

# Zurich Sewage Treatment Plant and Collection System Annual Performance Report



*Prepared For:  
The Municipality of  
Bluewater*

*Operating Authority:*



Reporting Period of January 1<sup>st</sup> – December 31<sup>st</sup>, 2023

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## Table of Contents

Overview .....	3
System Process Description .....	3
Raw Wastewater Collection .....	3
Sewage Lagoons .....	3
Intermittent Sand Filters .....	4
System Facts: .....	4
Influent and Effluent Flow Monitoring .....	4
Influent Data .....	7
Imported Sewage .....	9
Effluent Monitoring .....	9
Comparison to Compliance Limits and Objectives .....	10
Effluent Quality Assurance .....	14
Summary of Efforts Made to Achieve Design Objectives .....	14
Operating Problems and Corrective Actions .....	15
Maintenance Activities .....	15
Calibration Records .....	15
Sludge Generation .....	16
Complaints .....	16
Bypass, Overflows, Spills & Abnormal Discharge Events .....	16
Summary of Efforts made to achieve conformance with F-5-1 .....	16
Notice of Modification to the Works .....	16
Additional Information the Water Supervisor Requires .....	16
Appendix A .....	
Appendix B .....	

## Overview

The following report was prepared by Ontario Clean Water Agency on behalf of The Municipality of Bluewater in accordance with:

- Condition 10(6) (a) through (i) cited in Environmental Compliance Approval (ECA) #4039-877J9R issued July 21, 2010, to The Corporation of the Municipality of Bluewater.
- Schedule E (4) cited in Consolidated Linear Infrastructure Environmental Compliance Approval (CLI-ECA) #045-W601 issued June 20, 2023, to The Corporation of the Municipality of Bluewater.

## System Process Description

The Zurich Sewage Treatment Plant (STP) is located at Lot 19, Concession 10, Zurich, Ontario. The facility has a rated capacity of 495 m<sup>3</sup>/d and is comprised of the following components:

- Wastewater collection (WWC) system and pumping stations
- Four facultative lagoons (two aerated) with supplementary treatment
- Intermittent Sand Filters (ISF)

### Raw Wastewater Collection

Raw sewage flows by gravity through the collection system. When gravity flow is not possible, there are two pumping stations. Both the Knell Crescent Sewage Pumping Station (SPS) and the Zurich Main SPS have two submersible pumps. Knell Crescent SPS pumps sewage to the Zurich Main SPS, which, in turn, pumps sewage to the Zurich STP. The Zurich MPS has a 250 mm overflow that discharges into the Zurich Drain. Both stations have standby generators. The Zurich Main SPS has Milltronics that monitor wet well levels, which control the start/stop cycle of all pumps and alarms. Pumps and alarms at the Knell Crescent SPS operate off floats.

### Sewage Lagoons

The lagoon system includes four cells; two cells are equipped with aerators (Cells 1 and 2) and two cells are conventional storage cells (Cells 3 and 4). Raw sewage enters the aeration cells from the inlet structure, which contains two weirs. Sewage flows over either or both of these weirs to enter the aerated lagoon cells. Stop-gates enable or block flow over the weirs. Typically, the four lagoon cells operate in series, with raw sewage entering Cell 1 first. Four separate transfer structures are used to control flow of sewage between cells.

The lagoon cells are designed to provide secondary treatment to the raw sewage entering the facility. The aeration cells are sized to provide a minimum total hydraulic retention time of 60 days (*i.e.* 30 days per cell). The aeration system includes blowers that provide air flow to both aeration cells. The additional oxygen from the air flow enhances reactions that cause decomposition of various contaminants, thus assisting in the sewage treatment. The conventional lagoon cells are sized to provide sufficient storage to store the inflow during the freezing period when the sand filters cannot operate.

Aluminum sulfate is added to the lagoons to coagulate suspended particles in the sewage. The coagulated particles grow to sufficient size where they readily settle. This assists in removing phosphorous from the wastewater before being discharged from the lagoon.

### Intermittent Sand Filters

The ISF provides filtration and treatment of effluent from the lagoon cells during the non-freezing periods. The filters are a two-cell system designed to provide 100% excess capacity. This allows one of the filter cells to be operated at any time with the other cell removed from service, while maintaining the design capacity of the facility. The Outlet Works allow treated effluent from the ISF to be fed by gravity to a discharge chamber and discharged into the Zurich Drain.

### System Facts:

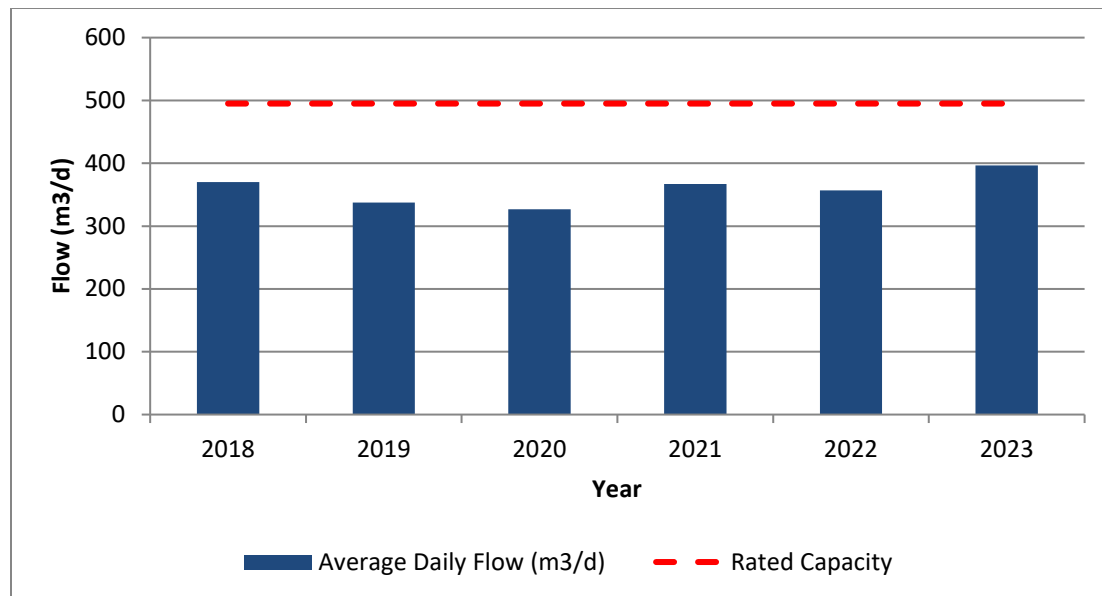
<b>Environmental Compliance Approval</b>	#039-877J9R (issued July 21, 2010)
<b>CLI Environmental Compliance Approval</b>	#045-W601 (issued June 20, 2023)
<b>Rated Capacity</b>	495 m <sup>3</sup> /d
<b>Receiving Water</b>	Zurich Drain

In 2023, the Zurich STP and WWC system was operated in accordance with the provincial regulations as required in ECA #039-877J9R and CLI-ECA #045-W601.

### Influent and Effluent Flow Monitoring

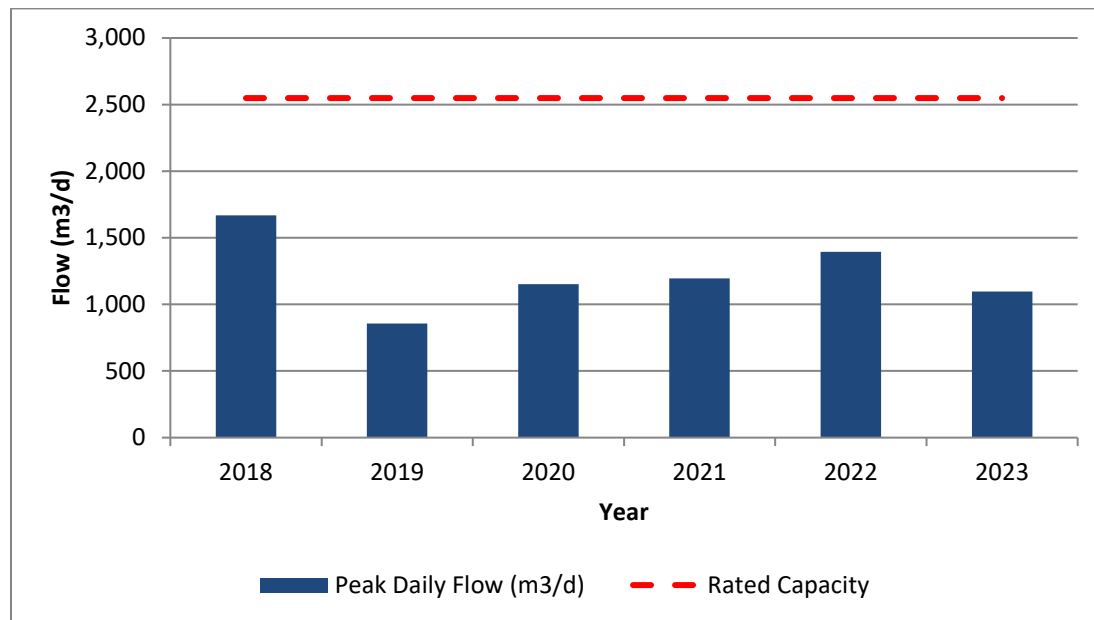
The Zurich STP is rated to treat an average daily flow of 495 m<sup>3</sup>. Refer to Figure 1 for a comparison of the average daily flow for the last six years against the rated capacity. The Zurich STP is at 80% of the rated capacity of 495 m<sup>3</sup>/d.

