2023 ANNUAL PERFORMANCE REPORT, Version 3

VICTORIA HARBOUR WASTEWATER TREATMENT PLANT

For the period of
January 1st, 2023 to December 31st, 2023

Prepared for the Corporation of the Township of Tay by the Ontario Clean Water Agency

TAY TOWNSHIP

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

REQUIREMENTS FOR ANNUAL PERFORMANCE REPORT

This annual performance report was prepared in accordance with Amended Environmental Compliance Approval No. 3389-A5BKJJ as per Section 10.(6) items a) through l) for the for the Victoria Harbour Wastewater Treatment Plant and with Environmental Compliance Approval #129-W601, Issue 1 for the Tay Township Municipal Collection System.

ECA No. 3389-A5BKJJ- SECTION 10. REPORTING REQUIREMENTS

(6) The Owner shall prepare and submit a performance report to the Water Supervisor on an annual basis, within ninety (90) days following the end of the period being reported upon. The reports shall contain, but shall not be limited to, the following information:

(a) a summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;

(b) a description of any operating problems encountered and corrective actions taken;

(c) a summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming part of the Works;

(d) a summary of any effluent quality assurance or control measures undertaken in the reporting period;

(e) a summary of the calibration and maintenance carried out on all effluent monitoring equipment; and

(f) a description of efforts made and results achieved in meeting the Effluent Objectives of Condition 5.

(g) a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;

(h) a summary of any complaints received during the reporting period and any steps taken to address the complaints;

(i) a summary of all By-pass, spill or abnormal discharge events;

(j) a copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule B, Section 1, with a status report on the implementation of each modification;

(k) a report summarizing all modifications completed as a result of Schedule B, Section 3; and

(l) any other information the Water Supervisor requires from time to time;

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This annual performance report was prepared in accordance with Amended Environmental Compliance Approval No. 3389-A5BKJJ as per Section 10.(6) items a) through l) for the for the Victoria Harbour Wastewater Treatment Plant and with Environmental Compliance Approval #129-W601, Issue 1 for the Tay Township Municipal Collection System as per Section 4.0 elements 4.6 through 4.7 during the 'Reporting Period' of January 1, 2023 to December 31, 2023.

1. System Description

The Victoria Harbour Wastewater Treatment Plant (WWTP) is a Class II Treatment and Class II Collection facility. The Victoria Harbour WWTP is an extended aeration process with tertiary treatment that serves the Township of Tay. The major process units consist of inlet works including an automated fine screen, vortex grit separator, cloth media disk filtration, aeration tanks, clarifier, and is treated with UV and chemical dosing for phosphorus removal. Sludge management consists of aerobic digesters with a sludge holding tank. The WWTP discharges the treated effluent via its outfall into Sturgeon Bay. The facility is equipped with standby power in the event of a power failure.

An overview of the Victoria Harbour Wastewater Treatment Plant can be found in the following table:

Table 1. Victoria Harbour Wastewater Treatment Plant System Overview

Facility Name:	Victoria Harbour Wastewater Treatment Plant
Facility Type:	Extended Aeration with Clarification, Aerobic Digesters, Filtration and UV Disinfection
Plant Classification:	Class II WWT, Class II WWC
Works Number:	110004174
Rated Capacity:	2,364 m^3/d
Discharge Point:	Sturgeon Bay
Environmental Compliance Approval:	3389-A5BKJJ (Issued: February 1, 2016)

2. Monitoring Data and Comparison with ECA Objectives and Limits

ECA 3389-A5BKJJ, section 10(6)(a) requires:
"A summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;"

Where: Condition 7 is *"imposed to ensure that the effluent discharged from the Works to the Sturgeon Bay meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body."*

2.1 Discharge Data Report (MECP)

The Ontario Clean Water Agency (OCWA) has an agreement with the MECP to submit quarterly discharge data for all OCWA operated municipal sewage treatment facilities 45 days at the end of each quarter. Monitoring data is submitted via the Ministry of Environment Wastewater System (MEWS). The MECP has these reports stored in a shared location where MECP Inspectors can obtain and review them. There are no limits/objectives for discharge for the quarterly Discharge Data Report.

2.2 Monitoring Report (WSER)

A monitoring report required under the Wastewater Systems Effluent Regulation (WSER) is submitted on a quarterly basis to the Government of Canada via the Effluent Regulatory Reporting Information System (ERRIS). The quarterly monitoring report requires that the following information be reported for the Victoria Harbour WWTP:

- Number of days effluent was deposited
- Total volume of effluent deposited
- Average CBOD (limit of 25 mg/L)
- Average concentration of suspended solids (limit of 25 mg/L)

The monitoring reports can be found within the ERRIS. All results for average $CBOD_5$ and concentration of suspended solids were below the limits set out in WSER. Testing is performed annually every April for Acute Lethality of the effluent to Rainbow Trout. The 2023 results showed 0% mortality.

2.3 Influent ECA Monitoring Program Requirements

The following table (Table 2) outlines the influent water quality monitoring program required by the most current ECA for the reporting period. There are additional in-house samples taken and analyzed throughout the year in order to help with process performance monitoring, adjustment, and optimization. These parameters were analyzed by an accredited analytical laboratory (SGS Canada Inc., Lakefield, Ontario).

Table 2. Influent Water Quality Monitoring Program and Sampling Points- ***as per ECA 3389-A5BKJJ Section 9(3)- Table 3- Influent Monitoring***

Influent Monitoring		
Parameter	**Sample Type**	**Frequency**
Biochemical Oxygen Demand (BOD_5)	Composite	Monthly
Total Suspended Solids	Composite	Monthly
Total Phosphorus	Composite	Monthly
Total Kjeldahl Nitrogen	Composite	Monthly

2.4 Raw Sewage (Influent) Characteristics: Summary and Interpretation of Reporting Year

The following parameters in Table 3 are not reportable as they do not have limits or objectives but are monitored as required by the ECA and used to characterize the contents of incoming sewage flow.

A summary of the influent laboratory results can be seen in the following table for samples taken and analyzed during the reporting period. Sample results are based on a monthly composite sample taken and analyzed by an accredited external laboratory. A total of 12 influent samples were analyzed for the reporting period.

Table 3: Raw Sewage (Influent) Quality Analysis for 2023

Month	Monthly Influent Concentrations (mg/L)			
	BOD_5	**Total Suspended Solids**	**Total Phosphorus**	**Total Kjeldahl Nitrogen**
January	63.00	131.00	2.51	9.60
February	157.00	218.00	2.16	20.10
March	50.00	207.00	0.77	18.70
April	73.00	83.00	1.00	12.10
May	72.00	160.00	1.09	14.60
June	122.00	191.00	2.40	19.90
July	144.00	200.00	2.34	21.10
August	136.00	191.00	2.49	25.30
September	113.00	172.00	2.64	29.50
October	146.00	162.00	1.82	21.10
November	54.00	42.00	1.32	19.40
December	105.00	132.00	1.55	17.30
2023 Annual Average	**102.92**	**157.42**	**1.84**	**19.06**

Influent Laboratory analysis for the reporting year based on samples at the inlet of the works averaged a Biochemical Oxygen Demand (BOD_5) concentration of 102.92 mg/L, a Total Suspended Solids (TSS) concentration of 157.42 mg/L, a Total Phosphorus (TP) concentration of 1.84 mg/L and a Total Kjeldahl Nitrogen concentration of 19.06 mg/L.

