screenings Conveyor Inspection
- Plant Water Strainer Reducer Oil Level Inspection
- Grit Tank Actuated Sluice Gate Exercise and Inspection
- Hydrocyclone Inspection
- Washer Compactor Inspection & Maintenance
- Inspect Odour Control Dampers and fan discharge expansion joints.
- Leak check of the isolation valve packing
- Perform a megger test on the fan motor winding insulation.
- Inspection of VFDs for dust
- Wet Well Grinder Control Panel Inspection
- Inspect the sump pit pump flanges.

## **APPENDIX G – Maintenance Activities**

- Perforated Plate Screen Motor Megger Test
- Combustible and H2S Gas detectors & Alarm Testing
- Washer Compactor Motor Megger Test, Washer Compactor Control Panel Inspection, Motor Lubrication, Control Panel Light Inspection, Washer Compactor Inspection
- Test and verify the actuated damper emergency shutdown circuit.
- Classifier cleaning and inspection of belt, control panel, control panels lights and testing of e-stop.
- Classifier gearbox oil replacement, guard inspection, megger test, motion detection cleaning, motor bearing lubrication, safety contact test, seal leakage inspection and valve inspection
- Cyclone cleaning, hardware inspection, cyclone liner inspection, cyclone vortex finder inspection
- Functional test of the PLC battery fault alarm circuit operation
- Inspection of conveyor connection welds, conveyor motor to gearbox flexible element, conveyor screw, conveyor trough liner,
- Inspect the damper actuator gearbox and discharge chute.
- Inspect the level indicating transmitter electrical connections.
- Inspect the motor variable frequency drive cabinet cooling fan bearings for signs of excessive vibration, heat, and noise.
- Inspect the sump pit pump impellers & pump oil seals.
- Inspection of the fan pillow block lip seal
- Lubricate the Biofilter fan bearings.
- Inspection of Grit Air Blower Flow Transmitter
- Perforated Plate Screen Baldor Motor Lubrication,
- Inspection of perforated plate screen control panel, control panel lights, Tactile Inspection, TECO Motor Lubrication
- Inspection of Submersible Pump Control Panel Inspection, Submersible Pump Current Draw, Submersible Pump Inspect Cables, Submersible Pump Megger Testing
- Test the actuated gate emergency shutdown circuit and actuated valve emergency shutdown circuit.
- Test the gate & damper actuator RAM battery.
- Test the fan E-stop button.
- Vacuum truck unloading bay basket screen cleaning.
- Valve Inspection and Back Flushing of system
- Verification checks of the differential pressure transmitters, pressure transmitters, temperature transmitters and level indicating transmitters.
- Verify the damper actuator closed limit setting, gate actuator closed limit setting and valve actuator closed limit setting.
- Visually inspect the grit channel air piping & diffuser condition.
- Inspection of Washer Compactor Bar Screen Inspection, Washer Compactor Clean Outside of Unit, Washer Compactor Corrosion Inspection, Washer Compactor Gearbox Oil Change, Washer Compactor Housing Inspection, Washer Compactor Test the E-Stop
- Wet Well Grinder Control Panel Light Inspection and Wet Well Grinder Megger Test

### **Quarterly activities:**

- Lubricate the pump motor bearings.
- Leak check of the pump suction valve packing.
- Inspect the pump mechanical seal plastic sight tubing.

## **APPENDIX G – Maintenance Activities**

- Grit Tank and Channel Blowers Quarterly maintenance
- Flow Transmitter Sensor Cleaning
- Pump Inspection for Obstructions
- Perforated Plate Screen Inspection & Maintenance
- Test and check the UPS for RPU
- Conduit Flow Transmitter Verification
- Actuated Butterfly valve Maintenance and Exercise
- Washer Compactor Inspection & Maintenance
- Visual inspection of the pump/motor coupling
- Check and check Conveyor Outlet gate valve instrument air filter, gate valve instrument air filter
- Classifier Motor Inspection and Screen Lubrication
- Influent Sampler Inspection and Maintenance
- Dewatering Pumps Lubrication and Inspection
- Sump Pumps Lubrication and Inspection
- Inspect the oil level in the Screw conveyor gearbox.
- Inspect the oil level in the grit conveyor gearbox.
- Classifier wearing shoe inspection.
- Change the conveyor gearbox oil and conveyor screw flange welds.
- Grit Tank and Channel Blower Coupling Screw Inspection
- Inspect and verify air transmitters - flow meters, pressure, and temperature instrumentation.
- Leak check of the pump discharge valve packing
- Sampler Refrigerator Cleaning
- Visual Inspection of Biofilter Humidifier
- Washer Compactor Brush Reset, Washer Compactor Tighten Wear Strip, Washer Compactor Worm Blade Wear Inspection

### **PRM Maintenance Tasks**

#### **Monthly activities**

- Submersible Sump Pump Operational Inspection
- Functional test of the gas detector high alarm -Transmitter & Control Panel
- Check Hazardous Gas Monitor and Sensors
- Auditory check of odour control air handler unit fan bearings for wear
- P Building - Coagulant Metering Pump Inspection
- P Building Dry Polymer Chemical Feeder Inspection
- P Building, Dry Polymer Mixer Disperser maintenance

#### **Bi-Monthly activities**

- Lubricate odour control air handler fan bearings.
- Inspect the scum pump motor and pump drive belt and scum pump sheave for signs of wear.

#### **Quarterly activities:**

- Test and check UPSs for RPUs
- Pump Drive Casing Bearing Greasing & Shaft seal Inspection-
- Visual Inspection of media filter
- Raw sludge pump mechanical seal water line check
- Lubricate odour control air handler fan bearings

## **APPENDIX G – Maintenance Activities**

- Sampler Inspection and Maintenance
- Primary Tank Gate Inspection, Exercise and Lubrication
- P Bldg Angle Valve inspection and Maintenance

### **Bi-annual activities:**

- P Bldg Sampler Thermal Sensor verification and Calibration
- P Bldg Suspended solid analyzer cleaning
- Inspection of sump pumps, suction, and discharge lines, check valves, switches and floats.
- Bridge cog wheel drive shaft bearing automatic lubricator replacement.
- Bridge rail wheel wear check
- Check for looseness on the bridge driven sprocket retaining collar.
- Flow Transmitter inspection and Sensor Cleaning
- Check for looseness on the bridge collector control panel wiring.
- Inspection of the scum collector emergency shutdown pushbutton
- Polymer Motorized Valve inspection
- Pump Drive Casing Bearing Greasing & Shaft seal Inspection.
- Valve Inspection and exercise
- Polymer Dilution Water Solenoid Valve Inspection
- P Bldg-Propeller Mixer Lubrication
- Primary Tank Valve inspection and exercise

### **Annual activities:**

- Verification/check of pressure switches- Low & High
- Calibration of fixed gas detectors.
- Inspect the scum pump motor sheave for signs of wear.
- Scum pump motor and pump alignment check and gearbox oil level check.
- Bridge travel stop switch functional test.
- Check for looseness on the bridge collector stop limit switch striker plate bolts.
- Verification and testing of Primary Effluent Auto Sampler.
- Inspect the sump pit pump impellers and sump pit pump oil seals.
- Bridge rail wheel bearing wear and bridge collector drive tooth assembly checks.
- Scum pump high discharge pressure switch calibration and suction pressure switch calibration
- Bridge cog wheel drive sprocket assembly checks.
- Bridge collector rail mounting hardware checks.
- Cog wheel drive roller assembly corrosion check.
- Bridge drive gearbox oil level check
- Lubricate the bridge cog wheel drive sprocket/chain assembly, bridge collector scraper arm pivot point, bridge drive coupling and bridge main drive bearing.
- Bridge collector scraper hoist motor brake check.
- Bridge collector cable hoist drum cable wear check.
- Lubricate the bridge collector cable hoist sheave bearings.
- Bridge collector cable hoist gearbox oil level check.
- Bridge drive assembly alignment check.
- Bridge collector cable hoist sheave wear check.
- Bridge collector sludge rubber scraper blade wear check.