Figure 1: Influent Flows 2018-2023



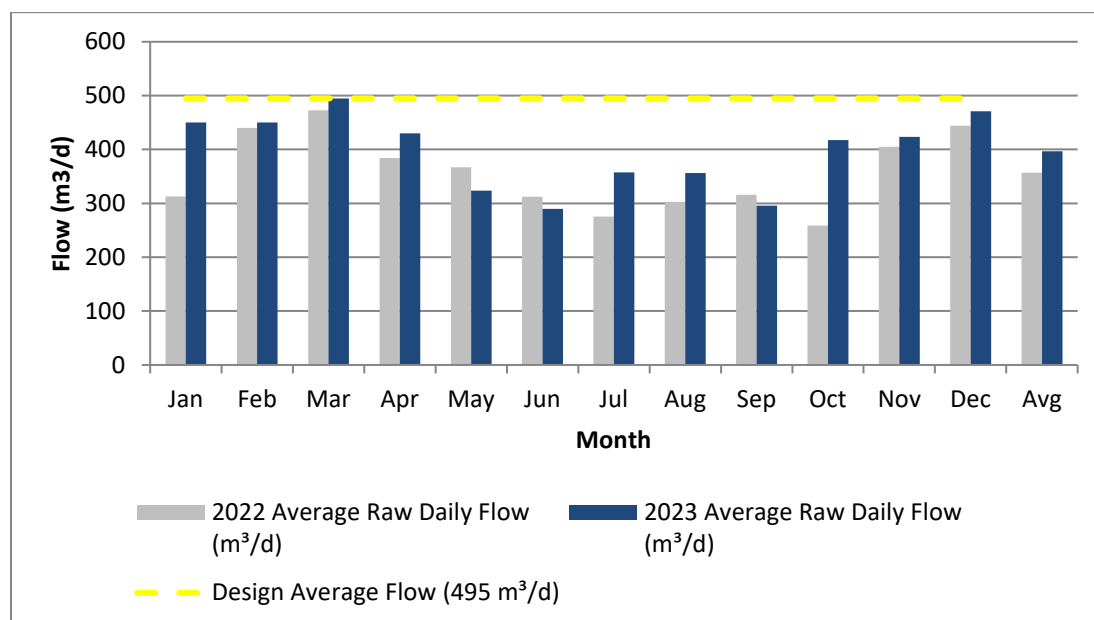
The rated capacity for peak daily flow is 2549 m<sup>3</sup>/d. Refer to Figure 2 for a comparison of the peak daily flow for the last six years against the corresponding rated capacity.

Figure 2: Peak Daily Flows 2018-2023



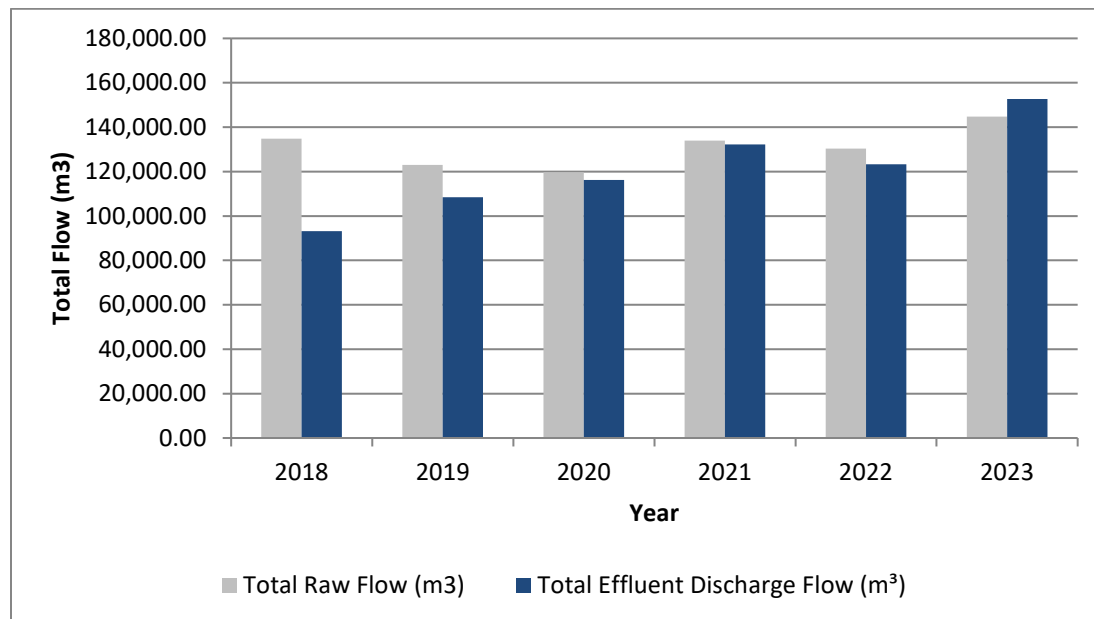
The raw sewage average daily flow was 397 m<sup>3</sup>/d in 2023 and 357 m<sup>3</sup>/d in 2022. This 11% annual increase was likely the result of wet weather throughout the year. Refer to Figure 3 for 2023 average daily flows by month and the corresponding annual average.

Figure 3: Average Daily Flows by Month



Refer to Figure 4 for the total raw and effluent flow in 2022 and 2023. Variances in effluent flow are due to raw incoming flow volumes and the corresponding amount of contents in the lagoons.

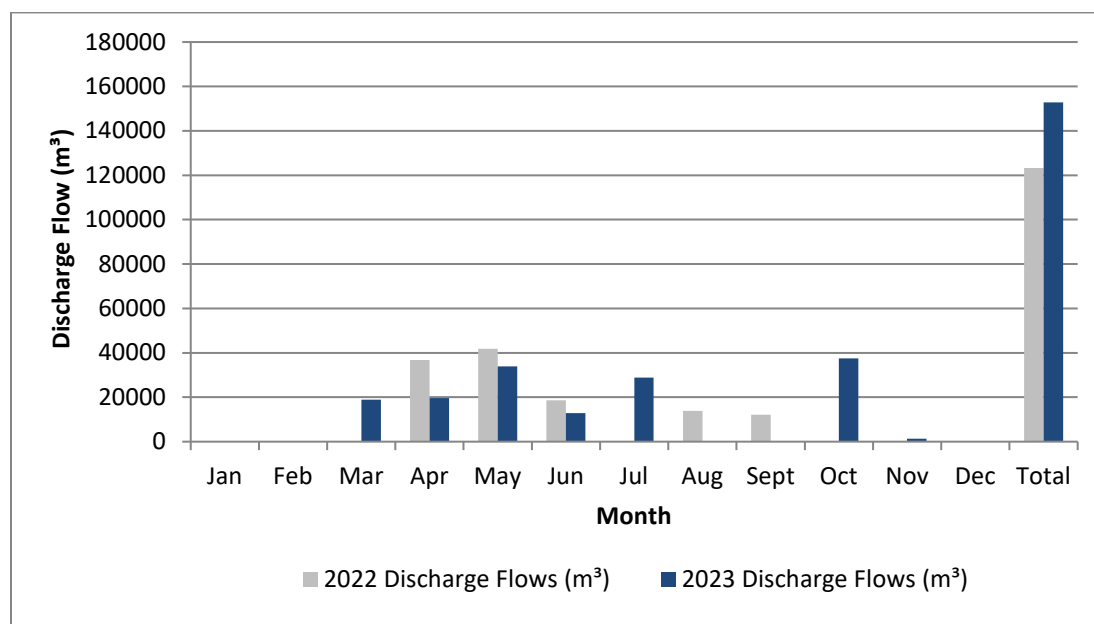
Figure 4: Total Raw and Effluent Flows 2018-2023



In 2023, the Zurich STP discharged 152 761 m<sup>3</sup> of effluent. This is 24% higher than the 2022 total discharge flow of 123 240 m<sup>3</sup> and consistent with higher raw inflow in 2023. The average daily discharge flow was 1197 m<sup>3</sup>/d in 2022 and 1132 m<sup>3</sup>/d in 2023. The maximum daily discharge flow in 2022 and 2023 was 2150 m<sup>3</sup>/d recorded in October 2023.