The results from 2022 are similar in comparison to the results from the reporting year. The average concentration of BOD_5 in 2022 was 117.09 mg/L (14.17 mg/L higher in 2022). In 2022 TSS annual average concentration was 152.36 mg/L (5.06 mg/L higher in 2023). In 2022 TP annual average concentration was 2.05 mg/L (0.18 mg/L higher in 2022) and TKN annual average concentration was 20.09 mg/L (1.03 mg/L higher in 2022).

2.5 Raw Sewage (Influent) Flow: Summary and Interpretation of Reporting Year

The Rated Capacity listed in the most current ECA for Victoria Harbour WWTP is 2,364 cubic metres per day (m^3/day). Typically the Rated Capacity listed in an ECA is determined based on the highest average annual flow during which the sewage treatment plant can consistently meet site specific effluent quality criteria (as per the Ontario Design Guidelines for Sewage Works); this is usually dictated by the most limiting treatment/process unit in the system. ECA No. 3389-A5BKJJ, Section 6(2) requires the Owner to use its best efforts to (b) operate the works within the Rated Capacity of the Works.

The Peak Flow Rate is the maximum rate of sewage flow for which the plant or process unit was designed. Each process in the treatment system will have its own Peak Flow Rate. The Peak Flow Rate a treatment system is determined by the process unit with the lowest Peak Flow Rate. For Victoria Harbour WWTP, the Plant Peak Flow Rate is limited by Effluent Filter, which has a Peak Flow Rate of 6,600 cubic metres per day.

2.6 Comparison of Influent Flow to Rated Capacity

A summary of influent flow data and comparison to the Rated Capacity during the reporting period can be found in the below table and graph. Based on the definition of the Rated Capacity, a single exceedance does not necessarily result in a non-compliance event, however, if a system continually exceeds its Rated Capacity, this could result in reduced treatment efficiency and lead to effluent objective exceedances.

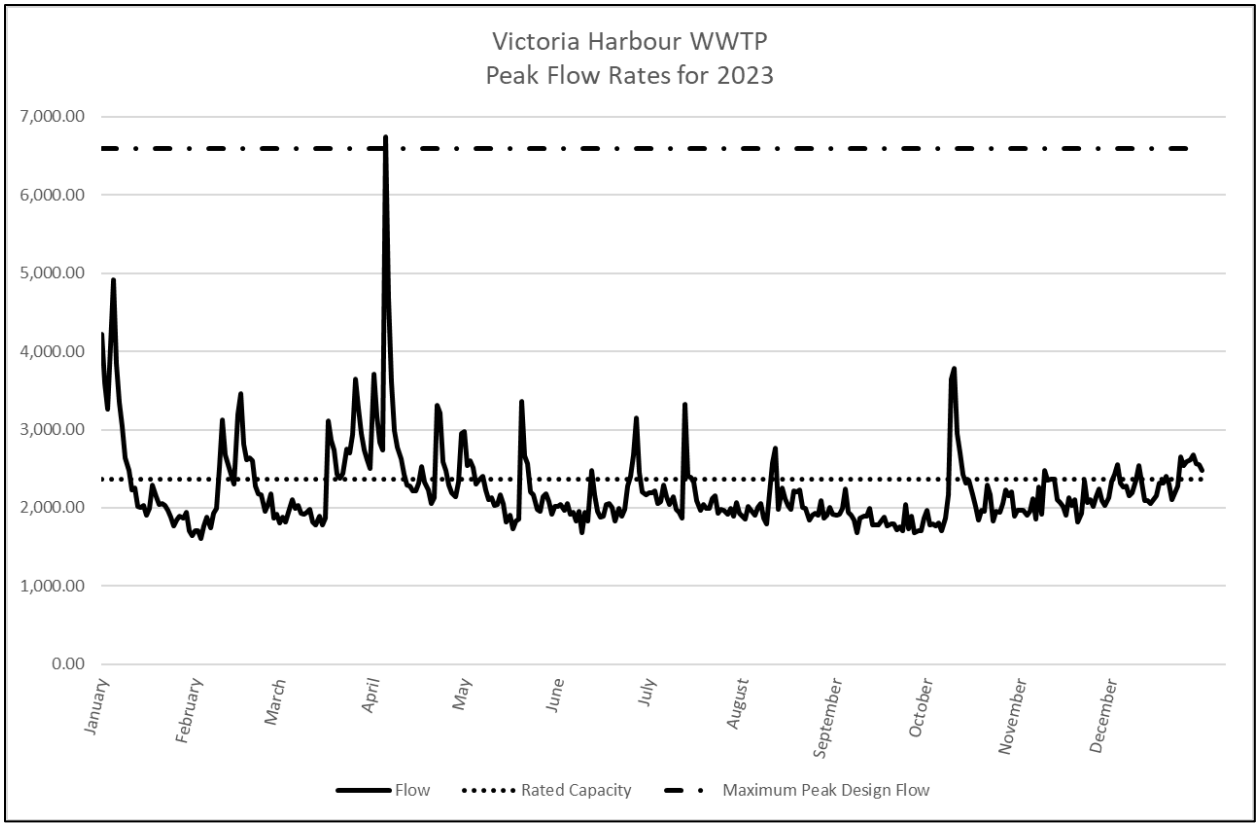
Table 4. Raw Sewage (Influent) Flow Data during Reporting Period

Month	**Average Influent Flow** (m^3/day)	**% of Rated Capacity** (2,364 m^3/day)	**Maximum Influent Flow** (m^3/day)	**% of Plant Peak Flow Rate** (6,600 m^3/day)	**Total Influent Flow** (m^3)
January	2,483.00	105%	4,911.00	74%	76,973.00
February	2,281.75	96%	3,462.00	52%	63,889.00
March	2,340.38	99%	3,648.00	55%	72,552.00
April	2,812.70	118%	6,741.00	102%	84,381.00
May	2,220.45	93%	3,357.00	51%	68,834.00
June	2,088.93	88%	3,153.00	48%	62,668.00
July	2,117.06	90%	3,318.00	50%	65,629.00
August	2,040.90	86%	2,768.00	42%	63,268.00
September	1,842.96	78%	2,242.00	34%	55,289.00
October	2,193.16	92%	3,784.00	57%	67,678.00
November	2,091.96	88%	2,483.00	38%	62,759.00
December	2,348.58	99%	2,680.00	41%	72,806.00
2023	**2,237.60**	**95%**	**6,741.00**	**102%**	**816,726.00**

Note: As per the ECA, 'Rated Capacity' is defined as "the Average Daily Flow for which the Works are approved to handle".