## **APPENDIX G – Maintenance Activities**

- Bridge collector sludge scraper wear shoe check.
- Bridge scum skimmer blade wear check.
- Bridge collector drive teeth wear check.
- Bridge drive gearbox oil change.
- Bridge collector cable hoist gearbox lubricant change
- Verification checks of the raw sludge magnetic flow meters.
- Scum tank ultrasonic level sensor cleaning
- 600 VAC power strip trolley brush replacement.
- Primary treatment tank safety rail mounting support check.
- Sludge pump discharge valve actuator closed limit setting.
- Busbar/MCC Panel Single line Diagram Update Inspection
- Scum pump mechanical seal water line check
- Scum pump mechanical seal oil level check
- Lubricate the dewatering pump bearings.
- Inspect the dewatering pump mechanical seal plastic sight tubing.
- Temperature transmitter verification and maintenance.
- Level Transmitter Sensor Cleaning and verification.
- Verification checks of Flow switch low.
- Scum collector skimmer plate spring torque check.
- Functional test of the odour control air handler low pressure alarm.
- Inspection of the scum pump motor gearbox oil level and seals.
- Inspect the scum collector motor sheave/gearbox drive belt.
- Propeller Mixer motor Insulation Checks.

### **Secondary Treatment**

Secondary Treatment includes eleven Aeration Tanks, eleven Final Clarification Tanks, and the Plant Water System. The following maintenance was completed in 2023.

#### **Daily activities:**

- Inspection of aeration blower air and drive motor inlet filter for build up of dirt.
- Inspection of blower main lubricating pump.
- Flush the water side of the oil heat exchange.
- Observe the glycol pump outlet pressure and record and analyze vibration data for all bearings.

#### **Weekly activities:**

- Bi-weekly exercise and lubrication of aeration tank sluice gates.
- Inspect the activated sludge valve packing glands for signs of wear.
- Inspect the aeration tank sluice gate stem covers for signs of cracking and deterioration and mechanical drive.
- Inspection of scum skimmer driver gearbox
- Verification and testing of autosamplers.
- Verification of aeration air flow meters.



## **APPENDIX G – Maintenance Activities**

- Verification/check of the gas detector (Bump Testing)
- Testing of eye wash stations

### **Monthly activities:**

- Inspection of the clarifier tank RAS and WAS pumps.
- Testing of hazardous gas monitors
- Clean RAS motor variable frequent drives (VFDs).
- Clean WAS motor variable frequent drives (VFDs).
- Emergency/Exit light inspections.
- Functional test the ground fault interrupters.
- Perform a megger test of the RAS/WAS pumps and blower motor winding insulation.
- Oil analysis of the heat exchanger oil.
- Perform an accuracy test for the RAS and WAS flow meters.
- Perform an accuracy test for the WAS suspended solids analyzer.

### **Bi-Monthly activities:**

- Lubricate final clarifier scum skimmer collector mechanism bearings.
- Inspection of RAS, WAS, Scum pump's motor
- Inspection of sludge collection drive, chains, flight shoes, etc.,
- Verify the operation of the bearing lubrication oil low level alarm circuit.
- Replace the bearing lubricating oil for the blowers/motors.

### **Quarterly activities:**

- Test and check UPSs for RPUs
- Calibration of gas detectors
- Maintenance and calibration of final effluent flow meters
- Exercise of inspection of the effluent bypass gates
- Inspection of the dry well foundation
- Conduit flow transmitter verification

### **Bi-annual activities:**

- Inspection of sump pumps, suction, and discharge lines, check valves, wiring, switches and floats.
- Inspection of A/C equipment
- Inspection of fans for damage, wear on belt driver fan motor belts
- Primary Pump Suction Diffuser Strainer Inspection and Service

### **Annual activities:**

- Replacement of TSS/pH/Temp Electrode for AT2
- Calibration of final effluent turbidity indication transmitter
- Maintenance and calibration of final effluent flow meters
- D Bldg Plant Water Self cleaning strainer inspection & maintenance

## **APPENDIX G – Maintenance Activities**

- Conduit flow transmitter calibration
- Inspection of door, building, roof, insulation
- Update of Busbar/MCC SLD inspection
- Verification of the seal water pressure indicating transmitter
- Clean seal water tank mechanical floats
- Fire Detection & Alarm System Test and Inspections-
- Perform a Calibration test for the Mixed Liquor flow meter.
- Inspection, Cleaning, Maintenance & lubrication of the soft start controller
- Inspection of the wet well foundation

### **Phosphorous Removal:**

#### **Daily activities:**

- Inspection of the chemical feed pumps
- Inspections of the ferrous chloride tanks
- Inspection of the ferrous chloride sump pumps

#### **Quarterly activities:**

- Test sump pump control wiring, mechanical floats, etc.,
- Inspection of the ferrous chloride tanks & containment Areas
- Verify ferrous chloride instrumentation, FITs, LITs, LSL, LSH, LSHH
- Test and check UPSs for RPUs
- Bag strainer Inspection and maintenance
- Exercise of 3-way valves for bag strainers

#### **Bi-annual activities:**

- Inspection of Chemical Tank heat tracing system
- Inspection of PRS flow meters for secondary dosing
- FIT inspection of secondary treatment dosing flow meters
- Inspection of sump pumps, suction, and discharge lines, check valves, switches and floats.

#### **Annual activities:**

- Phosphorous System Inspection and exercise of all valves.

### **Dewatering**

Dewatering includes the Centrifuges, Schwing Silo Pumps, Polymer/Sludge Feed Pumps and all electrical control equipment for dewatering operations. The following maintenance was completed in 2023.

#### **Weekly activities:**

- Check and exercise actuated System ball valves.
- Verify accuracy of sludge transfer density transmitter
- Check visually for any damage or wear on equipment.
- Sludge Feed Sampling Station Inspection

## APPENDIX G – Maintenance Activities

- Inspection and Maintenance of Fan and Fan Motor
- Inspect and Clean Polymer Feeder Screw
- Inspect odour control canister and replace medium if necessary.
- Lubricate and exercise gas three-way valves.
- Check for damage on the fan, lubricate all levers and linkages.
- Inspection of Sludge Transfer pumps.
- Visually check tank level and pressure transmitter for any damage or wear
- Check and tighten, if necessary, the stuffing the stuffing box
- Check oil level in Screw Feeder Gear Box
- Check the function of the emergency controls and emergency cord.
- Drain condensate water from the hydraulic oil tank.
- Exercise gate valves to fully open and close position
- Filter the oil using an external filtration unit.
- Inspect the condition of the loop filter
- Remove the sump pump suction debris, inspect sump pump discharge line, sump pump start float switch, sump pump discharge check valve, sump pump stop float switch, sump pump control wiring and sump pump high float switch
- Auditory inspection of the grinder unit
- Check grinder ACC buffer fluid level.
- Visual inspection of the grinder unit
- Lubricate and Exercise Actuated Plug Valves
- Check and ensure the automatic greasers is working properly.
- Check the bearing temperature using infrared thermometer and check the bearing fastener.
- Check the sludge pump bearing lubrication oil level, oil seal of the polymer metering pump, oil seal of the dewatering centrate pump, centrate pump bearing lubrication oil level
- Inspection of the sliding frame gland and ensure there are no leaks.
- Lubricate and exercise gas isolation valves.
- Inspect and clean the flame arrester baffle for signs of deterioration.

### Monthly activities:

- Lubricate and Exercise Actuated Knife Gate Valves
- Check the polymer storage and mixing tank level indicating transmitter electrical connections and level indicating transmitter accuracy.
- Flush and clean drains remove any obstructions.
- Inspect odour control canister and replace medium if necessary.
- Check Gas Monitor
- Inspection and verification of instrumentation
- Perform a megger test of the polymer feed pump motor,
- Visual inspection on the polymer metering pump motor variable speed drive start/stop/reset/jog contacts for corrosion, polymer metering pump motor emergency shutdown circuit, check the polymer metering pump high discharge pressure shutdown circuit.
- Functional test of the sludge transfer pump discharge to centrifuge pressure indicator.
- Inspection of the centrifuge bowl discharge end wear saddles, centrifuge frame liners, centrifuge lid wear liner, oil level in the centrifuge back drive gearbox
- Change the conditioning loop filter.