Discharge periods in 2023 included: March 6 to March 24, April 11 to May 31, June 19 to July 28, and October 10 to November 3. Refer to Figure 5 for final effluent total monthly flows for 2022 and 2023.

Figure 5: Final Effluent Total Monthly Flows

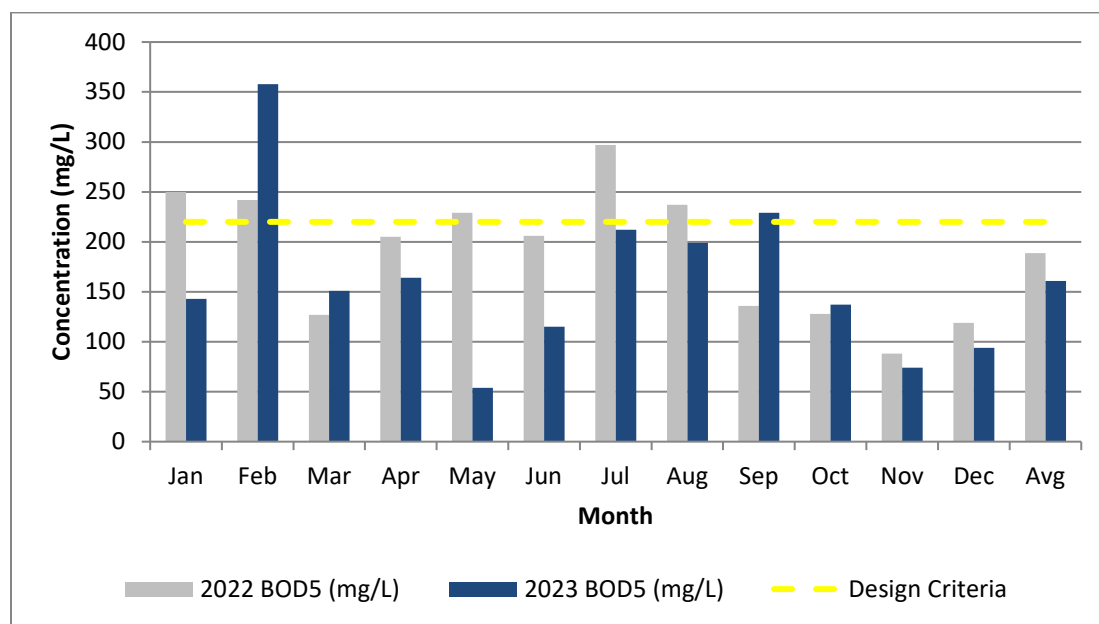


## Influent Data

Influent is monitored for Biological Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), Total Phosphorous (TP), and Total Kjeldahl Nitrogen (TKN) on a monthly basis. These parameters are measured through a grab sample with the exception of the months of May, June, July, and November, which are composite samples. These parameters are measured against the design criteria of the Zurich STP. Values above design concentration can result in ineffective treatment of raw sewage and can lead to effluent limit exceedances. In 2023, there were exceedances of BOD<sub>5</sub>, TSS, and TKN; however, this did not affect effluent water quality.

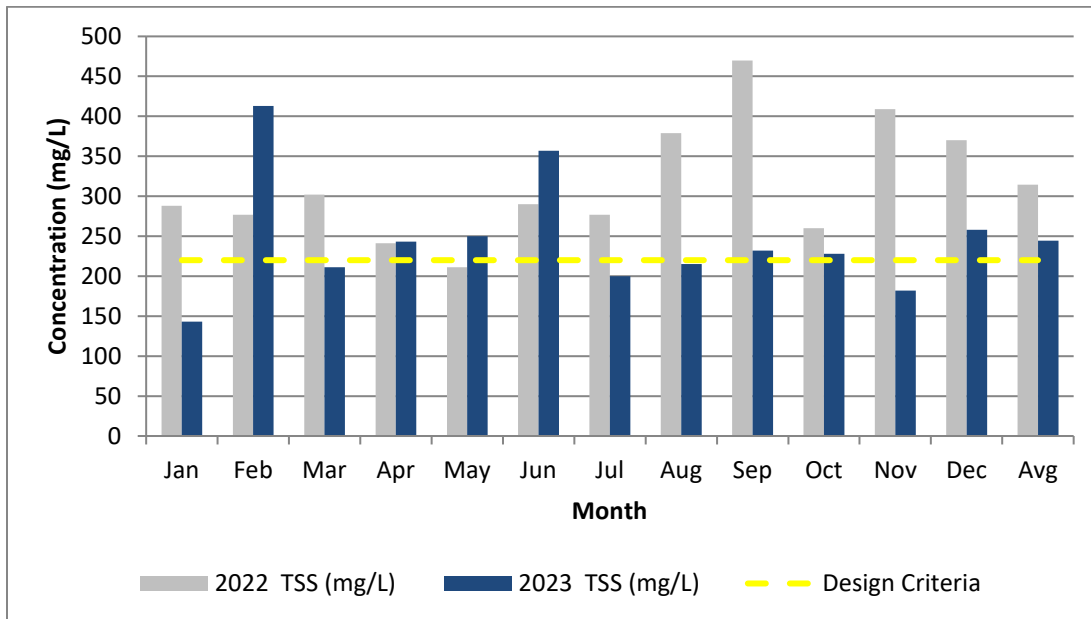
In 2023, the monthly average raw BOD<sub>5</sub> concentration was 161 mg/L, a 15% decrease from 2022. Refer to Figure 6 for a comparison of 2023 monthly raw BOD<sub>5</sub> concentrations to 2022 concentrations.

Figure 6: Raw BOD<sub>5</sub> Concentrations



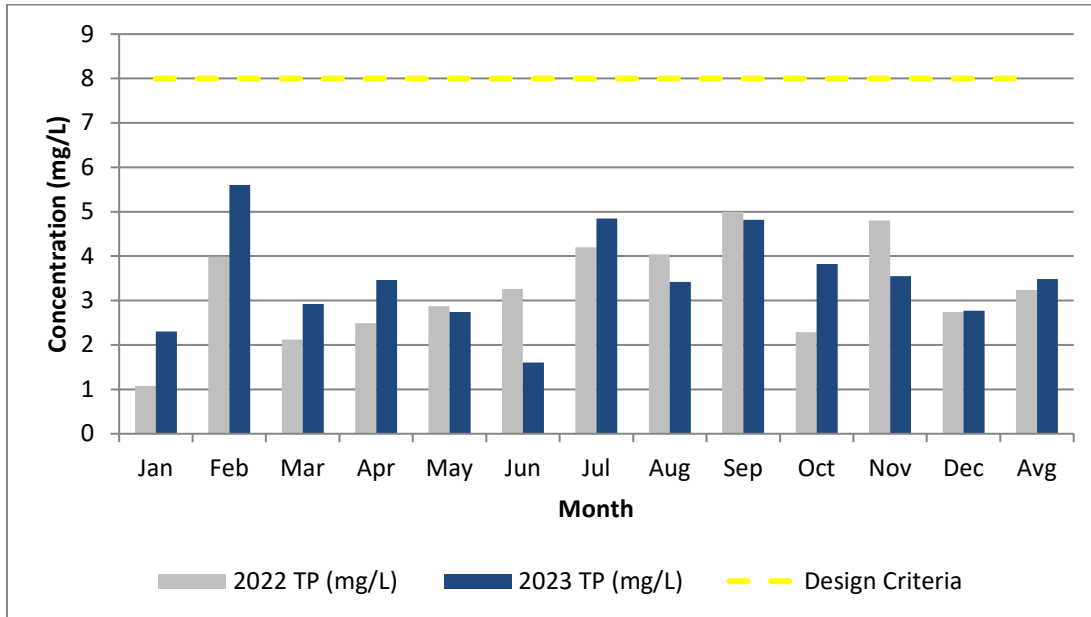
In 2023, the monthly average raw TSS concentration was 244 mg/L, a 22% decrease from 2022. Refer to Figure 7 for a comparison of 2023 monthly raw TSS concentrations to 2022 concentrations.

Figure 7: Raw TSS Concentrations



In 2023, the monthly average raw TP concentration was 3 mg/L, an 8% increase from 2022. Refer to Figure 8 for a comparison of 2023 monthly raw TP concentrations to 2022 concentrations.