Note: As per the ECA, 'Average Daily Flow' is defined as "the cumulative total sewage flow to the sewage works during a calendar year divided by the number of days during which sewage was flowing to the sewage works that year".

Figure 1. Peak Influent Flow versus Rated Capacity and Peak Flow Rate during Reporting Period



The average flow of 2,237.60 m^3/day is based on the total flow for the reporting period divided by the number of operational days (i.e. 365) as per the 'Average Daily Flow' definition in the ECA.

If the Annual Average Daily Flow reaches/exceeds 80% of the Rated Capacity, current best practice is to assess issues and provide recommendations for proactive actions. For 2023, the Annual Average Daily Flow was above 80% of the 'Rated Capacity' at 95% of the 'Rated Capacity'. The highest recorded peak flow event of 6,741.00 m^3 occurred on April 5, 2023, it is suspected that warm weather and heavy rains contributed to higher than usual flows.

Currently, OCWA Engineering is evaluating the facility for future expansion upgrades that will increase the rated capacity of the plant. The Plant Peak Flow Rate of 6,600 m^3/day, was exceeded for the reporting year.

Refer to **Appendix A** for detailed monthly raw sewage (influent) flows at the facility.

2.7 Effluent ECA Monitoring Program

The following table outlines the monitoring programs at the Victoria Harbour WWTP as required by the most current ECA for the reporting period. There are additional in-house samples taken and analyzed throughout the year in order to help with process performance monitoring, adjustment, and optimization.

Table 5. Effluent Water Quality Monitoring Program and Sampling Points- ***as per ECA 3389-A5BKJJ Section 9(3)- Table 4- Effluent Monitoring***

Effluent Monitoring		
Parameter	**Sample Type**	**Frequency**
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	Composite	Weekly
Total Suspended Solids	Composite	Weekly
Total Phosphorus	Composite	Weekly
Total Ammonia Nitrogen	Composite	Weekly
E. Coli	Grab	Weekly
pH	Grab	Weekly
Temperature	Grab	Weekly

The following tables outline the final effluent objectives, limits and loadings at the Victoria Harbour WWTP as per its ECA. The applicable effluent parameters are either “concentrations” expressed as milligrams per litre or “loadings” expressed as kilograms per day. As per Section 7, concentration limits for $CBOD_5$, TSS and TP are reportable based on a monthly average effluent concentration, *E.Coli* based on a monthly Geometric Mean Density, pH based on a Single Sample Result, and the Loading Limits of TP are reportable based on a Monthly Average Daily Effluent Loading.

2.8 ECA Compliance Objectives and Limits

The following tables outline the effluent water quality compliance objectives and limits at the Victoria Harbour WWTP as per its ECA.

Table 6: Final Effluent Design Objectives- ***as per ECA 3389-A5BKJJ Section 6(1)- Table 4- Effluent Objectives***

Effluent Parameters	**Concentration Objective** (mg/L unless otherwise indicated)
Carbonaceous Biochemical Oxygen Demand ($CBOD_5$)	10.0
Total Suspended Solids	10.0
Total Phosphorus	0.3
Total Ammonia Nitrogen- (May 1 – October 31)	8.0

Effluent Parameters	Concentration Objective (mg/L unless otherwise indicated)
Total Ammonia Nitrogen-(November 1 – April 30)	10.0
E. Coli	100 organisms/100 mL
pH	7.0 to 9.0, inclusive at all times

Table 7: Final Effluent Design Limits *as per ECA 3389-A5BKJJ Section 7(1)- Table 4- Effluent Limits*

Effluent Parameters	Average Concentration Limit (mg/L unless otherwise indicated)	Average Waste Loading Limit (kg/day unless otherwise indicated)	Reportable
$CBOD_5$	15.0	--	Monthly
Total Suspended Solids	15.0	--	Monthly
Total Phosphorus	0.5	1.18	Monthly
E. Coli	200 organisms/100 mL	--	Monthly
pH of the effluent maintained between 7.0 to 9.5, inclusive at all times			

2.9 Effluent Monitoring Data: Summary and Interpretation of Reporting Year and Comparison to Objectives and Limits

ECA 3389-A5BKJJ, section 10(6)(a) requires:
"A summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;"

Where: Condition 6 is "imposed to establish non-enforceable effluent quality objectives which the Owner is obligated to use best efforts to strive towards on an ongoing basis. These objectives are to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occur and before the compliance limits of Condition 7 are exceeded."

Where: Condition 7 is "imposed to ensure that the effluent discharged from the Works to the Sturgeon Bay meets the Ministry's effluent quality requirements thus minimizing environmental impact on the receiver and to protect water quality, fish and other aquatic life in the receiving water body."

The following tables summarizes the effluent water quality for the reporting period compared with the ECA compliance objectives and limits.

A review of the effluent monitoring data shows that the following parameters were within the objectives (as applicable) and limits set out in the most current ECA for the duration of the 2023 reporting period:

- $CBOD_5$ monthly average effluent concentration

- Total Suspended Solids monthly average effluent concentration
- Total Phosphorus monthly average effluent concentration
- Total Phosphorus monthly average daily effluent loading
- Total Ammonia Nitrogen monthly average effluent concentration
- *E.Coli* monthly geometric mean density concentration

A review of the effluent monitoring data shows that the following parameters were within the limits set out in the most current ECA for the duration of reporting period but were unable to meet the objectives in the following instances:

- pH – in 37 out of 99 sample throughout the reporting period
- $CBOD_5$ – April, 2023 due to a bypass event
- TSS – April, 2023 due to a bypass event
- TSS – December, 2023 due to a bypass event
- TP – April, 2023 due to a bypass event
- *E.Coli* – April, 2023 due to a bypass event

It should be noted that as per the ECA, the objectives are non-enforceable design objectives to be used as a mechanism to trigger corrective action proactively and voluntarily before environmental impairment occurs. Exceedances of objectives are not reportable.