## **APPENDIX G – Maintenance Activities**

- Check the condition of the screw feeder oil and replace if necessary.
- Check the setting of the throttle valves.
- Check the strainer on the water/oil cooler inlet and clean if necessary.
- Lubricate the pillow block bearing.
- Replace the return line hydraulic oil filter.
- Take a sample of the hydraulic oil from the hydraulic tank for analysis.
- Replace the tension bar thrust bearing.
- Record and analyze vibration data of all bearings/
- Verify the pressure setting of the pressure switch.
- Inspect, lubricate and service the electric motor.
- Replace Rams on Schwing Pumps
- Check the pressure setting of the relief valves.
- Lubricate and Exercise Valves on the system.
- Inspection of Activated Carbon for Odour Control Systems
- Quarterly activities
- Check the equalization tank odor control fan drive pulley belt.
- Inspection the centrifuge bowl, centrifuge conveyor accelerator, centrifuge conveyor feed nozzles, centrifuge conveyor flights, centrifuge conveyor inserts and retainers, chute section between main conveyor and transfer conveyor.
- Inspect the digested sludge flame arresters baffles for signs of deterioration
- Lubricate the equalization tank odor control fan shaft bearings.
- Oil analysis of the centrifuge back drive gearbox oil

### **Bi-annual activities:**

- Check the extraction conveyor coupling.
- Inspect the recirculating oil system reservoir breather cap strainer.
- Replace the centrifuge main motor bearing automatic greaser.
- Inspection of the recirculating system flexible feed oil lines
- Calibration and Recertification of the Portable Gas Detectors
- Clean and Inspect Centrate Wet Well Tank.
- Drain, pump out and clean Sludge Holding tank using vacuum truck.
- Exercise and Lubricate System Valves
- Centrifuge oil analysis
- Check the condition of the extraction conveyor gearbox oil.
- Change the gate valve actuator oil and power pack hydraulic oil.
- Check and repair the internal walls of the sludge storage silos.
- Drain, pump out and clean Equalization tanks using vacuum truck.
- Check for wear from the sliding frame hold downs.

### **Annual activities:**

- Calibration check of the polymer powder suction pressure indicating transmitter and sludge holding tanks pressure differential transmitter.
- Check the hydraulic oil level and temperature.
- Inspect the back drive system flexible element.

## **APPENDIX G – Maintenance Activities**

- Inspect the centrifuge back drive toothed driven pulley.
- Inspect the centrifuge flexible connector to cake drop chute.
- Inspect the centrifuge flexible connector to centrare drop chute.
- Inspect the centrifuge main motor drive belts and motor drive pulley.
- Inspect the centrifuge toothed drive pulley.
- Fire Detection & Alarm System Test and Inspections
- Check auto lubricator on Screw Feeder and Agitator Hopper and replace if necessary.
- Check Hydraulic Oil Level and Temperature and panel lights.
- Check water to drain for signs of contamination.
- Check/Adjust screw feeder packing.

### **Digestion, Dissolved Air Flotation, and Biogas**

Digestion, Air floatation, and Biogas includes twenty Anaerobic Digesters, ten DAF tanks and five Waste Gas Burners. The following maintenance were completed in 2024.

#### **Dissolved Air Flotation**

##### **Weekly activities:**

- Inspection of Flotation Tank Chains
- Scheduled restoration of the dissolved air floatation (DAF) tank flight chain oiler needle valve drippers
- Lubricate the dissolved air floatation (DAF) tank top skimmer flight inboard shaft bearings.
- Inspection of the dissolved air floatation (DAF) tank top skimmer flight rubbers for wear and tank top skimmer flight support pipe mounting brackets
- Biweekly Leak check of the polymer metering pumps.
- Check, clean and verify Polymer tanks Level Transmitter, Pressure Transmitters, and the DAF Tank Level Transmitter

##### **Monthly activities:**

- Verification checks of DAF Tanks flow meters.
- Replace the TWAS transfer pump gearbox oil.
- Testing of hazardous gas monitors
- Inspection of the polymer metering pump high discharge pressure shutdown circuit, polymer metering pump motor emergency shutdown circuit, and polymer metering pump motor variable speed drive components condition for corrosion
- Inspection of the polymer metering pump inlet pneumatically operated isolation valve instrument feed air filter
- Inspection of the polymer metering pump run dry shutdown circuit and the k the polymer metering pump system pneumatically operated discharge isolation valve instrument feed air filter condition.
- Replace oil in the dissolved air floatation (DAF) tank top skimmer main gearbox.
- Perform a megger test of the dissolved air floatation tank subnatant recirculating pump motor winding insulation.

## **APPENDIX G – Maintenance Activities**

- Perform a megger test of the polymer mixing tank motor winding insulation and the mixing tank transfer pump motor winding insulation.
- Perform a megger test of the TWAS transfer pump motor winding insulation
- Lubricate the TWAS pump gearbox to pump coupling, the TWAS transfer motor bearings and the TWAS transfer pump bearing
- Inspection for wear of the dissolved air floatation (DAF) tank top skimmer drive chain,
- Inspection of the DAF flight skimmer drive motor emergency shutdown circuit
- Inspection of the dissolved air floatation (DAF) tank hopper level indicating transmitter, tank hopper level indicating transmitter electrical connection for corrosion
- Check the dissolved air floatation (DAF) tank inlet isolation plug valve instrument feed air filter.
- Flush the dissolved air floatation (DAF) tank air distribution subnatant header.
- Flush the subnatant recycle pump circuit.
- Inspection of the subnatant recirculating pump motor emergency shutdown circuit, subnatant recirculation pump motor high-high discharge pressure. Shutdown, subnatant recirculation pump motor low-low discharge pressure shutdown, subnatant recycle pump seal water 'Y' strainer for dirt build-up
- Inspection of the dissolved air floatation (DAF) tank pneumatically operated plant water fill valve instrument feed air filter, dissolved air floatation (DAF) tank subnatant recirculating pump inlet isolation plug valve instrument air feed filter for dirt, Check the dissolved air floatation (DAF) tank subnatant recirculating pump pneumatically operating discharge isolation valve instrument air feed filter
- Check the dissolved air floatation (DAF) tank subnatant recycle pump discharge valves.
- Check the dissolved air floatation (DAF) tank top skimmer flight rubbers for wear, skimmer flight support pipe mounting brackets and the dissolved air floatation (DAF) tanks flow control valve instrument feed air filter condition.
- Check the TWAS pump seal water 'Y' strainer for dirt build-up.
- Inspection of the TWAS transfer pump high discharge pressure shutdown circuit function, pump motor emergency shutdown circuit, TWAS transfer pump performance, and the TWAS transfer pump run dry shutdown circuit.

### **Bi-Monthly activities:**

- Inspection of the mixing tank polymer transfer pump performance.
- Leak check/inspection of the dissolved air floatation (DAF) knife gate valves and unwatering valves.
- Inspection of the polymer mixing tank high-high level polymer batching system shutdown circuit.
- Verification of the polymer mixing tank level indicating transmitter accuracy.
- Check the tension on the dissolved air floatation (DAF) tank top skimmer flight chain.

### **Quarterly activities:**

- Test and check UPSs for RPUs
- Replace the TWAS transfer pump gearbox oil, polymer mixing tank mixer gearbox oil and the polymer mixing tank polymer transfer system gearbox oil.
- Replace the oil for the dissolved air floatation (DAF) tank top skimmer intermediate gearbox.
- Lubricate of the TWAS pump motor to gearbox coupling

## **APPENDIX G – Maintenance Activities**

- Inspection of the polymer mixing tank polymer transfer pump air operated outlet isolation valve instrument feed air filter, transfer pump inlet isolation valve air filter and polymer mixing tank to day tank pneumatically operated rerouting valve inlet air filter
- Inspection of the polymer day tank pneumatically operated inlet isolation valve instrument feed air filter and polymer metering pump system pneumatically operated routing valve instrument feed air filter
- Inspection of the polymer mixing tank transfer pump stuffing box.
- Inspect the sump pit pump flanges, impellers, and oil seals.
- Inspection of the Vogelsang pump pressurized lubrication system pressure.
- Inspection of polymer mixing tank polymer transfer system gearbox oil level.