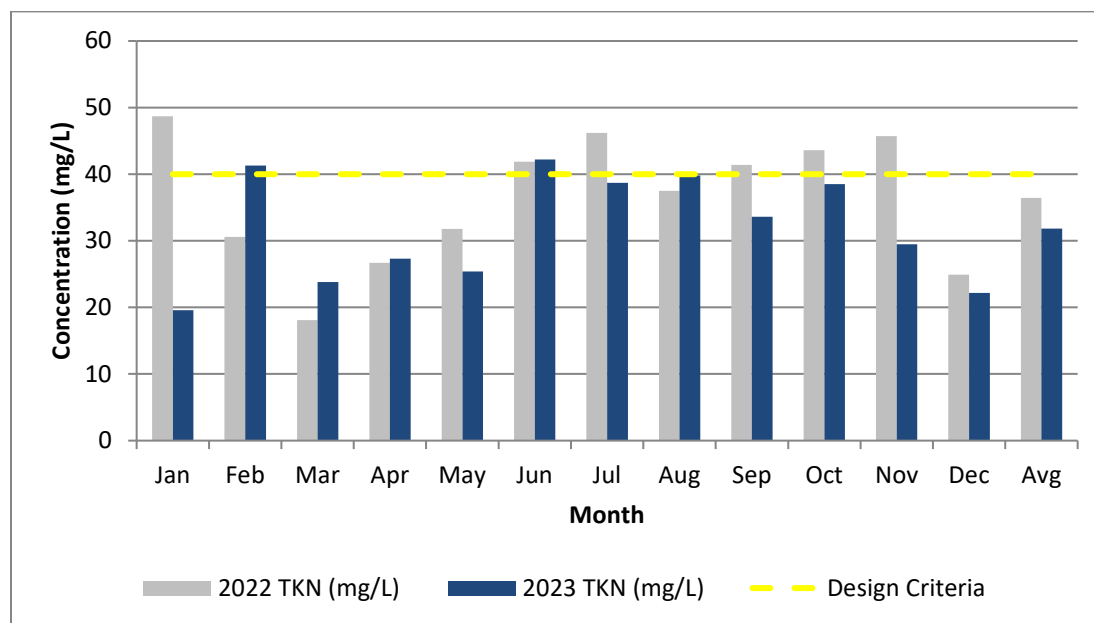
Figure 8: Raw TP Concentrations





In 2023, the monthly average raw TKN concentration was 32 mg/L, a 13% decrease from 2022. Refer to Figure 9 for a comparison of 2023 monthly raw TKN concentrations to 2022 concentrations.

Figure 9: Raw TKN Concentrations



## Imported Sewage

In 2023, the Zurich STP received 22.72 m<sup>3</sup> of septage. Refer to Table 1 below for details.

Table 1: Imported Sewage

Date Septage Received	Origin	Hauler
January 9, 2023	Zurich Co-Op	Grand Bend Sanitation
December 14, 2023	Zurich Co-Op	Total Septic

## Effluent Monitoring

The Zurich STP is permitted to discharge year round. However, discharge typically occurs during non-freezing months. For a list of discharge periods in 2023, see ‘Influent and Effluent Flow Monitoring’.

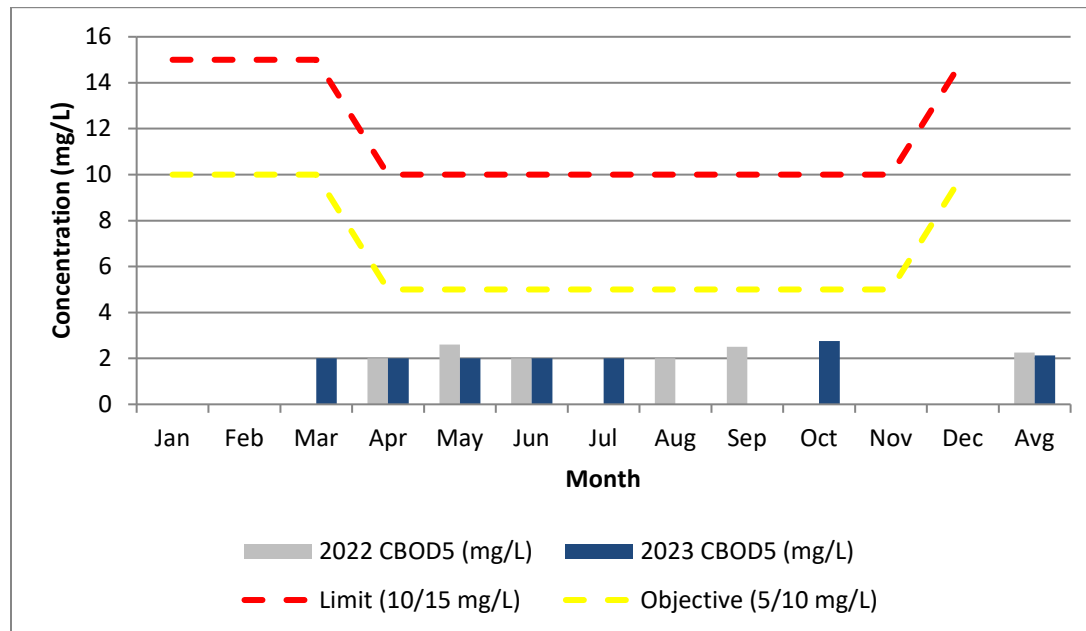
There are two discharge seasons specified in the Zurich STP ECA: April 16 to December 14 and December 15 to April 15. Each of these periods has separate ECA objectives and limits for each parameter. The objectives and limits are more stringent in the April 16 to December 14 discharge period due to effluent loading having a greater impact on receiving streams during warmer weather. Specific objectives and limits are noted in the figures below.

Effluent from the Zurich STP is sampled weekly through grab samples and analyzed for Carbonaceous Biological Oxygen Demand (CBOD<sub>5</sub>), TSS, TP, Total Ammonia Nitrogen (TAN), Unionized Ammonia, E. coli, pH, and Temperature. For details on objective and limit exceedances, refer to ‘Summary of Efforts Made to Achieve Design Objectives’.

### Comparison to Compliance Limits and Objectives

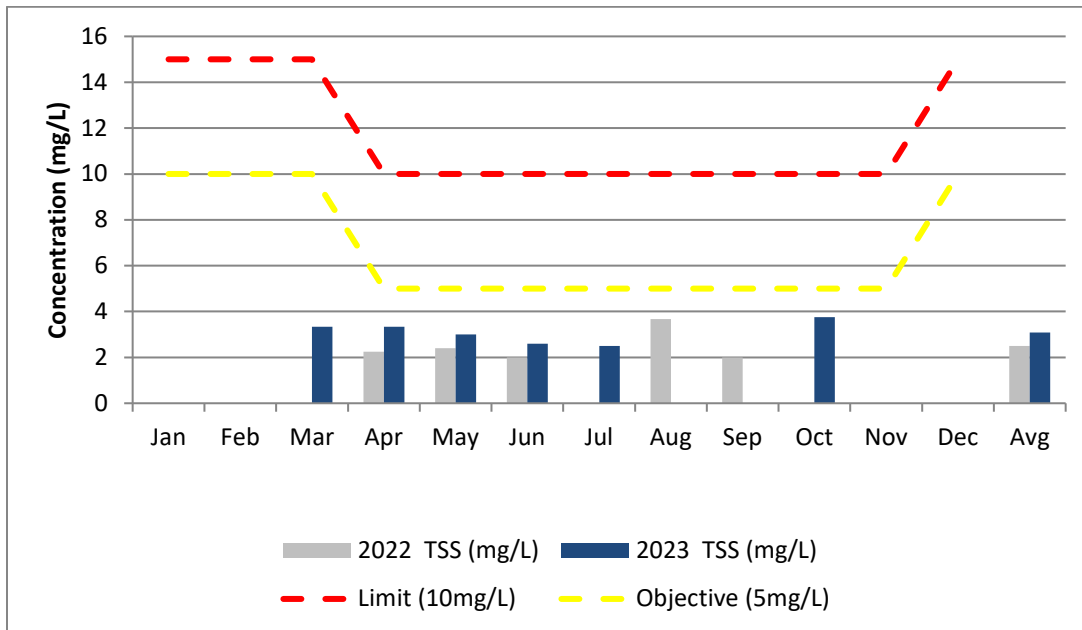
The average monthly effluent CBOD<sub>5</sub> concentration in 2023 was 2 mg/L, a 5% decrease from 2022. There were no limit or objective exceedances in 2023. Refer to Figure 10 for a comparison of 2023 monthly effluent CBOD<sub>5</sub> concentrations to 2022 concentrations.