Table 8: Effluent Sampling Results: $CBOD_5$

Month	**Monthly Average** (mg/L)	**Within Limits?** (15.0 mg/L)	**Within Objectives?** (10.0 mg/L)
January	2.40	Yes	Yes
February	2.00	Yes	Yes
March	2.25	Yes	Yes
April	6.29	Yes	Yes
May	2.00	Yes	Yes
June	2.00	Yes	Yes
July	2.50	Yes	Yes
August	2.00	Yes	Yes
September	2.00	Yes	Yes
October	2.00	Yes	Yes
November	2.00	Yes	Yes
December	3.33	Yes	Yes
2023 Average	**2.56**	--	--

**As per the ECA, CBOD5 Concentration Averaging Calculator is a Monthly Average Effluent Concentration*

Table 9: Effluent Sampling Results: TSS

Month	Monthly Average (mg/L)	Within Limits? (15.0 mg/L)	Within Objectives? (10.0 mg/L)
January	2.00	Yes	Yes
February	3.25	Yes	Yes
March	4.75	Yes	Yes
April	12.00	Yes	No
May	3.00	Yes	Yes
June	4.50	Yes	Yes
July	3.20	Yes	Yes
August	2.25	Yes	Yes
September	3.25	Yes	Yes
October	3.60	Yes	Yes
November	2.75	Yes	Yes
December	4.83	Yes	Yes
2023 Average	**4.12**	**--**	**--**

**As per the ECA, TSS Concentration Averaging Calculator is a Monthly Average Effluent Concentration*

Table 10: Effluent Sampling Results: TP and TP Loading Concentrations

2023	Total Phosphorus Concentration			Total Phosphorus Waste Loading		
	Monthly Average (mg/L)	**Within Limits?** (0.5 mg/L)	**Within Objectives?** (0.3 mg/L)	**Monthly Average** (kg/day)	**Within Limits?** (1.18 kg/day)	**Within Objectives?** (N/A)
January	0.03	Yes	Yes	0.07	Yes	--
February	0.04	Yes	Yes	0.08	Yes	--
March	0.04	Yes	Yes	0.10	Yes	--
April	0.10	Yes	Yes	0.10	Yes	--
May	0.03	Yes	Yes	0.07	Yes	--
June	0.06	Yes	Yes	0.10	Yes	--
July	0.05	Yes	Yes	0.10	Yes	--
August	0.03	Yes	Yes	0.06	Yes	--
September	0.03	Yes	Yes	0.05	Yes	--
October	0.04	Yes	Yes	0.07	Yes	--
November	0.04	Yes	Yes	0.08	Yes	--
December	0.09	Yes	Yes	0.09	Yes	--
2023	**0.05**	**--**	**--**	**0.08**	**--**	**--**

**As per the ECA, TP Concentration Averaging Calculator is a Monthly Average Effluent Concentration*

**As per the ECA, TP Loading Limits Concentration Averaging Calculator is a Monthly Average Daily Effluent Loading.*

Table 11: Effluent Sampling Results: TAN

Month	**Monthly Average Concentration** (mg/L)	**Within Monthly Objective?** (8.0 mg/L May 1-Oct 31) (10.0 mg/L Nov 1-Apr 30)	**Within Monthly Compliance Limit?** (N/A)
January	0.60	Yes	N/A
February	1.30	Yes	N/A
March	1.10	Yes	N/A
April	0.88	Yes	N/A
May	2.14	Yes	N/A
June	2.38	Yes	N/A
July	1.04	Yes	N/A
August	0.20	Yes	N/A
September	1.05	Yes	N/A
October	0.70	Yes	N/A
November	0.95	Yes	N/A
December	0.23	Yes	N/A

**As per the ECA, there are no limits for TAN Concentration, only objective limits*

Table 12: Effluent Sampling Results: *E.Coli* Concentrations

Month	**Monthly Geometric Mean Density** (mg/L)	**Within Monthly Objective?** (100 CFU/100 mL)	**Within Monthly Compliance Limit?** (200 CFU/100 mL)
January	1.74	Yes	Yes
February	1.68	Yes	Yes
March	1.68	Yes	Yes
April	5.68	Yes	Yes
May	2.00	Yes	Yes
June	2.00	Yes	Yes
July	2.00	Yes	Yes
August	2.00	Yes	Yes
September	2.00	Yes	Yes
October	2.00	Yes	Yes
November	1.68	Yes	Yes
December	2.00	Yes	Yes

**As per the ECA, E.Coli Concentration Averaging Calculator is a Monthly Geometric Density*

Table 13. Effluent Quality Data during Reporting Period: pH

2023	pH			
	Min.	**Max.**	**Within Objective?** (7.0 – 9.0) inclusive at all times)	**Within Limits?** (6.0 – 9.5) inclusive at all times
January	6.63	7.03	No	Yes
February	6.85	7.16	No	Yes
March	7.05	7.62	Yes	Yes
April	7.19	7.48	Yes	Yes
May	7.23	7.45	Yes	Yes
June	7.26	7.50	Yes	Yes
July	7.11	7.45	Yes	Yes
August	7.04	7.46	Yes	Yes
September	6.62	7.03	No	Yes
October	6.44	7.36	No	Yes
November	6.43	7.25	No	Yes
December	6.43	6.87	No	Yes

Refer to the below section (Section 2.9) for a comparison of effluent discharge data compared to the ECA objectives, limits and loadings with relation to the success and adequacy of the system.

2.10 Effluent Flow: Summary and Interpretation of Reporting Year

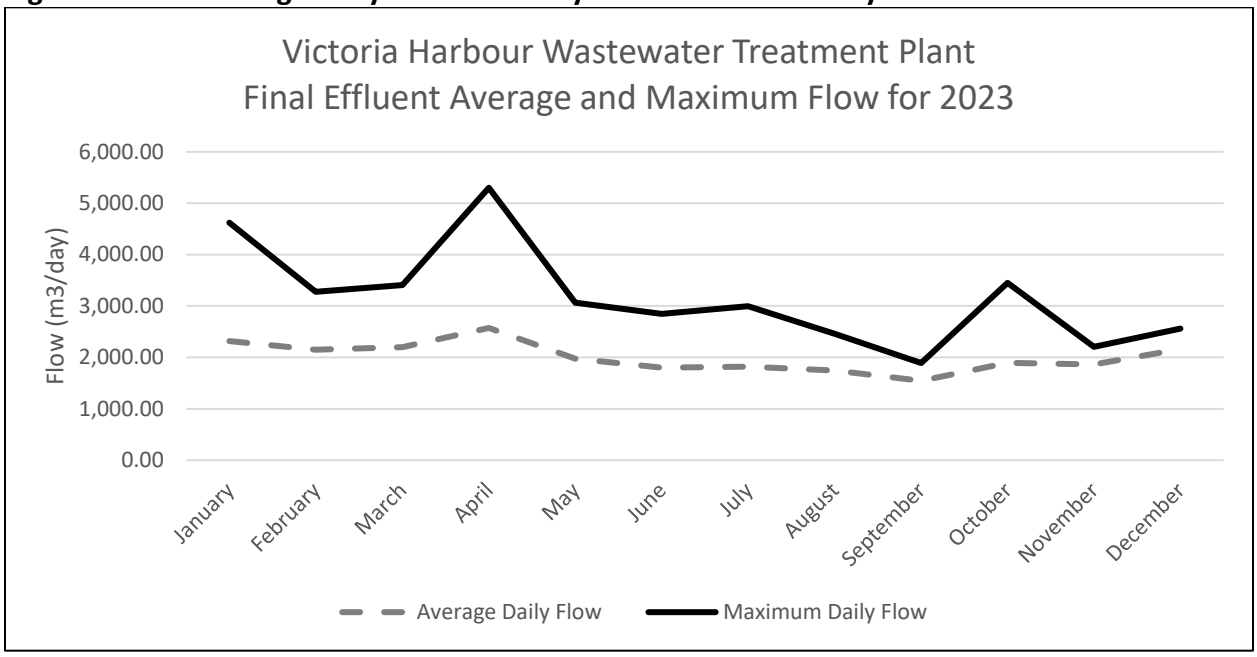
The following table (Table 14) outlines the final effluent average daily flow data in 2023 and the graph shows the final effluent daily and peak final effluent flow by month for the reporting period.