### **Bi-annual activities:**

- Inspection of the dissolved air floatation (DAF) tank top skimmer motor variable speed drive potentiometer for corrosion, tank top skimmer motor variable speed drive start/stop/reset/jog contacts for corrosion and tanks top skimmer motor variable speed drive components for corrosion.
- Performance check on the dissolved air floatation (DAF) tank subnatant recirculating pump
- Inspection of the dry polymer feed auger fail safe shutdown circuit, dry polymer feed auger polymer build-up above eductor shutdown circuit.
- Check the mixing tank level indicating transmitter, mixing tank polymer transfer pump high discharge pressure shutdown circuit.
- Inspection of the TWAS transfer pump gearbox condition oil level.
- Inspection of the polymer mixing tank mixer gearbox oil level, polymer mixing tank polymer transfer system gearbox oil level
- Inspection of the polymer mixing tank level indicating transmitter sensor, mixing tank low-low level polymer batching system shutdown circuit, mixing tank level indicating transmitter electrical connections, mixing tank transfer pump to drive motor coupling flexible element.
- Check the polymer transfer pump motor emergency shutdown circuit.
- Check the polymer metering pump pneumatically operated rerouting valve inlet air filter.
- Check the mixing tank polymer transfer pump seal water ' Y ' Strainer Ref
- Check the mixing tank transfer pump run dry shutdown circuit.
- Inspection of the polymer day tank level indicating transmitter accuracy, the polymer day tank level indicating transmitter sensor, polymer day tank level indicating transmitter wiring connection for corrosion
- Inspection of the polymer metering pump seal water ' Y ' strainer and the polymer mixing tank for wear

### **Annual activities:**

- Visual inspection on the polymer metering pump motor variable speed drive potentiometer for corrosion and start/stop/reset/jog contacts for corrosion.
- Submersible Pump Inspection.
- Check the dry polymer auger feeders for wear.

### **Digestion/Biogas:**

## **APPENDIX G – Maintenance Activities**

### **Weekly activities:**

- Drain the condensate from the primary digester header condensate trap and the condensate from the primary digester mixing header.
- Drain the digester gas compressor condensate trap.
- Lubricate and exercise the digester gas isolation valves.
- Inspection of the Check Mixing Pump and Recirculating Pump
- Functional test of the gas detector high alarm circuit operation
- Functional test of the gas detection audible and visual annunciating devices
- Inspection of digester linear motion mixer
- Lubrication of mixer lower and linear bearing lubrication

### **Monthly activities:**

- Atmosphere Monitoring Alarm Testing.
- Calibration of the digester dome pressure indicating transmitter.
- Clean and inspect the digester gas compressor inlet thermal valve seat for signs of corrosion.
- Clean the digester dome pressure indicating transmitter orifice.
- Functional test of the gas detector high alarm circuit operation control Panel and transmitter
- Inspect and clean the compressor flame arrester baffle for signs of deterioration.
- Inspect and lubricate the isolation valve gearbox.
- Inspect the digester dome pressure indicating transmitter wire connections for signs of corrosion and looseness.
- Inspect the digester gas compressor inlet thermal fuse and valve pin for signs of corrosion.
- Visual inspection of the digester gas compressor inlet flexible anti vibration joints for signs of fatiguing
- Visually inspect digester gas sediment and condensate tank sight glass for signs of deterioration
- Clean the digester gas compressor pressure switch orifice.
- Verify the calibration of the digester gas compressor pressure switch.
- Lubricate and exercise the digester gas dome relief gas isolation valve.
- Remove the sump pump suction debris, test the sump pump start float switch, sump pump high float switch, sump pump stop float switch.
- Inspect the sump pump discharge check valve and sump pump discharge line and test the sump pump control wiring.
- Check for looseness of the digester gas compressor mounting bolts.
- Lubrication of the duty digester gas compressor/motor coupling
- Clean the condensate tank and sediment accumulator.
- Inspect the digester gas compressor drive motor cooling fan blade for signs of cracking or fatigue.
- Perform a megger test of the digester gas compressor motor winding insulation.
- Record and analyze vibration data of all bearing.
- Verify the digester gas low pressure trip circuit operation.
- Verify the temperature trip circuit operation.

### **Quarterly activities:**



## **APPENDIX G – Maintenance Activities**

- Clean digester gas compressor pressure indicating transmitter orifices.
- Exercise and Lubricate Digester Gas Valves
- Functional test of the PLC battery fault alarm circuit operation and test the RPU UPS low battery alarm circuit operation.
- Inspect and clean the flame arrester trap for signs of deterioration.
- Inspect digester gas pressure relief valves.
- Inspect the digester gas compressor condensate trap for signs of plugging.
- Inspect the digester gas compressor pressure indicating transmitter wire connections for signs of corrosion and looseness.
- Inspect the gas compressor lubrication drive motor fan cooling shroud screen for signs of plugging with debris.
- Leak inspection of the routing and isolation valve flange gaskets
- Lubricate the gas compressor inboard and outboard motor bearings.
- Measure the resistance of the influent flow meter to digestion tanks.
- Observe the sludge recirculation pump discharge pressure.
- Replace the RPU UPSs
- Verify the calibration of the digester gas compressor pressure indicating transmitter.

### **Bi-annual activities:**

- Calibrate Gas monitor and certify.
- Check Digester Level Indicating Transmitter Electrical Connections
- Check recirculation pump seal water line.
- Check the main digester gas burner regulating valve diaphragm for signs of leakage.
- Cleaning of the hot water boiler digester/natural gas flow control butterfly valve
- Flush the digester gas scrubber water line and spray nozzles.
- Inspect the digester check valve axle shaft for signs of corrosion.
- Inspect the digester compressor check valve hinge pin for signs of wear, check valve seat, spring for signs of fatigue.
- Inspect the digester gas flame arrester bank assembly.
- Inspect the hot water boiler combustion air fan impeller for signs of contamination.
- Lubricate the gas compressor inboard and outboard motor bearing.
- Measure the resistance of the digester sludge flow meter element to the equalization tanks.
- Measure the resistance of the digester sludge transfer pump flow meter element.
- Measure the resistance of the overflow flowmeter.
- Perform leak test of the digester/natural gas boiler pressure regulating valve diaphragm.
- Remove and clean the digester gas compressor low lubrication pressure switch.
- Replace digester/natural gas boiler pressure regulating sensing line filter.
- Replace the gas compressor mechanical seals.
- Test the digester gas compressor bypass valve.
- Verify the pressure alarm circuit operation.
- Accuracy checks of the mixing gun gas flow gauge.
- Clean and inspect the digester gas inlet thermal valve seat for signs of corrosion.
- Clean the digester gas low pressure switch orifice.
- Clean the gas compressor lubrication system strainer.
- Inspect and clean the flame arrester baffle for signs of deterioration.
- Inspect the digester content tank sludge temperature probe.

## APPENDIX G – Maintenance Activities

- Inspect the digester gas inlet thermal fuse and valve pin for signs of corrosion.
- Lube oil vacuum pressure switch calibration
- Lubricate and exercise digester gas compressor outlet isolation valve.
- Lubricate the hot water boiler digester/natural gas flow control valve actuator mechanism.
- Lubricate the sludge transfer pump bearings.
- Oil analysis of the sludge mixing pump, sludge recirculation pump and analysis of the sludge transfer pump bearing
- Operational test of the digester gas compressor lubrication flow switch shutdown circuit
- Seal and operate the digester/natural gas plug valve.
- Tactile inspection of the MSA panel connections for looseness
- Validate the digester gas compressor low lubrication pressure switch and shutdown circuit operation.
- Verify Calibration Accuracy of Level Indicating Transmitter
- Verify the boiler gas safety shut off valve shut off integrity.

### Annual activities:

- Busbar/MCC Panel Single line Diagram Update Inspection
- Calibration and Recertification of the Portable Gas Detectors-MSA
- Calibration checks of the digester gas regulating valve and flow meter transmitter.
- Clean and inspect the digester gas inlet thermal valve seat for signs of corrosion.
- Fire Detection & Alarm System Test and Inspection
- Functional test of the low seal water flow switch trip circuit operation
- Functional test of the primary sludge transfer pump failed to start alarm circuit operation.
- Functional test of the recirculation pump failed to start alarm circuit operation.
- Functional test of the sludge mixing pump failed to start alarm circuit operation.
- Functional test of the transfer valve fail to close alarm operation.
- Inspect and clean the flame arrester baffle for signs of deterioration.
- Inspect the digester gas inlet thermal fuse and valve pin for signs of corrosion.
- Inspect the digester gas compressor temperature transmitter wire connections for signs of corrosion and looseness.
- Inspect the hot water recirculation pump discharge check valve pin, check valve seat or flapper.
- Inspect the sludge mixing motor/pump drive belts, sheaves and discharge check valve pin.
- Inspect the sludge transfer pump discharge check valve pin, check valve seat and/or flapper.
- Leak inspection of the routing and isolation valve packing glands
- Leak inspection of the sludge recirculation valves.
- Exercise Automatic Safety Shutoff Hydramotor valves
- Sludge mixing pump oil level check.
- Ultrasound inspection of the digester condensate/sediment tank and digester gas scrubber tank for signs of corrosion.
- Isolation Valve Exercise and Lubrication
- Verification checks of MASS flow meter, control valve and the low seal water flow switch.
- Verification checks of the sludge mixing pump discharge pressure alarm switch.
- Verification checks of the sludge transfer pump discharge pressure alarm switch.
- Verify the calibration of the digester gas compressor temperature transmitter.
- Visual inspection of digester gas pipe flange gaskets or valve "O" rings for deterioration.