Figure 10: Effluent CBOD<sub>5</sub> Concentrations



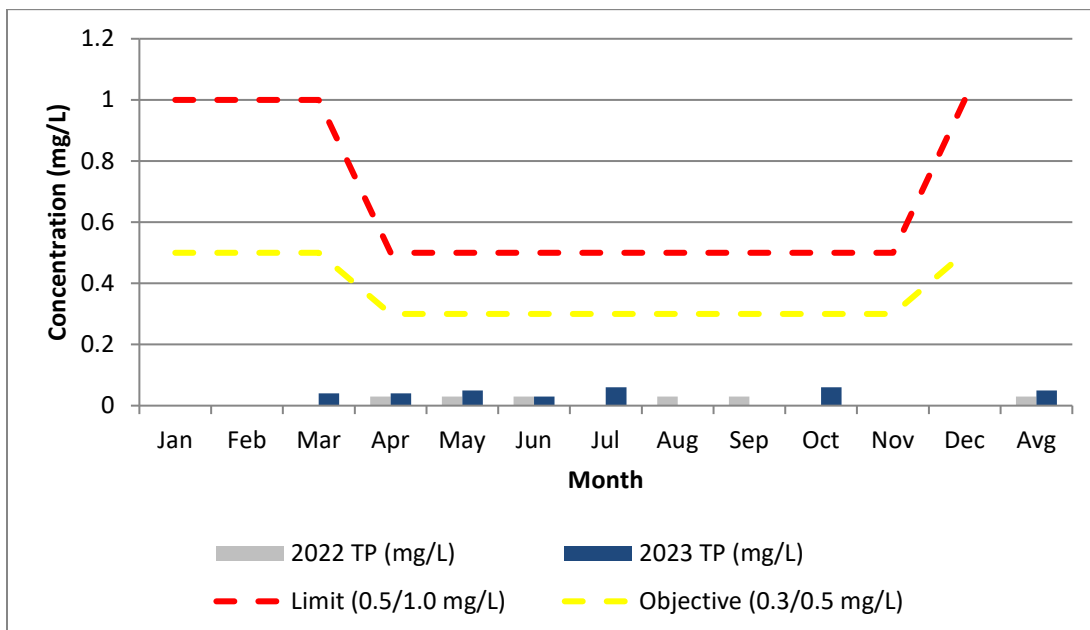
The average monthly effluent TSS concentration in 2023 was 3 mg/L, a 24% increase from 2022. There were no limit or objective exceedances in 2023. Refer to Figure 11 for a comparison of 2023 monthly effluent TSS concentrations to 2022 concentrations.

Figure 11: Effluent TSS Concentrations



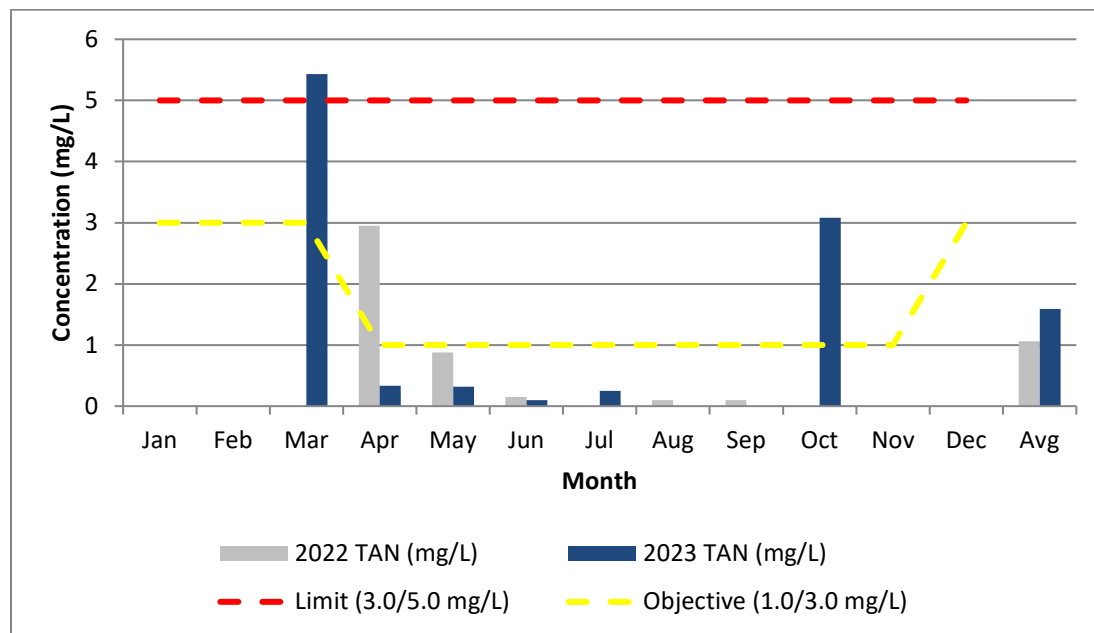
The average monthly effluent TP concentration in 2023 was 0.1 mg/L, a 67% increase from 2022. There were no limit or objective exceedances in 2023. Refer to Figure 12 for a comparison of 2023 monthly effluent TP concentrations to 2022 concentrations.

Figure 12: Effluent TP Concentrations



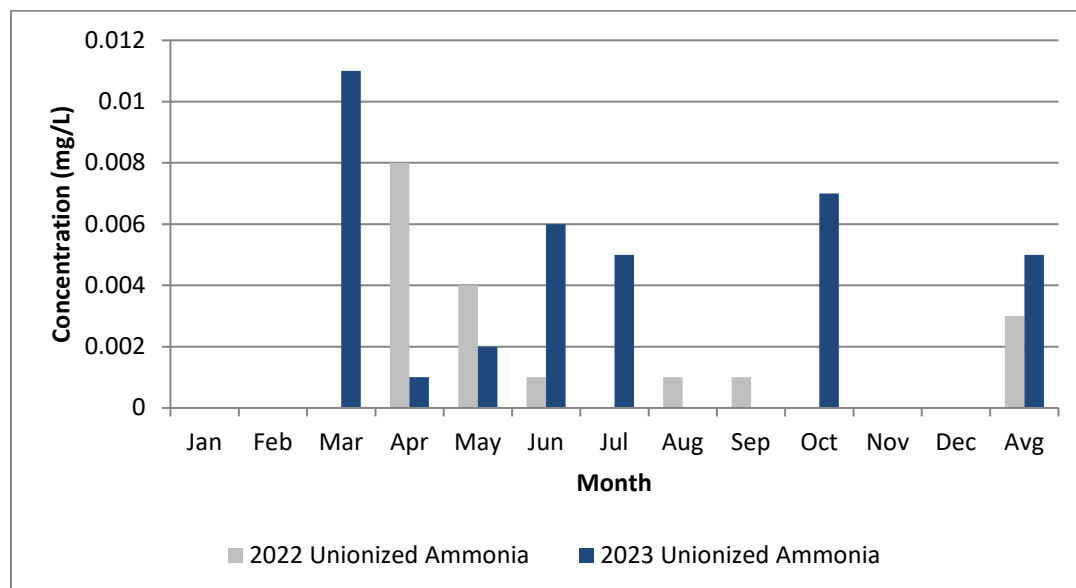
The average monthly effluent TAN concentration in 2023 was 1.6 mg/L, a 50% increase from 2022. The value in March (5.4 mg/L) exceeded both the objective (3.0 mg/L) and limit (5.0 mg/L). The value in October (3.1 mg/L) also exceeded both the objective (1.0 mg/L) and limit (3.0 mg/L). Refer to Figure 13 for a comparison of 2023 monthly effluent TAN concentrations to 2022 concentrations.