Table 14: Final Effluent Average Daily Flow and Peak Flow Data by Month for 2023

Month	**Average Daily Effluent** (m^3/day)	**Peak Daily Effluent** (m^3/day)	**Total** (m^3/day)
January	2,317.00	4,623.00	71,827.00
February	2,148.60	3,276.00	60,161.00
March	2,205.51	3,407.00	68,278.00
April	2,573.86	5,301.00	77,216.00
May	1,976.25	3,066.00	61,624.00
June	1,802.36	2,846.00	54,071.00
July	1,822.41	2,996.00	56,495.00
August	1,746.74	2,461.00	54,149.00
September	1,545.70	1,891.00	46,371.00
October	1,894.25	3,452.00	58,722.00
November	1,863.63	2,209.00	55,909.00

Month	Average Daily Effluent (m^3/day)	Peak Daily Effluent (m^3/day)	Total (m^3/day)
December	2,162.38	2,560.00	67,034.00
2023 Average	**2,004.10**	**5,301.00**	**731,497.00**

Figure 2: 2023 Average Daily and Peak Daily Final Effluent Flow by Month for 2023



During the reporting period, the average annual daily flow for final effluent to outfall (Sturgeon Bay) was 2,004.10 m^3/day. The maximum peak final effluent daily flow was 5,301.00 m^3/day, which occurred on April 5, 2023 corresponding with the maximum peak daily influent flows on April 5, 2023.

2.11 Success & Adequacy of the System

ECA 3389-A5BKJJ, Section 10.(5)(a) requires:

"A summary and interpretation of all monitoring data and a comparison to the effluent limits outlined in Condition 7, including an overview of the success and adequacy of the Works;"

In 2023, the Victoria Harbour WWTP produced effluent with the following removal rates:

Parameter	Average Removal Rate for 2023
Total Suspended Solids	97.53%
Total Phosphorus	97.45%

During the reporting period, Victoria Harbour WWTP provided effective wastewater treatment, producing effluent with removal rates for Total Suspended Solids at 97.53% and 97.45% for Total Phosphorus.

During the reporting period, the Victoria Harbour WWTP provided effective wastewater treatment. The bacteriological quality of the effluent complied with the environmental compliance approval monthly geometric mean density of less than 200 *E.Coli* organisms per 100 mL sample of effluent discharged from the plant. The range of monthly geometric mean density of organisms for 2023 was between 1.41 and 2.00 organisms per 100 mL under normal operating conditions, which indicates effective effluent disinfection. pH was also maintained between 6.0 and 9.0 for the reporting period, however there were instances that it fell outside of the objective (7.0 – 9.0) in 37 single samples which occurred in the months of January, February, September, October, November and December. A specific cause of these single sample exceedances is unknown, but it is suspected that slight changes in alum dosing reduced the pH.

This facility was in compliance with all of the effluent concentration and loading limits for the reporting year, under normal operating conditions for all parameters. Based on the monitoring program and effluent quality data, the Victoria Harbour WWTP provided effective treatment for the 2023 reporting year. Exceedances of the objectives limits for all parameters. The only instances where the effluent objectives were not met (with the exception of pH noted above) was a result of a bypass event that occurred in April, 2023.

For 2023 best efforts were used to operate the works within the rated capacity of the system. For the reporting period, the annual average Daily flow was 1,086.33 which was below 80% of the Rated Capacity at 57%. Best efforts were also made to ensure that the effluent from the works was free of floating and settleable solids and did not contain oil or any other substances in amounts sufficient to create a visible film or sheen or foam or discolouration on the receiving waters.

3. Operational Issues and Corrective Actions

ECA 3389-A5BKJJ, section 10.6, element (b) requires:

“A description of any operating problems encountered and corrective actions taken;”

There were no operating problems encountered during the reporting period.

4. Maintenance Activities

ECA 3389-A5BKJJ, section 10.6, element (c) requires:

"A summary of all maintenance carried out on any major structure, equipment, apparatus, mechanism or thing forming a part of the works;"

4.1 Work Management System

Planned maintenance, including scheduled and non-scheduled maintenance activities are scheduled using a computerized Work Management System (WMS) that allows user to:

- Enter detailed asset information
- Generate and process work orders
- Access maintenance and inspection procedures
- Plan, schedule, and document all asset related tasks and activities
- Access maintenance records and asset histories

Work Orders are automatically generated by the WMS program and are assigned to the applicable Operations staff accordingly.

4.2 Preventative Maintenance Activities

There were a number of preventative maintenance tasks completed throughout the reporting period. They are as follows:

- Monthly Generator Testing
- Analyzer/pH/DO Probe Calibrations
- Monthly Headworks Maintenance
- Monthly Inspection/Maintenance of Aeration Blowers
- Monthly Alarm Testing
- Monthly UV Inspections/Maintenance
- Clarifier Maintenance/Cleaning
- Annual Pump Maintenance
- Floc Tank Mixer Inspection/Maintenance
- Annual Air Scrubber Maintenance
- Annual Clarifier Drive Unit Maintenance
- Annual Generator Maintenance
- Annual Transfer Pumps Maintenance

4.3 Repairs and Improvement

There were a number of repairs and/or improvements completed throughout the reporting period. They are as follows:

During the reporting period, notable maintenance for the 2023 year included:

- Winfield Pump Station Pump Rebuild
- Alarms Switched to One System
- Sewer Lateral Repair
- Ellen Street Pump Station Wet Well Clean/Inspection
- Wycliffe Pump Station Wet Well Clean/Inspection
- Winfield Pump Station Generator Maintenance

5. Effluent Quality Assurance

ECA 3389-A5BKJJ, section 10.6, element (d) requires:

"A summary of any effluent quality assurance or control measures undertaken in the reporting period;"

Quality assurance and control measures undertaken during the reporting period include adherence to provincial regulations, use of accredited laboratories, operation of the system by licensed Operators, scheduled sampling and analysis, in-house laboratory analysis and calibration of equipment. The sections below provide further details of these measures.

5.1 Adherence to Provincial Regulations

The Ontario Clean Water Agency operates the Victoria Harbour WWTP in accordance with provincial regulations and the Environmental Compliance Approval.

5.2 Use of Accredited Laboratories

Analytical tests to monitor the effluent quality are conducted by a laboratory audited by the Canadian Association for Laboratory Accreditation Inc. (CALA) and accredited by the Standards Council of Canada (SCC). Accreditation ensures that the laboratory has acceptable laboratory protocols and test methods in place. It also requires the laboratory to provide evidence and assurances of the proficiency of the analysts performing the test methods. During the reporting period, all chemical sample analyses were conducted by SGS (Lakefield) Canada Inc.