## **APPENDIX G – Maintenance Activities**

### **Solids Handling:**

Solids Handling includes the Biosolids Storage Silos, Sludge Cake Transfer Pumps, Truck Loading Facility and Biofilters, Odour Control Building, and maintenance for the Lab Building. The following maintenance was completed in 2024.

#### **Weekly activities:**

- Lubricate Conveyor Shaft Packing
- Check and top up grease for the auto greaser and other lubrication points.

#### **Monthly activities:**

- Change the conditioning loop filter
- Check all the bolts and nuts for tightness and wear
- Check the condition of the screw feeder oil and replace if necessary
- check the condition of the spiral screw.
- Check the condition of the trough and casing with the end partitions and any trough sections.
- Check the condition of the trough lids and safety provisions.
- Check the poppet valves for wear, the setting of the throttle valves.
- Check the valve operating cylinder for leakage at the seal and piston cups.
- Lubricate the pillow block bearing
- Take a sample of the hydraulic oil from the hydraulic tank for analysis.
- Combustible, Hydrogen Sulfide Gas & Oxygen Detectors & Alarm Test- Monthly
- Lubrication and Exercise of System Knife Gate Valves
- Record and analyze vibration data of all bearing.
- Replace the return line hydraulic oil filter.
- Check all pneumatic connections are in good condition and not leaking.
- Check for leakage around the packing of the gate.
- Check that no foreign material is jammed in the screw.
- Check that the trough sections bolts are tight enough.
- Check the connection at the drive shaft that the bolts are tight enough.
- Check the drive gearbox oil level.
- Check the gate operating cylinder yoke connection.
- check the gate rollers for wear and seizure.
- Check the screw drive gearbox and motor mounting bolts ensuring that they are tight enough.
- Check the stuffing box and gland packing for leakage and lubricate.
- Check the trough welded joints for cracks and various welded joints on the screw for cracks.
- Remove cover and check the auto lubricators.
- Visually check for leakage around the gate valves.
- Visually inspect the limitorque actuator.

#### **Quarterly activities:**

- Check for debris build-up on the HVAC unit filters.
- Check the condition of the spiral screws in conveyors.

## **APPENDIX G – Maintenance Activities**

- Check the connection of the trough and casing with the end partitions and any trough sections.
- Check the valve actuating cylinder for leakage at the seal and piston cups and check the condition of the trough lids and the safety provisions.
- Check the gate rollers for wear and seizure.
- Remove the conveyors covers and examine the liners for wear.
- Check and clean the oil cooler if necessary.
- Check the pressure setting of the pressure switch, pressure setting of the pump relief valve, the setting of the throttle valve and service the pump electric motors.

### **Bi-annual activities:**

- Calibrate Gas monitor and certify.
- Change the gate valve actuator and power pack hydraulic oil
- Check and repair the internal walls of the cake storage silo.
- Check for debris build-up on the HVAC unit filter (East) and HVAC unit filter (West)
- Check for wear from the sliding frame hold downs.
- Check the condition of the extraction conveyor gearbox oil, extraction conveyor coupling.
- Check the function & setting of safety and emergency stop.
- Check the pressure setting of the relief valve.
- Check the screw feeder end bearing, screw feeder shaft and flights for wear.
- Check the tension on the HVAC unit blower motor belts.
- Check for corrosion on the HVAC unit blower motor contactor contacts.
- Check for damage on the HVAC unit structure.
- Check for fatigue on the HVAC unit electrical wiring insulation.
- Check for looseness on the terminal screws for air handler unit control panel.
- Inspect the air handler unit for moisture infiltration.
- Inspect the sump pit pump flanges, impellers, oil seals.
- Remove the covers and examine the liners for wear.

### **Annual activities:**

- Check and tighten stuffing boxes as needed.
- Check for damage on the fan, wear on the belt driven fan motor belts and lubricate fan bearings.
- Remove debris from the belt driven fan inlet/outlet screen.
- Flush and clean air handling unit heating coil.
- Internal flushing of heating coil tubes.
- Take an oil sample from the conveyor gearbox for analysis.

## **Boilers, Air Compressors, and HVAC**

Boilers, Air Compressors, and HVAC include the plant-wide hot water system, heating, ventilation, and air conditioning (HVAC), and instrument air compressors (Auxiliary Building). The following maintenance was completed in 2024.

### **Boilers/HVAC:**

## **APPENDIX G – Maintenance Activities**

### **Weekly:**

- Remove the debris build-up from the cooling unit evaporator coils.
- Corrosion checks three-way hot water valve linkage.
- Calibration of the three-way hot water valve.
- Internal flushing of heating coil tubes.
- Flush and clean air handling unit heating coil.
- Inspect Fire Pump Skid Alarm Panel.
- Check for fatigue on the cooling unit condenser fan blades.
- Inspect, maintain, and test air conditioning equipment.
- Check for debris in the HVAC unit condensate drain lines.
- Inspect, test and power down the actuators.
- Visually inspection of discharge pressure, temperature & mechanical seals for leakage.

### **Monthly:**

- Verification of Flow Indicating Transmitters
- Visual inspect the gas level indicators.
- Functional test of the gas detector high alarm circuit operation
- Observe the primary loop pump VFD cabinet fan for unusual noise.
- Visual inspection of hot water recirculation pump for mechanical seal leak.
- Calibration of the pressure transmitter & gas detector
- Check the tension on the HVAC unit blower motor belts.
- Check for corrosion on the HVAC unit blower motor contactor contacts.
- Check for fatigue on the HVAC unit electrical wiring insulation.
- Inspect the air handler unit for moisture infiltration.
- Check for looseness on the terminal screws for air handler unit control panel.
- Remove debris from the belt driven fan inlet screen.
- Lubricate the fan bearings.
- Check for wear on the HVAC unit damper linkage.
- Inspection of VFD Cabinet Fan and cleaning.

### **Quarterly:**

- Lift tests the pressure relief valves.
- Lubricate motor bearings.
- Lubricate the hot water recirculation pump bearings.
- Visual inspection of the hot water recirculation pump bearing cover seal.
- Verify the operation of natural gas pilot safety shut off valve.
- Perform a megger test of the steam/hot water heat exchanger feed water pump motor winding insulation.
- Verify the operation of the natural gas pilot safety vent valve.
- Check the hot water recirculation pump/motor coupling lubricant.
- Check for debris build-up on the HVAC unit filter.
- Check calibration of refrigerant monitor system.
- Visual inspection of the hot water boiler burners for proper alignment and refractory condition.

## **APPENDIX G – Maintenance Activities**

### **Bi-Annually:**

- Fan Lubrication and Inspection Tasks for all Fans across facility
- Accuracy test of the boiler feed water outlet temperature transmitter
- Check for debris in the HVAC unit condensate drain lines.
- Visually inspect the steam/hot water heat exchanger feed water pump mechanical seals for leakage
- Visual inspection of the hot water boiler burners for proper alignment and refractory condition
- Check for the wear on the HVAC unit damper linkages.
- Visually inspect the primary loop pump mechanical seals for leakage
- Calibration test of the boiler flue gas analyzers
- Exercise the digester three-way hot water valves.
- Replace the primary loop pump variable frequency drive (VFD) cabinet filters.
- Verification checks of the digester three-way hot water valve.
- Verification checks on boiler instrument low air pressure trip switch operation.
- Verification checks on the digester gas high pressure cut out switch.
- Accuracy test of the combustion air low pressure cut-out switch.
- Verification checks on the digester gas low pressure cut out switch.
- Verification of the primary loop pump discharge check valve operation.
- Verification test of the boiler stack temperature thermocouple.
- Verify the uptake draft actuator operation.
- Verify of the inlet damper start limit switch circuit operation.
- Flush and clean heat exchanger.
- Verify the boiler digester gas flow control valve low fire start position switches/circuit operation.
- Lubricate the hot water recirculation pump bearings.
- Verify the boiler instrument air low pressure trip switch and circuit operation.
- Calibration test of the boiler flue gas analyzer
- Verify the boiler stack discharge damper limit switch and circuit function.
- Calibration checks of the combustion/stack uptake pressure transmitter.
- Verify the boiler stack O2 analyzer alarm and shut down circuit operation.
- Lubricate hot water boiler combustion air fan drive motor bearings.
- Verify the digester gas high pressure trip switch/circuit operation.
- Lubricate the hot water boiler air inlet vane bearings.
- Verify the digester gas low pressure cut out switch and circuit operation.
- Verification checks of the boiler stack temperature transmitter.
- Verify the feed pump low flow trip switch and trip circuit operation.
- Lubricate the boiler outlet damper.
- Verify the inlet damper actuator low fire position limit switch and circuit operation.
- Internal flushing of heat exchanger tubes.
- Verify the inlet damper low purge pressure switch and circuit operation.
- Lubricate the hot water recirculation pump bearings.
- Verify the inlet damper purge limit switch and circuit operation.