Figure 13: Effluent TAN Concentrations



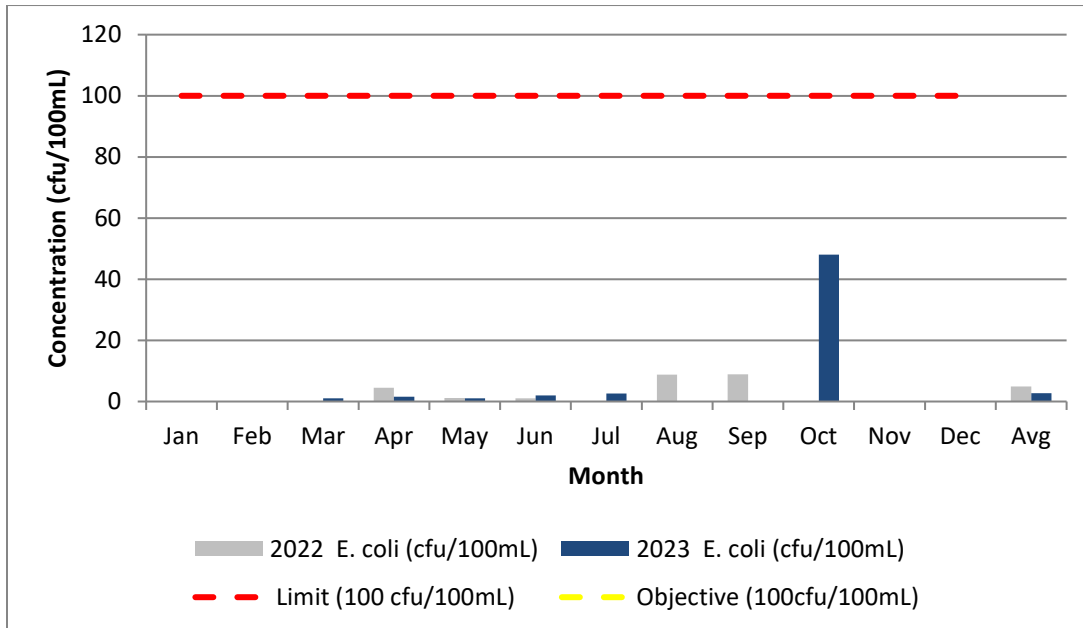
The average monthly effluent Unionized Ammonia concentration in 2023 was 0.005 mg/L, a 67% increase from 2022. There are no objectives or limits for Unionized Ammonia but the 2023 values meet the Provincial Water Quality Objective (PWQO) of 0.02 mg/L. Refer to Figure 14 for a comparison of 2023 monthly effluent Unionized Ammonia concentrations to 2022 concentrations.

Figure 14: Effluent Unionized Ammonia Concentrations



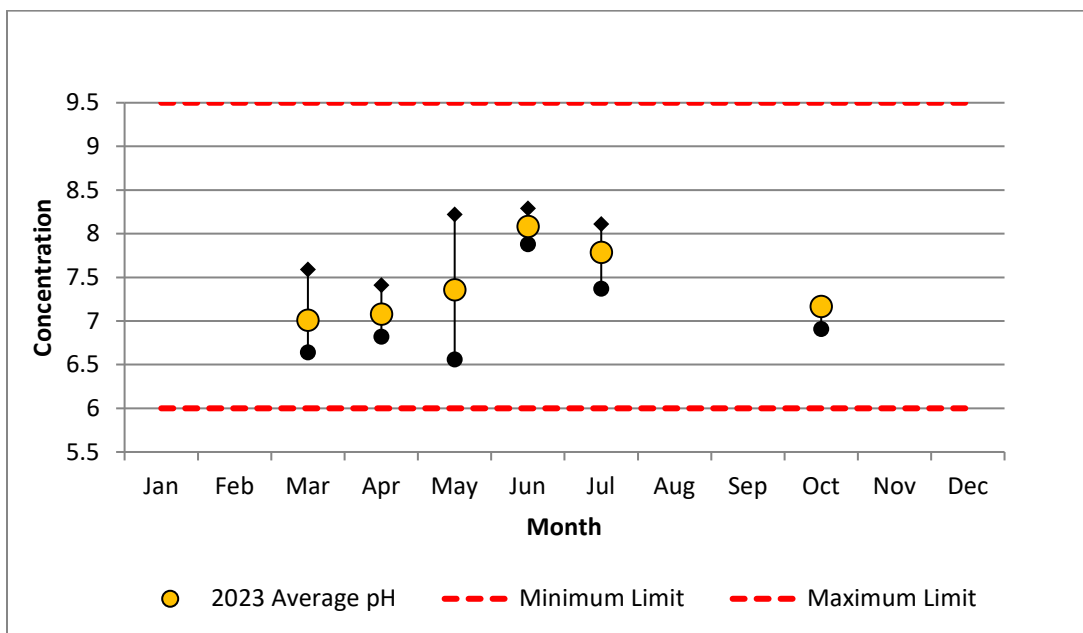
The average monthly effluent E. coli concentration in 2023 was 3 cfu/100mL, a 45% decrease from 2022. There were no limit or objective exceedances in 2023. Refer to Figure 15 for a comparison of 2023 annual effluent E. coli concentrations to 2022 concentrations.

Figure 15: Effluent E. coli Concentrations



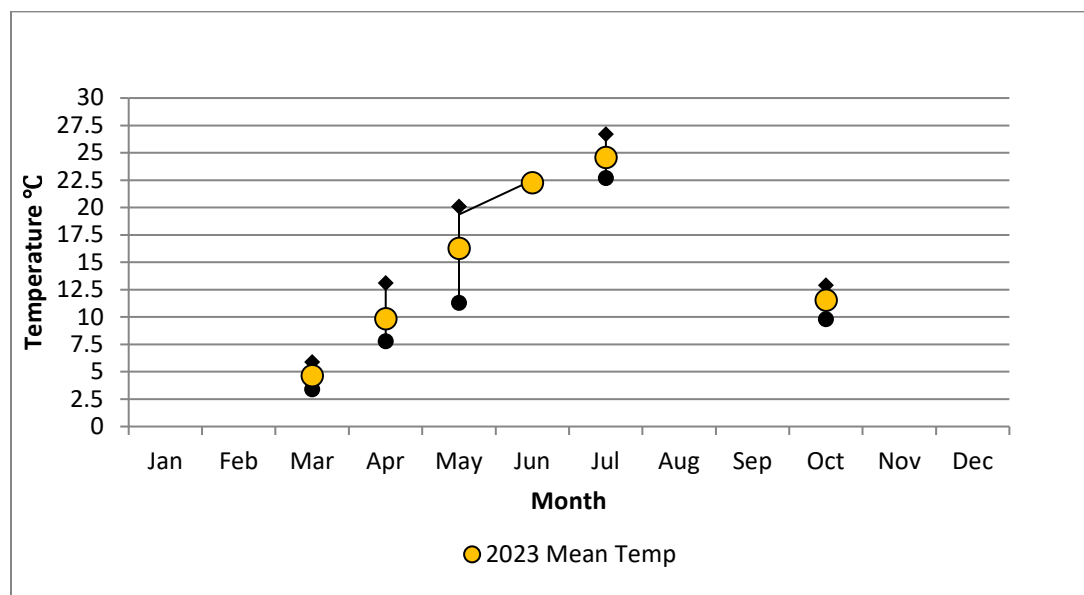
In 2023, effluent pH ranged from 6.6 to 8.3. All values met the objective and limit in 2023, which are the same. Refer to Figure 16 for a comparison of 2023 monthly effluent pH values to the objective/limit.

Figure 16: Effluent pH Values



In 2023, effluent Temperatures ranged from 3.4 °C to 26.7 °C. There are no objectives or limits for Temperature. Refer to Figure 17 for monthly effluent Temperature values in 2023.

Figure 17: Effluent Temperatures



## Effluent Quality Assurance

Effluent quality assurance is evaluated by monitoring parameters and changes in the lagoons. Operational staff monitor plant performance by conducting in-house tests on dissolved oxygen, pH, and temperature. Staff also monitor and record chemical dosages and any adverse observations in the lagoon cells. Data collected from these tests provide valuable information to the operators to make the appropriate adjustments in the treatment process and take corrective actions before the plant reaches its effluent limits.

## Summary of Efforts Made to Achieve Design Objectives

In 2023, there were two exceedances of the TAN limit and objective in March and October. Both of these exceedances were reported as non-compliances to the MECP. Refer to Table 2 for details. To prevent these exceedances in 2024, the lagoons will be discharged at a steadier rate throughout the season.

Despite these exceedances, design objectives were not exceeded more than 50% of the time in 2023. Moreover, there were no trends in deterioration of final effluent quality. The average influent flow is currently at and thus has not exceeded 80% of the rated capacity.

**Table 2:** Summary of Objective and Limit Exceedances

Month	Parameter	Concentration (mg/L)	Objective (mg/L)	Limit (mg/L)	Issue
March	TAN	5.4	3.0	5.0	Adjusting flows to ISF upon start-up
October	TAN	3.1	1.0	3.0	High flows through ISF caused pooling

## Operating Problems and Corrective Actions

In 2023, the biggest challenge for the Zurich STP was managing flows through the ISF. This led to two non-compliances for exceeding the TAN ECA limit. In 2024, there is a plan to discharge flows through the ISF at a steadier rate to reduce the probability of this reoccurring.

Capital and major maintenance recommendations have been submitted by OCWA to the Municipality of Bluewater to address ongoing maintenance requirements for the collection system and sewage lagoons to continue to produce high quality effluent. Items included on the list for 2024 are:

- Float replacements – Knell Crescent SPS
- Pump rebuilds – Knell Crescent SPS and Zurich Main SPS
- Check valve rebuilds – Zurich Main SPS
- Filter pump rebuild – Zurich STP
- Auto-control installation - Zurich STP blowers
- Flushing and camera inspection of the WWC system

## Maintenance Activities

Preventative and corrective maintenance is assigned and monitored within the Workplace Management System (WMS) program. Refer to Appendix A for the 2023 maintenance summary. Refer to Table 3 for a list of repairs and replacements that occurred in 2023.