5.3 Operation by Licensed Operators

Victoria Harbour WWTP was operated and maintained by licensed Operators. The mandatory licensing program for operators of sewage treatment facilities in Ontario is regulated under the Ontario Water Resources Act (OWRA) Regulation 435/93 and Ontario Regulation 129/04. A Licensed individual has successfully passed the licensing exam and meets the education and experience requirements set out in the regulation.

5.4 Sampling and Analysis

The Ontario Clean Water Agency followed a sampling and analysis schedule that meets the requirements of the ECA.

5.5 In-house Analysis

In-house analysis were conducted by Licensed Operators for monitoring purposes using Standard Methods. The data generated from these tests is used to determine the treatment efficiency while maintaining process control. All in-house monitoring equipment is calibrated based on the manufacturer's recommendations. The Operators of the facility continue to use their expertise in order to meet our objective of no exceedances of the ECA Effluent Compliance Limits and OCWA will continue to make best efforts to meet the ECA Effluent Objectives.

5.6 Calibrations

Third-party and in-house calibrations are completed on various equipment and monitoring and analysis items as required based on manufacturer's recommendations. Refer to Section 7 for more information regarding calibration of monitoring equipment.

6. Calibration of Monitoring Equipment

ECA 3389-A5BKJJ, section 10.6, element (e) requires:

"A summary of the calibration and maintenance carried out on all effluent monitoring equipment;"

The flow meters used to measure raw sewage (influent) and final effluent at Victoria Harbour WWTP were calibrated on September 26, 2023 by Indus Control. All program parameters received a passing inspection. Refer to Appendix B for detailed calibration records/reports.

7. Sludge Production & Disposal

ECA 3389-A5BKJJ, section 10.6, element (g) requires:

"A tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated in the next reporting period and a summary of the locations to where the sludge was disposed;"

During the reporting period, a total volume of 5,897.50 m^3 of sludge produced at the Victoria Harbour WWTP was hauled by Wessuc Inc. The sludge was either delivered to lagoons for storage or applied as soil conditioner to agricultural land to Non-Agricultural Source Material Plan (NASM Plan) sites/locations which were approved by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) under Ontario Regulation 338/09. NASM Plans under the Nutrient

Management Act are issued to the owner (farmer) who is responsible for managing this plan with assistance from the NASM Plan Developer.

Refer to Table 16 for a tabulation of the hauled sludge and the locations of where the sludge was disposed and Appendix C a detailed record of specific sludge haulage dates and volumes.

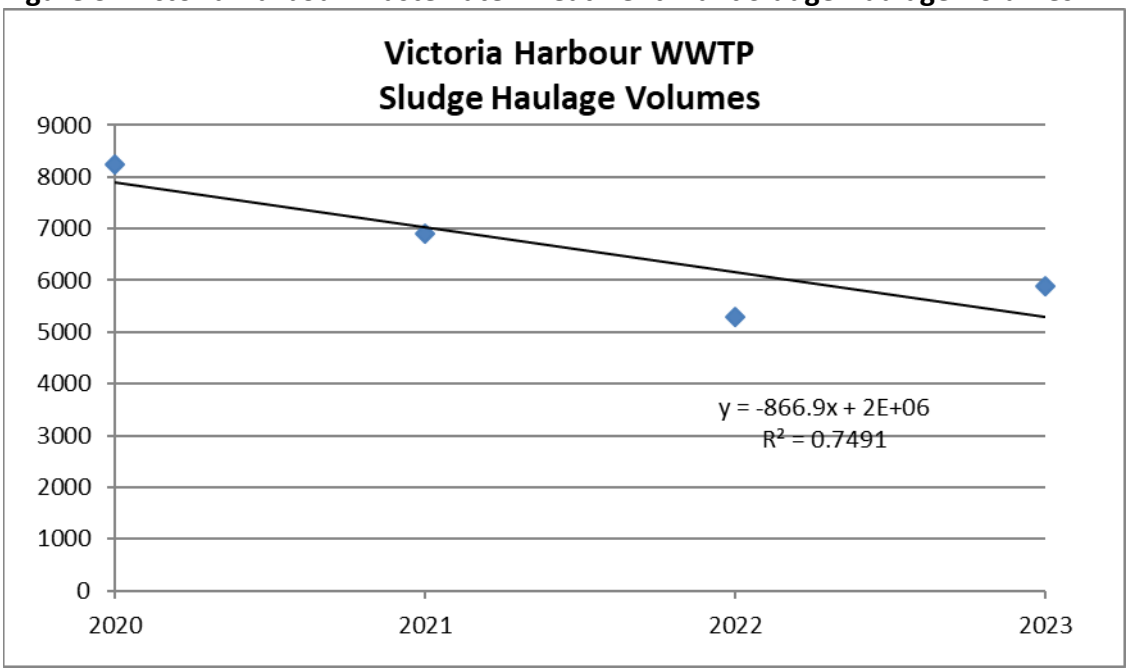
Table 16. Sludge Hauling during the Reporting Period

Haulage Months	Site #	Location	NASM#	Volume of Sludge (m^3)
January	N/A	Lagoon	N/A	507.00
February	N/A	Lagoon	N/A	533.00
March	N/A	Lagoon	N/A	578.00
April	S11081	Field/Lagoon	24897	655.00
May	S12020, S11017	Field	60242, 25157	979.00
June	S11017, S12099	Field	25157, 24339	492.00
July	S5008, S12057	Field/Lagoon	25065, 25135	708.50
August	S2003, S11043	Field	24021, 60593	455.00
September	N/A	N/A	N/A	N/A
October	S11029, S11008, S5041, S2004	Field	60567, 60843, 25249, 60608	585.00
November	S2004	Field	60608	90.00
December	N/A	Lagoon	N/A	315.00
Total Sludge Haulage for 2023:				**5,897.50**

During the reporting period, a total volume of 5,897.50 m^3 of sludge was hauled from Victoria Harbour WWTP to ROHES storage lagoon or to field. Compared to 2022, this was an increase of approximately 10% (5,295.60 m^3). Process adjustments are continuously made by staff, including optimization of the decanting/dewatering process.

Typically, to estimate the volume of sludge generated in the next reporting period, a linear regression using data from previous years is used. The regression model estimates the sludge volume for 2024 to be approximately 4,364.15 m^3. However, given the low R^2 value (0.74, see Figure 2) the regression model would not be able to accurately estimate sludge volumes for 2024. The closer the R^2 value is to 100%, the better the regression model fits to the data. Operations staff will continue to optimize the dewatering process to reduce the relative volume of sludge.

Figure 3: Victoria Harbour Wastewater Treatment Plant Sludge Haulage Volumes



Biosolids produced at the Victoria Harbour WWTP met all the quality criteria specified in the Regulation for the reporting period. A summary of the Victoria Harbour WWTP sludge quality with a comparison to quality criteria can be referenced in Appendix D.