### **Annually:**

## **APPENDIX G – Maintenance Activities**

- Calibration test of the boiler flue gas analyzers.
- Calibrate Gas monitor and certify.
- Check for damage on the fan unit structures.
- Calibrate the pressure switch.
- Inspect Filters.
- Visually inspect the filter feed pump mechanical seal for signs leakage.
- Inspect the air separator automatic vent valve for signs of contamination.
- Inspect the primary loop pump drive coupling for signs of wear.
- Replace the local control panel UPS cabinet filter and RPU filters.
- Test the central heating panel (CP-H) UPS battery.
- Calibration checks of the primary loop discharge header pressure transmitter.
- Verification checks of the primary loop flow indicating transmitter.
- Verification test of the low-pressure switch and the level alarm circuit operation.
- Verify the control circuit for the primary loop discharge header pressure switch high-high alarm and locking circuit.
- Inspection of Glycol System

### **Service Air Compressors:**

#### **Monthly Activities:**

- Comairco service air compressor recommended monthly maintenance.
- Emergency / Exit light inspections.
- Quarterly activities.
- Test and check UPSs for RPUs.
- Glycol Conductivity meter Calibration verification.

#### **Bi-annual Activities:**

- Inspection of Auxiliary building sump pumps, seals, flanges, impellers suction, and discharge lines, check valves, wiring, switches, and floats.
- Electrical inspection of training center sewage pump.
- Comairco service air compressor recommended bi-annual maintenance.
- Flow Switch Calibration and verification.
- Trim Cooler Heat Exchanger Cleaning.

#### **Annual activities:**

- Inspection of motorized door and maintenance.
- Fire detection and fire alarm systems.
- Comairco service air compressor recommended annual maintenance.
- Pressure switch adjustment of service air setpoint.
- Pressure differential switch setpoint check and adjustment.
- Service Air compressor's Benshaw RC-130A wye-delta starter maintenance.
- Roof Top Dry Air Cooler Maintenance.
- Primary Glycol Pump Inspection & Maintenance.

## **APPENDIX G – Maintenance Activities**

### **Consumables, Mechanical and Welding, Grounds Keeping and Licensed Vehicles**

The following maintenance was completed in 2024 for consumables, mechanical and welding, grounds keeping and licensed vehicles.

#### **Machine Shop**

- Fabricated parts in welding shop for various work areas.
- Fabricated bronze nuts for various gate valves.

#### **City Water System & Backflow Preventers (BFP)**

- Attending all service calls and repairing done on priority basis.
- Installation of oil filled pressure gauges at all main water feed lines.

#### **Grounds keeping**

- Snow plowing and salting throughout the plant.
- Spills clean up, retaining and disinfecting throughout the plant.
- Ensured that waste oil is removed from work areas pump into holding tank in a safe manner and scheduled pickup.
- Scheduled annual maintenance inspection and repairs for all RTVs, Pick-up truck, boom truck, case tractor forklifts.
- Scheduled annual maintenance inspection and repairs for all lifting devices in the plant.
- Implemented a comprehensive program across the plant with signs installed at the gate entrance, office entrance, along the roadway, in the washroom, meeting rooms, workshops, elevators etc. These signs provided information on social distancing, limitation of the number of persons inside a location the use of masks, hand washing hand sanitizing and other related safety requirements.
- Sanitizing stations were installed at various locations across the plant.
- Implemented new policy of disinfecting twice per day all offices and common rooms including change rooms, training room and stairwells.
- Scheduling waste oil pick up, ensure all empty drums, paint cans, etc. are in the storage area so they can be removed from the plant. All waste oil manifest copy is sent to the appropriate personnel.
- Reviewed and upgraded overhead crane maintenance operation and maintenance program.



## APPENDIX H – Staff Training Courses

## **APPENDIX H – Staff Training Courses**

Training attended by Ashbridges Bay Treatment Plant operations and skilled trades staff in 2024 includes the list of courses below.

### **Capital Projects Training**

---

- ABTP - AERATION TANK 2 TRAINING
- ABTP CAPITAL - PLANT WATER: PHASE 1A (WEST SIDE) AND POWER MONITORING SCADA TRAINING
- ABTP CAPITAL – PLANT WATER: VERTICAL TURBINE PUMP – ELECTRICAL MAINTENANCE TRAINING
- ABTP CAPITAL – PLANT WATER: VERTICAL TURBINE PUMP – OPERATION TRAINING

### **Health and Safety Training**

---

- SAFETY IN OVERHEAD CRANE OPERATION (CEU)
- ARC FLASH AWARENESS (CEU)
- ARC FLASH FOR NON-QUALIFIED PERSONS (CEU)
- ASBESTOS AWARENESS (CEU)
- CONFINED SPACE AWARENESS 1/2 DAY (CEU)
- CONFINED SPACE ENTRY AND RESCUE - 2 DAY (CEU)
- CONFLICT RESOLUTION & NEGOTIATION SKILLS
- COPING WITH SHIFT WORK
- DESIGNATED SUBSTANCES AWARENESS (CEU)-2025
- ELECTRICAL SAFETY AWARENESS (CEU)
- FALL PROTECTION AWARENESS
- FALL PROTECTION IN AN INDUSTRIAL WORK SETTING (CEU)
- FIRE EXTINGUISHER & COMMERCIAL KITCHEN TRAINING
- FIRE SAFETY AND EXTINGUISHER USE (CEU)
- FIRE SAFETY AT WORK
- FUNDAMENTALS EXCEL WORKSHOP (LEVEL 1)
- FUNDAMENTALS OF LADDER SAFETY AWARENESS
- G PERMIT VEHICLE OPERATOR ORIENTATION
- HAZARDOUS NOISE IN THE WORKPLACE
- HEALTH AND SAFETY COMPETENCY FOR SUPERVISORS
- HEALTH AND SAFETY ORIENTATION TRAINING PROGRAM - PART B
- HYBRID WORK – FIRE SAFETY REVIEW
- INCIDENT REPORTING
- IN-SERVICE HEALTH & SAFETY ORIENTATION
- JHSC FINAL KNOWLEDGE ASSESSMENT
- JHSC MODULE 1: CERTIFICATION PROCESS
- JHSC MODULE 10- HAZARD CONTROLS AND EVALUATION OF HAZARD CONTROLS
- JHSC MODULE 11: EFFECTIVE RECOMMENDATIONS
- JHSC MODULE 12: INVESTIGATIONS AND REPORTING
- JHSC MODULE 13: INFORMATION & RESOURCES
- JHSC MODULE 2: OHS IMPORTANCE, ROLES & IRS
- JHSC MODULE 3: OCCUPATIONAL HEALTH & SAFETY LAW
- JHSC MODULE 4: JHSC FUNCTION AND STRUCTURE
- JHSC MODULE 5: DUTIES AND RESPONSIBILITIES
- JHSC MODULE 6: CATEGORIES OF HAZARDS & HAZARD RECOGNITION, ASSESSMENT, CONTROL
- JHSC MODULE 7: WORKPLACE INSPECTIONS
- JHSC MODULE 8: MUSCULOSKELETAL DISORDER (MSD) PREVENTION
- JHSC MODULE 9: BASIC ASSESSMENT METHODS