**Table 3:** Major Maintenance in 2023

Major Maintenance Wastewater
Alum pumps repaired
Filter valve repaired
Installed clean-out on property in WWC system
Filter bed pipe repaired

## Calibration Records

Pierce Services and Solutions Inc. calibrated influent and effluent flow meters and the wet well level sensor on March 23, 2023. Flow meters met the accuracy tolerance of within 15% of the actual flow rate. Operational staff complete routine pH meter calibrations and verifications. Refer to Appendix B for 2023 Calibration Records.

## Sludge Generation

In 2023, the Zurich STP generated 116 m<sup>3</sup> of sludge. No sludge was hauled in 2023. It is estimated that approximately 120 m<sup>3</sup> of sludge will be generated in 2024.

## Complaints

On April 13, 2023, a Zurich resident contacted the Spills Action Centre (SAC) to report sewage flowing into a creek downstream of the Zurich STP. The resident also reported seeing a black substance on the rocks near the creek and smelling a foul odour. SAC contacted the on-call Operator who responded and attended the site with the MECP and the municipality's Manager of Public Works. There was no sewage leak noted either at the site or along the pipeline to the Zurich STP. No foul odour was present and the black substance on the rocks was determined to be algae. No further complaints were received in 2023.

## Bypass, Overflows, Spills & Abnormal Discharge Events

The ECA requires additional daily sampling for bypass, overflow or spill events. There were no bypass, overflow or spill events in 2023.

## Summary of Efforts made to achieve conformance with F-5-1

The Municipality of Bluewater has a separated collection system, therefore a Pollution Prevention Control Program is not required to be established or maintained.

There were no bypass or overflow events in 2023 for the Zurich STP/WWC system. Nonetheless, it has been proposed to complete flushing and a camera inspection of the collection system. These projects are recommended to be undertaken to provide an overflow/bypass/spill overall reduction or elimination.

## Notice of Modification to the Works

There were no 'Notice of Modification to Sewage Works' forms submitted in 2023.

## Additional Information the Water Supervisor Requires

No additional information requests have been made.



# Appendix A

## Maintenance Summary

Workorder Summary Report

WO #	Asset ID	Asset Description	Location Description	Class	Work Order Description	Status	Schedule	Actual
							Start	Finish
<a href="#">3156742</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	1/1/23 12:00 AM	1/30/23 10:03 AM
<a href="#">3157327</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	1/1/23 12:00 AM	1/30/23 10:05 AM
<a href="#">3157346</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	1/1/23 12:00 AM	1/30/23 10:05 AM
<a href="#">3203368</a>			5876, Zurich WWTL & CS, Facility	Compliance	WSER Quarterly Reporting (3m) 5876	CLOSE	1/12/23 12:00 AM	1/16/23 01:47 PM
<a href="#">3205678</a>	0000310766	DRIVE VFD 2 BLOWER 2	5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Replaced and tested faulty hour meter on blower #2	CLOSE		1/24/23 08:29 AM
<a href="#">3211541</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	2/1/23 12:00 AM	2/27/23 02:50 PM
<a href="#">3212068</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	2/1/23 12:00 AM	2/27/23 02:47 PM
<a href="#">3212087</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	2/1/23 12:00 AM	2/14/23 12:45 PM
<a href="#">3243351</a>			5876, Zurich WWTL & CS, Facility	Compliance	RP03 Annual Report ECA (1y) 5876	CLOSE	2/1/23 12:00 AM	3/23/23 11:39 AM
<a href="#">3253008</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	3/1/23 12:00 AM	3/28/23 03:05 PM
<a href="#">3253520</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	3/1/23 12:00 AM	3/28/23 02:57 PM
<a href="#">3253539</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	3/1/23 12:00 AM	3/28/23 03:22 PM
<a href="#">3297778</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	4/1/23 12:00 AM	4/24/23 03:53 PM
<a href="#">3298371</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	4/1/23 12:00 AM	4/24/23 03:56 PM
<a href="#">3298390</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	4/1/23 12:00 AM	4/26/23 02:12 PM
<a href="#">3341675</a>	0000310773	PUMP ALUM	5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Trouble shot Alum pump #1	CLOSE		4/26/23 03:49 PM
<a href="#">3346977</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	5/1/23 12:00 AM	5/10/23 01:16 PM
<a href="#">3347539</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	5/1/23 12:00 AM	5/10/23 03:41 PM
<a href="#">3347558</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	5/1/23 12:00 AM	5/10/23 01:18 PM
<a href="#">3392965</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	6/1/23 12:00 AM	6/7/23 10:32 AM
<a href="#">3393549</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	6/1/23 12:00 AM	6/7/23 10:40 AM
<a href="#">3393568</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	6/1/23 12:00 AM	6/7/23 10:41 AM
<a href="#">3441779</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	7/1/23 12:00 AM	7/24/23 01:46 PM
<a href="#">3442327</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	7/1/23 12:00 AM	7/28/23 03:38 PM

<a href="#">3442346</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	7/1/23 12:00 AM	7/11/23 02:49 PM
<a href="#">3480191</a>			Zurich Wastewater Treatment Lagoons & Collection System	Refurbish/Replace/Repair	Replacing alum pump tube Zurich	CLOSE	7/6/23 08:50 PM	7/6/23 08:50 PM
<a href="#">3488751</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Fan Route Insp/Service (1y) 5876	CLOSE	8/1/23 12:00 AM	10/6/23 08:51 AM
<a href="#">3489071</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	8/1/23 12:00 AM	8/15/23 12:51 PM
<a href="#">3489672</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	8/1/23 12:00 AM	8/28/23 03:28 PM
<a href="#">3489691</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	8/1/23 12:00 AM	8/28/23 03:31 PM
<a href="#">3533071</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	9/1/23 12:00 AM	9/12/23 02:26 PM
<a href="#">3533727</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	9/1/23 12:00 AM	9/12/23 02:25 PM
<a href="#">3533746</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Refurbish/Replace/Repair	Engine Diesel Zurich WW Insp/Service (1y) 5876	CLOSE	9/1/23 12:00 AM	10/25/23 03:44 PM
<a href="#">3533785</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	9/1/23 12:00 AM	9/12/23 02:26 PM
<a href="#">3548643</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Engine Diesel Knell Crescent PS Insp/Service (1y) 5876	CLOSE	9/1/23 12:00 AM	12/21/23 11:12 AM
<a href="#">3548682</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Filter Sand 01 Insp/Service (1y) 5876	CLOSE	9/1/23 12:00 AM	9/25/23 01:05 PM
<a href="#">3548685</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Filter Sand 02 Insp/Service (1y) 5876	CLOSE	9/1/23 12:00 AM	9/25/23 01:06 PM
<a href="#">3548694</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Lagoon 01 Insp/Service (1y) 5876	CLOSE	9/1/23 12:00 AM	9/25/23 01:08 PM
<a href="#">3548697</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Lagoon 02 Insp/Service (1y) 5876	CLOSE	9/1/23 12:00 AM	9/25/23 01:08 PM
<a href="#">3575746</a>			5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Instalation of water and sewer services to 6 John St S in Zurich	CLOSE		10/16/23 07:57 AM
<a href="#">3581731</a>	0000249058	METER LEVEL	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Calibration	Meter Level Insp/Service (1y) 5876	CLOSE	10/1/23 12:00 AM	11/10/23 11:08 AM
<a href="#">3581736</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	10/1/23 12:00 AM	10/11/23 09:37 AM
<a href="#">3581783</a>	0000249083	VALVE BACKFLOW	5876, Zurich WWTL & CS, Process, Process Piping & Valves	Refurbish/Replace/Repair	Valve Backflow Insp/Service (1y) 5876	CLOSE	10/1/23 12:00 AM	11/3/23 09:16 AM
<a href="#">3582508</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	10/1/23 12:00 AM	10/31/23 05:52 PM
<a href="#">3582527</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	10/1/23 12:00 AM	10/23/23 03:39 PM
<a href="#">3624865</a>	0000310766	DRIVE VFD 2 BLOWER 2	5876, Zurich WWTL & CS	Refurbish/Replace/Repair	Trouble shot Blower #2 intermittently faulting	CLOSE		10/27/23 07:48 AM
<a href="#">3630043</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	11/1/23 12:00 AM	11/30/23 01:31 PM
<a href="#">3630709</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	11/1/23 12:00 AM	11/30/23 01:23 PM