8. Community Complaints

ECA 3389-A5BKJJ, section 10.6, element (h) requires:

"A summary of any complaints received during the reporting period and any steps taken to address the complaints;"

There is a standard operating procedure (SOP) in place that outlines the steps required for receiving and addressing community complaints. All complaints are to be discussed and/or investigated, and resolved as required. The community complaint is logged in detail in the facility logbook and then various details are entered into OCWA's electronic database system "Maximo." This database contains the history of all complaints with the relevant information enclosed.

For the reporting period, there were no community complaints received.

9. By-Pass, Spill or Abnormal Discharge Events

ECA 3389-A5BKJJ, section 10.6, element (i) requires:

"A summary of all By-pass, spill or abnormal discharge event;"

Quarterly by-pass reports were submitted to the MECP, as required in the ECA for the reporting period on May 3, 2023, August 9, 2023, October 31, 2023, and January 19, 2024.

9.1 By-pass Events

There were two (2) reportable bypass events during the Reporting Period:

Date	Estimated or Measured Volume (m^3)	Details
2023/04/05	530 m^3	SAC Reference Number: 1-34IECQ Treatment Skipped: Filters Treatment Provided: Headworks, Process, Clarifier, UV Duration: 6 Hours (intermittently) Volume: 580 m^3 <u>Incident Description</u> On April 5, 2023 heavy, continuous rainfall increased flows to the wastewater treatment plant causing the clarifier blanket to roll over weirs and clogging the filters. <u>Actions and Corrective Actions Taken</u> OCWA collected samples at the start of the bypass, at the start of the filter bypass and at the end of the bypass <u>Reporting Communications</u> • April 5, 2023 - OCWA verbally notified Spills Action Centre (SAC), Ministry of Health (MOH), and MECP • April 11, 2023 - OCWA provided a written notification to SAC, MOH and MECP
2023/12/19	353 m^3	SAC Incident #1-4IMB6U Treatment Skipped: Filters Treatment Provided: Headworks, Process, Clarifier, UV Duration: 145 minutes Volume: 353 m^3 <u>Incident Description</u> Backwash on filters was disabled to perform pump station maintenance, triggering a bypass of filters <u>Actions and Corrective Actions Taken</u> Operations staff suspended maintenance, and restored the backwash on the filters. OCWA collected samples at the start of the bypass and the end of the bypass <u>Reporting Communications</u>

		• December 19, 2023 - OCWA provided a verbal and written notification to Spills Action Centre (SAC), MOH and MECP

9.2 Spill or Abnormal Discharge Events

There were no reportable spill or abnormal discharge events for this reporting period.

10. Notice of Modifications (Limited Operational Flexibility)

ECA 3389-A5BKJJ, section 10.6, element (j) requires:

"A *copy of all Notice of Modifications submitted to the Water Supervisor as a result of Schedule B, Section 1, with a status report on the implementation of each modification;" w*here Schedule B, Section 1 is the *"Limited Operational Flexibility Criteria for Modifications to Municipal Sewage Works."*

There were no Notices of Modifications submitted to the Water Supervisor during the reporting period.

11. Summary of Modifications

ECA 3389-A5BKJJ, section 10.6, element (k) requires:

"A report summarizing all modifications completed as a result of Schedule B, Section 3;" where Schedule B, Section 3 includes: *"normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment, provided that the modification is made with the Equivalent Equipment, are considered pre-approved."*

Normal or emergency operational modifications, such as repairs, reconstructions, or other improvements that are part of maintenance activities, including cleaning, renovations to existing approved sewage works equipment are included in Section 4 of this report.

12. Other Information

ECA 3389-A5BKJJ, section 10.6, element (l) requires:

"Any other information the Water Supervisor requires from time to time."

There was no information required from the Water Supervisor during the reporting period.

13. Municipal Sewage Collection System- Annual Performance Report

This report was prepared in accordance with the requirements of the Environmental Compliance Approval for a Municipal Sewage Collection Systems, Schedule E, Section 4.6.1.

Municipal Sewage Collection System ECA #	129-W601, Issue 1
Sewage Works	Tay Township Municipal Sewage Collection System
Collection System Owner	The Corporation of the Township of Tay
Reporting Period	July 1, 2023 to December 31, 2023

Note: As per Schedule E, Section 4.6.1 of CLI-ECA #129-W601, the first report shall cover the period of July 1st, 2023 to December 31st, 2023 and be submitted to the Director on or before March 31st, 2024.

Is the Annual Report available to the public at no charge on a website on the Internet?

Yes

Note: As per Schedule E, Section 4.7.1 of CLI-ECA #129-W601, the annual performance report must be made available, on request and without charge, to members of the public who are served by the Authorized System; and 4.7.2 must be made available, by June 1st of the same reporting year, to members of the public without charge by publishing the report on the Internet, if the Owner maintains a website on the Internet.

Location where Annual Performance Report required under CLI-ECA #129-W601, Schedule E will be available for inspection. *(CLI-ECA #129-W601, Schedule E, Section 4.6.1 & 4.7.1):*

- Township of Tay Municipal Office at 450 Park Street, Victoria Harbour, Tay Township
- https://www.tay.ca/en/

Pursuant to Schedule E, sections 4.6.3 to 4.6.9, this Annual Performance Report shall:

a) If applicable, includes a summary of all required monitoring data along with an interpretation of the data and any conclusion drawn from the data evaluation about the need for future modifications to the Authorized System or system operations.

b) If applicable, include a summary of any operating problems encountered and corrective actions taken.

c) Includes a summary of all calibration, maintenance, and repairs carried out on any major structure, Equipment, apparatus, mechanism, or thing forming part of the Municipal Sewage Collection System.

d) Include a summary of any complaints related to the Sewage Works received during the reporting period and any steps taken to address the complaints.

e) Include a summary of all Alterations to the Authorized System within the reporting period that are authorized by this Approval including a list of Alterations that pose a Significant Drinking Water Threat.

f) Include a summary of all Collection System Overflow(s) and Spill(s) of Sewage.
   i. Dates;
   ii. Volumes and durations;
   iii. If applicable, loadings for total suspended solids, BOD, total phosphorus, and total kjeldahl nitrogen and sampling results for E.Coli;
   iv. Disinfection, if any; and
   v. Any adverse impacts(s) and any corrective actions, if applicable

g) Includes a summary of efforts made to reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses, including the following items, as applicable:
   i. A description of projects undertaken and completed in the Authorized System that result in overall overflow reduction or elimination including expenditures and proposed projects to eliminate overflows with estimated budget forecast for the year following that for which the report is submitted.
   ii. Details of the establishment and maintenance of a PPCP, including a summary of project progresses compared to the PPCP's timelines.
   iii. An assessment of the effectiveness of each action taken.
   iv. An assessment of the ability to meet Procedure F-5-1 or Procedure F-5-5 objectives (as applicable) and if able to meet the objectives, an overview of next steps and estimated timelines to meet the objectives.
   v. Public reporting approach including proactive efforts.