## APPENDIX H – Staff Training Courses

- JHSC PRE-COURSE INFORMATION MODULE
- JOINT HEALTH AND SAFETY COMMITTEES - (JHSC) CERTIFICATION TRAINING PART II - WORKPLACE SPECIFIC HAZARD TRAINING
- LOCK OUT, TAG OUT & TEST AWARENESS (CEU) -2024
- MMR – SELF-CONTAINED BREATHING APPARATUS (CEU) -(2022-2024)
- MOULD AWARENESS
- MTLD - CONCLUSION
- MTLD - EMPLOYEE RELATIONS
- MTLD - OCCUPATIONAL HEALTH & SAFETY
- MTLD - OVERVIEW
- MTLD - P&E POLICIES & PAYROLL
- MTLD - PICKETING ACTIVITY DURING A LABOUR DISRUPTION
- MTLD - SECURITY
- MTLD - STRATEGIC PUBLIC AND EMPLOYEE COMMUNICATIONS
- MTLD REDEPLOYMENT
- MUSCULOSKELETAL DISORDER (MSD) AWARENESS ELEARNING COURSE
- QUICK CUT SAW SAFETY AWARENESS (CEU)
- RIGGING SAFETY AWARENESS (2022-2024)
- SCAFFOLD SAFETY TRAINING (2023-2025)
- SITE INCIDENT MANAGEMENT TEAM TRAINING
- STANDARD FIRST AID LEVEL 'C' CPR & AED - 2 DAY (FAST RESCUE)
- SUCCESSFACTORS FOR MANAGERS WITH DIRECT REPORTS – RECRUITING & ONBOARDING
- SUPERVISOR HEALTH AND SAFETY AWARENESS IN 5 STEPS
- TRAFFIC CONTROL ROADWAY WORK (CEU) - 2025
- TRANSPORTATION OF DANGEROUS GOODS FOR TORONTO WATER STAFF ELEARNING (2022-2025)
- TRENCHING AND EXCAVATION AWARENESS
- WHMIS 2015 ELEARNING MODULE
- WORKER HEALTH AND SAFETY AWARENESS IN 4 STEPS
- WORKING AT HEIGHTS (2022-2024)
- WORKING AT HEIGHTS REFRESHER (CEU)
- 2022-2024
- WORKPLACE VIOLENCE LEGISLATION & POLICY REVIEW
- AIR PURIFYING RESPIRATORS (2023) CEU
- WWT INTEGRATED QUALITY MANAGEMENT SYSTEM TRAINING

### Site Specific Training

---

- ABTP - MAPNER MPR - SINGLE STAGE ROTARY COMPRESSOR R -150G GAS MIXING COMPRESSOR
- ABTP - TAILGATE - ABB INSTRUMENTATION TRAINING
- ABTP - ERS SOLIDS MASS BALANCE SHIFT REPORT
- ABTP - PUMP 101 - CHOPPER PUMPS CONCEPT
- ABTP - PURCHASE ORDER REQUEST APP
- ABTP - SKF SYSTEM 24 TRAINING
- ABTP MANUAL - DIGESTER OPERATIONS
- GE MULTILIN TRAINING
- ABTP - HOERBIGER GAS COMPRESSOR TRAINING
- ABTP - MANAGING ASBESTOS AND OTHER DESIGNATED INDUSTRIAL SUBSTANCES AND MATERIALS IN CONSTRUCTION AND INDUSTRIAL WORK
- ABTP - MOBILE ELEVATION WORK PLATFORMS-SCISSORS LIFT & ZOOM BOOM TRAINING
- ABTP - NFPA 820 & OESC OVERVIEW-LUNCH AND LEARN PRESENTATION

## APPENDIX H – Staff Training Courses

### Mandatory Tailgate

---

- ABTP - TAILGATE - CORPORATE SECURITY -SURVIVING AN ACTIVE ATTACKER
- ABTP - TAILGATE - FORKLIFT TRAINING
- ABTP - TAILGATE INJURY REPORTING
- ABTP - TAILGATE - SAFE SHOVELING
- ABTP - TAILGATE AIR QUALITY AND YOUR HEALTH
- ABTP - TAILGATE CIVILITY IN THE WORKPLACE
- ABTP - TAILGATE COLD STRESS
- ABTP - TAILGATE DESIGNATED SUBSTANCES
- ABTP - TAILGATE DISTRACTED DRIVING
- ABTP - TAILGATE EQUIPMENT SAFETY INSPECT IT BEFORE YOU USE IT
- ABTP - TAILGATE ERGONOMICS INJURIES SIMPLE PRECAUTIONS
- ABTP - TAILGATE EYEWASH STATION AND EMERGENCY SHOWER
- ABTP - TAILGATE GIANT HOGWEED'S & SIMILAR PLANTS
- ABTP - TAILGATE INFECTION CONTROL
- ABTP - TAILGATE LADDER SAFETY
- ABTP - TAILGATE MSD AWARENESS
- ABTP - TAILGATE NOISE EXPOSURE SP03 - HAZARDS
- ABTP - TAILGATE PHYSICAL AND CYBER SECURITY AWARENESS
- ABTP - TAILGATE PREVENTING BACK INJURIES
- ABTP - TAILGATE PSYCHOSOCIAL PROGRAM AND RISK ASSESSMENTS
- ABTP - TAILGATE RIGHT TO REFUSE UNSAFE WORK
- ABTP - TAILGATE SAFETY ON THE ROAD
- ABTP - TAILGATE SLIPS, TRIPS AND FALLS
- ABTP - TAILGATE WINTER DRIVING SAFETY
- EMERGENCY EQUIPMENT (FIRST AID KIT, EYE WASH, FIRE EXTINGUISHER) NOVEMBER 2024 MANDATORY TAILGATE FOR TORONTO WATER
- PERSONAL PROTECTIVE EQUIPMENT - HARD HATS (TORONTO WATER FEBRUARY 2024 MANDATORY TAILGATE)
- PPE – HARD HATS (TORONTO WATER FEBRUARY MANDATORY TAILGATE 2024)
- PREVENTING HEAT STRESS (TORONTO WATER'S MAY 2024 MANDATORY TAILGATE)
- RESPIRATORS: SELECTION, FIT, USE, AND MAINTENANCE (TORONTO WATER MANDATORY TAILGATE -AUG 2024)
- TW-JOB AIDS
- WORKPLACE HARASSMENT (TORONTO WATER'S JULY 2024 MANDATORY TAILGATE)

### Technical Training

---

- ELECTRIC VEHICLE ORIENTATION
- INDUSTRIAL MAINTENANCE TECHNICIAN (IMT) E & M CERTIFICATION (2021-2024)
- WACHS™ VALVE OPERATORS (CEU)
- WASTE WATER COMBINATION AIR VALVE
- ABTP - OWWA/WEAO CLIMATE CHANGE
- ACCEPTABLE USE OF INFORMATION TECHNOLOGY ASSETS POLICY
- ADJUST YOUR VOICE TO INCREASE YOUR EXECUTIVE PRESENCE
- ADVANCED WATER TREATMENT (CEU)
- AN INTRODUCTION TO AGILE
- AN INTRODUCTION TO PLANNING
- BACKFLOW PREVENTION AWARENESS (CEU) - 2025
- BASIC VIBRATION ANALYSIS
- CENTRIFUGAL AND POSITIVE DISPLACEMENT PUMP OPERATION (2024)
- CHAINSAW SAFETY AWARENESS (CEU)