<a href="#">3630728</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	11/1/23 12:00 AM	11/17/23 02:07 PM
<a href="#">3661516</a>			Zurich Wastewater Treatment Lagoons & Collection System	Refurbish/Replac e/Repair	Replaced alum pump 2 stenner tube	CLOSE	11/1/23 10:00 AM	11/1/23 11:00 AM
<a href="#">3671208</a>	0000249057	PANEL ALARM/DIALER VERBATIM	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer Zurich Lift Testing (1m) 5876	CLOSE	12/1/23 12:00 AM	12/5/23 11:04 AM
<a href="#">3671845</a>	0000249054	ENGINE DIESEL GENSET	5876, Zurich WWTL & CS, Facility, Power Generation	Inspection	Engine Diesel Zurich WW Insp/Test (1m) 5876	CLOSE	12/1/23 12:00 AM	12/7/23 03:45 PM
<a href="#">3671864</a>	0000249076	PANEL ALARM/DIALER 01	5876, Zurich WWTL & CS, Process, Process Control & Monitoring	Inspection	Alarm Dialer 01 Zurich LagoonTesting (1m) 5876	CLOSE	12/1/23 12:00 AM	12/4/23 10:17 AM

# Appendix B

## 2023 Calibration Report



**Pierce Services  
& Solutions Inc.**

45 Wilton Road  
Guelph, ON N1E 7L6

Phone: 519.820.4853  
Fax: 519.824.9402

## Flowmeter Report

Verification:  X

Calibration:

Client: OCWA Bluewater  
Description: Mag Flow Meter  
Manufacturer: Krohne  
Model: Aquaflux  
Inventory No.: \_\_\_\_\_

Location: Zurich Lagoons  
Date: 23-Mar-23  
Checked By: Greg Pierce  
Serial No.: C103696

Volocity	Input	As Found	As Left	Pass/Fail
0 m/s	0.00 l/s	0.00 l/s	0.00 l/s	Pass
1.05 m/s	33.11 l/s	33.0 l/s	33.0 l/s	Pass
4.77 m/s	150.00 l/s	150.00 l/s	150.00 l/s	Pass

Confirmed Run Mode: X

Returned to service:  X

**Service Comments:**

Flowmeter Information

Flow Unit: l/s  
Meter Size: 200 mm  
Pipe Material: Stainless Steel  
Liner Material: PU  
Range: 0-150 l/s  
Tag Number: FIT 107



**Comments:**

Verification of original calibration

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Operation Hrs - 88862 Hr  
Coil Temp - 482.2 F  
Electrode Temp - 94.7 F  
Conductivity - 5257 uS/cm  
Coil Resistance - 114.10 Ω

Signature: \_\_\_\_\_

Greg Pierce, CCST



Pierce Services  
& Solutions Inc.

519.820.4853 Fax 519.824.9402

## Instrument Verification Sheet

Client Name: Ontario Clean Water Agency

Date: March 23, 2023

Equipment Description: Level Sensor

Assigned Number: Wet Well Level

Area Located: Zurich Pumping Station

Inventory Number: 249058

### Instrument Data

Manufacturer: Milltronics

Model Number: MultiRanger Plus

Type: Ultrasonic

Serial Number: N/A

Range: 0 - 2.050 m

Accuracy: +/- 5%

Method Of Calibration: Standard Measurement

Application: Waste Water

### Calibration Data

Input %	Input	As Found	As Left	% Error
	15.99 mA	1.59 m	1.59 m	
49.03%	11.40mA	0.96 m	0.91 m	

Confirmed Run Mode:

Placed back in service:

Comments:



Checked By: Greg Pierce CCST

Signature: 



Pierce Services  
& Solutions Inc.

45 Wilton Road  
Guelph, ON N1E 7L6

Phone: 519.820.4853  
Fax: 519.824.9402

## Flowmeter Report

Verification:  X

Calibration:

Client: OCWA Bluewater

Location: Zurich Lift Station SPS

Description: Mag Meter

Date: 23-Mar-23

Manufacturer: ABB

Checked By: Greg Pierce

Model: Magmaster

Serial No.: 9726

Inventory No.: 249226

Velocity	Input	As Found	As Left	Pass/Fail
0 m/s	0.00 l/s	0.00 l/s	0.00 l/s	Pass
2.033 m/s	15.95 l/s	15.95 l/s	15.95 l/s	Pass
6.36 m/s	50.00 l/s	50.00 l/s	50.00 l/s	Pass
3.14 m/s	25.05 l/s	25.05 l/s	25.05 l/s	Pass

Confirmed Run Mode: X

Returned to service: X

### Service Comments:

#### Flowmeter Information

Flow Unit: l/s  
 Meter Size: 100 mm  
 Pipe Material: Cast Steel  
 Liner Material: PU  
 Range: 0-50 l/s  
 Tag Number: FIT 201



#### Comments:

Verification of original calibration

Signature:   
 Greg Pierce, CCST



Tag # LIT 100 Reservoir Level  
Date: March 23, 2023

#	Parameter	Value	#	Parameter	Value
P-0	Security	1954	P-50	OCM mA output	1
P-1	Units	1	P-51	OCM simulation	--
P-2	Mode of Measurement	1	P-52	Totalizer display factor	0
P-3	Empty Distance	4.690	P-53	Totalizer decimal point	2
P-4	Span	4.43	P-54	Low total	00.00
P-5	Blanking	0.300	P-55	High total	0000
P-6	Analog Output	2	P-56	Remote totalizer contact	0
P-7	Decimal Point	2	P-57	Flow sampler control	0
P-8	Relay 1, Function	1	P-58	Flow sampler control	1.000
P-9	Relay 1, Setpoint On	2	P-59	Time sampler control	--
P-10	Relay 1, Setpoint Off	2.15	P-60	Full Calibration	--
P-11	Relay 2, Function	1	P-61	Empty Calibration	--
P-12	Relay 2, Setpoint On	4.100	P-62	Measurement Offset	0.000
P-13	Relay 2, Setpoint Off	4.000	P-63	Sound Velocity at 20° C	344.1
P-14	Relay 3, Function	7	P-64	Velocity at P-65	342
P-15	Relay 3, Setpoint On	0.000	P-65	Air temperature	16 C
P-16	Relay 3, Setpoint Off	0.000	P-66	Maximum air temperature	165 C
P-17	Relay 4, Function	1	P-67	Minimum air temperature	-20 C
P-18	Relay 4, Setpoint On	1.000	P-68	Fill damping	10.00
P-19	Relay 4, Setpoint Off	1.500	P-69	Empty damping	10.00
P-20	Relay 5, Function	0	P-70	Process rate display	0.006
P-21	Relay 5, Setpoint On	--	P-71	Process rate filter	0
P-22	Relay 5, Setpoint Off	--	P-72	Fuzz filter	1
P-23	Transducer, Submersible	0	P-73	Agitator discrimination	1
P-24	Pump 1, hours	0	P-74	Fail-safe mode	1
P-25	Pump 2, hours	0	P-75	Fail-safe timer	2.000
P-26	Pump 3, hours	910.2	P-76	Reading	3.42
P-27	Pump 4, hours	819.2	P-77	Material level	3.421
P-28	Pump 5, hours	0.000	P-78	Space or distance	1.26
P-29	Pump, run on, interval	0.000	P-79	Scope displays	---
P-30	Pump, run off, duration	0	P-80	Echo confidence	1:23
P-31	Transducer	104	P-81	Confidence threshold long	10
P-32	DLD milliamp output	1	P-82	Confidence threshold long	5
P-33	Inflow/discharge totaling	1	P-83	Echo strength	88
P-34	Tank Shape	0	P-84	Noise	15:27
P-35	Tank dimension A	0.000	P-85	Algorithms	1
P-36	Tank dimension L	0.000	P-86	TVT curve	1
P-37	Convert display	1.000	P-87	Range extension	20
P-38	Display offset	0.000	P-88	Number of transmit pulses	4
P-39	Display reading options	0	P-89	Software version	1.22
P-40	Primary measuring device	1	P-90	Memory test	PASS
P-41	Flow rate time units	4	P-91	LCD,LED and relay test	PASS
P-42	OCM exponent	1.550	P-92	mA output test	16:55
P-43	Flume Dimensions	1.000	P-93	Temperature sensor test	176
P-45	Maximum head	4.390	P-94	Transmitter test	PASS
P-46	Maximum flow rate	1000	P-95	Programmer test	PASS
P-47	Auto zero	--	P-96	Watchdog reset test	PASS
P-48	OCM low head cutoff	5.000	P-97	Trim for 4 mA	234
P-49	OCM decimal point	2	P-98	Trim for 20 mA	3510
			P-99	Master reset	

Site Location: Zurich Well