## APPENDIX H – Staff Training Courses

- CHLORINE SAFETY / B KIT -CEU (2022-2024)
- CONTENT SERVER - EDOCS
- DISINFECTION OF POTABLE WATER PIPING (CEU)
- DRINKING WATER QUALITY MANAGEMENT STANDARD (CEU)
- EXCEL M365: TIPS & TRICKS - VIRTUAL INSTRUCTOR LED TRAINING (VILT)
- GIS BASICS - VIRTUAL INSTRUCTOR LED TRAINING (VILT)
- INTERMEDIATE EXCEL WORKSHOP (LEVEL 2)
- INTRODUCTION TO QGIS - VIRTUAL INSTRUCTOR-LED TRAINING (VILT)
- LABORATORY PROCEDURES FOR WASTEWATER OPERATORS
- LOGBOOK ENTRY (CEU)
- MASTERING EXCEL 365 - ADVANCED (2023)
- MASTERING OUTLOOK 365 - BEGINNER (2022)
- MASTERING POWERPOINT 365 - INTERMEDIATE (2022)
- NFPA 10 - STANDARD FOR PORTABLE FIRE EXTINGUISHER
- OIT EXAM IN ALL 4 DISCIPLINES (WATER TREATMENT, WATER DISTRIBUTION, WASTEWATER TREATMENT, AND WASTEWATER COLLECTION).
- PART 1: GETTING STARTED WITH ERIS
- PART 2: E-LOGBOOKS
- PART 3: MAKING MANUAL DATA ENTRIES V2
- PART 4: DATA QUERIES
- PART 5: TRENDS
- PART 6: DATE SELECTOR AND RUNNING REPORTS
- POWERPOINT M365: TIPS & TRICKS - VIRTUAL INSTRUCTOR LED TRAINING (VILT)
- SAFE DRINKING WATER ACT AND APPLICABLE DRINKING WATER REGULATIONS (CEU)
- SCADA CYBERSECURITY TRAINING
- SCRUM: THE BASICS
- SEWAGE WORKS AND SURFACE WATER SPILL RESPONSE
- SIX SIGMA VS KAIZEN
- TABLEAU CITY TRAINING
- TORONTO WATER ORIENTATION
- TROUBLESHOOTING WASTEWATER TREATMENT PLANT
- WASTEWATER TREATMENT LICENSE EXAM PREPARATION GUIDE
- WATER LOSS MANAGEMENT (CEU)
- WATER SYSTEM REPAIRS:INTRODUCTION TO OXY-ACETYLENE CUTTING AND STICK WELDING -2 DAY (CEU)
- WMS AVANTIS WORKSHOP
- WORD M365: TIPS & TRICKS - VIRTUAL INSTRUCTOR LED TRAINING (VILT)
- WORK BYTES - INTRODUCTION
- WORK BYTES - PASSWORD SECURITY
- WORK BYTES - PHISHING
- WORK BYTES - PHYSICAL SECURITY
- WORK BYTES - PUBLIC WI-FI
- WORK BYTES - SOCIAL ENGINEERING
- WORK BYTES - SOCIAL MEDIA BEST PRACTICES
- WORK BYTES: BUSINESS EMAIL COMPROMISE
- WORK BYTES: INTERNET OF THINGS
- WORK BYTES: MOBILE SECURITY
- WORK BYTES: WORKING REMOTELY
- WWT-MECP EXAM PREP FOR WASTEWATER TREATMENT LEVEL 3 AND 4

## APPENDIX H – Staff Training Courses

### Other Training

---

- (INACTIVE) INDIGENOUS AWARENESS TRAINING: TRUTH AND RECONCILIATION
- \*INACTIVE\*ACCOMMODATIONS ESSENTIALS FOR MANAGERS
- ... AND I BREATHED
- 10 STEPS TO A PROFESSIONAL COVER LETTER
- 10 YEARS TO TRANSFORM THE FUTURE OF HUMANITY — OR DESTABILIZE THE PLANET | JOHAN ROCKSTRÖM
- 3 WAYS TO BE A BETTER ALLY IN THE WORKPLACE | MELINDA EPLER
- 5 TIPS TO IMPROVE YOUR CRITICAL THINKING | SAMANTHA AGOOS
- ACCESSIBILITY 101
- ACCOMMODATIONS ESSENTIALS FOR MANAGERS
- AODA - IASR AODA - IASR TRANSPORTATION STANDARD
- AODA - IASR DESIGN OF PUBLIC SPACES STANDARD
- AODA - IASR EMPLOYMENT STANDARD
- AN ACTION PLAN FOR SOLVING THE CLIMATE CRISIS | JOHN DOERR AND RYAN PANCHADSARAM
- ATTENDANCE MANAGEMENT PROGRAM TRAINING FOR CITY OF TORONTO MANAGEMENT
- BUDGETING BASICS
- BUILDING YOUR EMOTIONAL INTELLIGENCE VILT
- CALL IT OUT: RACISM, RACIAL DISCRIMINATION AND HUMAN RIGHTS
- CITY BENEFIT AND PENSION SEMINARS
- CITY STORES WEB FORM - HOW TO CREATE AN ORDER
- CITY STORES WEB FORM - HOW TO VIEW AND APPROVE ORDERS
- CONDUCT A SUCCESSFUL INTERVIEW
- CONDUCT A SUCCESSFUL PHONE SCREEN
- CONFRONTING ANTI-BLACK RACISM TRAINING -HALF DAY
- DERIVATIVES MASTERCLASS: PRACTICAL FUTURES TRADING (2 OF 36)
- DIVISIONAL PURCHASE ORDER TRAINING
- DOMESTIC/INTIMATE PARTNER VIOLENCE FOR EMPLOYEES
- DOMESTIC/INTIMATE PARTNER VIOLENCE FOR SUPERVISORS
- DON'T INTERVIEW THE RIGHT PEOPLE THE WRONG WAY
- EFFECTIVE MEETINGS
- ELI: DIVISIONAL ADMINISTRATORS
- ELIMINATING SEXUAL HARASSMENT IT'S EVERYONE'S BUSINESS
- EMOTIONAL INTELLIGENCE CRASH COURSE: SOCIAL AWARENESS
- EMPLOYEE ASSISTANCE PROGRAM (EAP) ORIENTATION SESSION
- EXTERNAL TRAINING FOR END-USERS
- HOW TO BE AN EFFECTIVE INTERVIEWER
- HOW TO CONDUCT WORKPLACE INVESTIGATIONS
- HUMAN RIGHTS 101
- HUMAN RIGHTS AND WORKPLACE HARASSMENT ESSENTIALS FOR MANAGEMENT
- INCLUSIVE RECRUITMENT INCLUDES MANAGERS
- INDIGENOUS AWARENESS TRAINING: TRUTH AND RECONCILIATION
- INTERVIEW PROCESS AT THE CITY FOR HIRING MANAGERS
- INTERVIEWING CHECKLIST
- INTRODUCTION TO INDIGENOUS LEARNING
- LD CONFIDENTIALITY AGREEMENT
- LEARNING AND LEADING WITH HUMAN RIGHTS
- LET'S TALK ABOUT ALLYSHIP
- LET'S TALK ABOUT BIAS
- LET'S TALK ABOUT COLONIALISM
- LET'S TALK ABOUT EQUITY

## **APPENDIX H – Staff Training Courses**

- LET'S TALK ABOUT PRIVILEGE
- LET'S TALK ABOUT SYSTEMIC INJUSTICE
- MANAGING LABOUR RELATIONS: AN INTRODUCTION - PART 1
- MANAGING LABOUR RELATIONS: PART TWO
- MUNICIPAL FINANCE ESSENTIALS
- PERFORMANCE MANAGEMENT - OBJECTIVE SETTING
- PERFORMANCE MANAGEMENT OVERVIEW
- PMMD: SOLICITATION TYPES - CLIENT DIVISION
- PRACTICE WRITING BEHAVIOR-BASED INTERVIEW QUESTIONS
- PREPARE TO CONDUCT AN INTERVIEW
- PROTECTING PRIVACY ON THE JOB
- RESPECT IN OUR WORKPLACE
- RETIREMENT PLANNING SEMINARS
- SAP ARIBA - CLIENT DIVISION: SOURCING REQUEST
- SAP ARIBA: MODULE AND DASHBOARD NAVIGATION
- SAP INTRODUCTION: NAVIGATION AND REPORTS
- SAP PROCUREMENT
- SHARING KNOWLEDGE FOR SUCCESS (2024)
- THE TORONTO PUBLIC SERVICE BY-LAW ELEARNING
- UNCONSCIOUS BIAS FOR PEOPLE LEADERS
- UNCONSCIOUS BIAS IN LEADERSHIP THEORIES
- UNDERSTANDING DISRUPTION
- UNDERSTANDING GENDER & SEXUAL ORIENTATION
- WTLD CONCLUSION
- WTLD OCCUPATIONAL HEALTH & SAFETY
- WTLD OVERVIEW
- WTLD PEOPLE & EQUITY POLICIES & PAYROLL
- WTLD PICKETING ACTIVITY DURING A LABOUR DISRUPTION
- WTLD REDEPLOYMENT
- WTLD SECURITY
- WTLD STRATEGIC PUBLIC AND EMPLOYEE COMMUNICATIONS
- ANTI-ISLAMOPHOBIA VIRTUAL WORKSHOP
- WHAT HAPPENS IN A BEHAVIOR-BASED INTERVIEW
- WHAT IS THE ROLE OF A HIRING MANAGER?
- WHY YOU NEED TO USE STRUCTURED INTERVIEWS