13.1 Description of the Works

The Tay Township Municipal Sewage Collection System is owned by the Township of Tay and operated on behalf of the Owner by the Ontario Clean Water Agency (OCWA) and is composed of two subsystems: The Port McNicoll Sewage Collection System and the Victoria Harbour Sewage Collection System. For the purposes of this annual report, the below information will cover the Victoria Harbour Municipal Collection System. Information regarding the Port McNicoll Municipal Sewage Collection System can be found enclosed in the Corporation of the Township of Tay: Port McNicoll Wastewater Treatment Plant 2023 Annual Performance Report.
The Victoria Harbour Collection System consists of Sewage Works for the collection and transmission of Sewage, consisting of seven Raw Sewage Pumping Stations, sanitary sewers and forcemain with discharge into the inlet works of the Victoria Harbour Sewage Treatment Plant.

The sewage pumping stations in the Authorized system include:

- Winfield Pump Station, Pump Station #2 (PS) – a wet well type sewage pumping station equipped with two submersible sewage pump. The PS is equipped with a generator in case of power failure.
- Robins Point Road Pump Station #3 (PS) – a wet well type sewage pumping station with two submersible pumps, manual transfer switch, and approximately 3.5 meters of 300 mm diameter overflow sewer from the wet well to the site drainage ditch which discharges to Sturgeon Bay. The pump station has the ability for a portable generator to be plugged in the event of a power failure.
- Bourgeois Beach Pump Station #5 (PS) –a wet well type sewage pumping system with two submersible sewage pumps and manual transfer switch. The PS is equipped with a manual transfer switch, and two portable generators in the event of a power outage
- Ellen Street Pump Station, Pump Station #1 (PS) – a wet well type sewage pumping station equipped with two submersible sewage pumps. The PS is equipped with a generator in case of power failure
- Mitchells Beach Pump Station #6 (PS) – a wet well type sewage pumping system with two submersible sewage pumps, and manual transfer switch. The PS is equipped with two portable generators in case of power failure.
- Wycliffe Pump Station #7 (PS) – a wet well type sewage pumping system with two submersible sewage pumps, PLC, and float switches. The PS is equipped with two portable generators in case of power failure.

The Victoria Harbour Municipal Collection System contains no combined sewage pumping stations, no combined sewage storage structures or combined storage tanks. The authorized collection system also contains no authorized combined sewer collection system overflow points and no authorized sanitary sewer overflow points.

16.2 Summary of Monitoring Data and Interpretation

No monitoring data was required within the municipal sewage collection system for the reporting period.

16.3 Summary of Operating Problems Encountered and Corrective Actions Taken

There were no operating problems encountered during the reporting period.

16.4 Summary of Calibration, Maintenance, and Repairs

Preventative maintenance is scheduled for all equipment at the sewage treatment plant and pumping stations at regular frequency (frequency depends on the equipment and type of maintenance). Maintenance activities are scheduled within the work management system Maximo, upon completion, operators set the work order to complete. On a monthly basis, preventative work orders are reviewed for completion. See *Section 4. Maintenance Summary* for more information.

16.5 Community Complaints Received in Relation to the Sewage Works

There were two community complaints regarding the municipal collection system received in 2023, which fell outside of the reporting period of July 1 to December 31, 2023, as summary of the complaints is provided below.

2023	Details of Community Complaints
January 6, 2023	• Odour Complaint: OCWA attended the site and determined the resident had a gas leak causing the odour
May 5, 2023	• Sewer Back-up Complaint: OCWA attended the site to investigate and completed a Sewer Lateral Repair

16.6 Alterations to the Authorized System

There were no repairs and/or improvements for the collection system during the reporting period. See *Section 11. Summary of Modifications* for more information.

16.7 Summary of Collection System Overflow(s) and Spill(s) of Sewage

There were no collection system overflows or spills during the reporting period.

16.8 Efforts Made to Reduce Collection System Overflows, Spills, STP Overflows, and/or STP Bypasses

The sewage pumping stations are equipped with alarm monitoring for high flow events. Preventative maintenance procedures are in place to ensure the sewage pumping stations are operating as designed and include:

- Wet Well Cleanouts
- Daily Pump Station Inspection
- Pump Inspections
- Alarm Testing
- Generator Inspection and Maintenance

Annual Flow & Effluent Quality Summary for 2023

Appendix A

With Daily Raw Influent Flows for 2023

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Performance Assessment Report

From 1/1/2023 to 12/31/2023 11:59:59 PM

1675 VICTORIA HARBOUR WASTEWATER TREATMENT FACILITY 120003227

	1 / 2023	2/ 2023	3/ 2023	4/ 2023	5/ 2023	6/ 2023	7/ 2023	8/ 2023	9/ 2023	10/ 2023	11/ 2023	12/ 2023	<--Total-->	<--Avg-->	<--Max-->	<-Criteria->
Flows																
Raw Flow: Total - Raw Sewage m³/d	76,973.00	63,889.00	72,552.00	84,381.00	68,834.00	62,668.00	65,629.00	63,268.00	55,289.00	67,678.00	62,759.00	72,806.00	816,726.00			0.00
Raw Flow: Avg - Raw Sewage m³/d	2,483.00	2,281.75	2,340.39	2,812.70	2,220.45	2,088.93	2,117.06	2,040.90	1,842.97	2,183.16	2,091.97	2,348.58		2,237.61		100,000.00
Raw Flow: Max - Raw Sewage m³/d	4,911.00	3,462.00	3,648.00	6,741.00	3,357.00	3,153.00	3,318.00	2,768.00	2,242.00	3,784.00	2,483.00	2,680.00			6,741.00	0.00
Raw Flow: Count - Raw Sewage m³/d	31.00	28.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	365.00			0.00
Eff. Flow: Total - Final Effluent m³/d	71,827.00	60,161.00	68,278.00	77,216.00	61,264.00	54,071.00	56,495.00	54,149.00	46,371.00	58,722.00	55,909.00	67,034.00	731,497.00			0.00
Eff. Flow: Avg - Final Effluent m³/d	2,317.00	2,148.61	2,202.52	2,573.87	1,976.26	1,802.37	1,822.42	1,746.74	1,545.70	1,894.26	1,863.63	2,162.39		2,004.10		
Eff. Flow: Max - Final Effluent m³/d	4,623.00	3,276.00	3,407.00	5,301.00	3,066.00	2,846.00	2,996.00	2,461.00	1,891.00	3,452.00	2,209.00	2,560.00			5,301.00	0.00
Eff Flow: Count - Final Effluent m³/d	31.00	28.00	31.00	30.00	31.00	30.00	31.00	31.00	30.00	31.00	30.00	31.00	365.00			0.00
Carbonaceous Biochemical Oxygen Demand: CBOD																
Eff: Avg cBOD5 - Final Effluent mg/L	< 2.40	< 2.00	< 2.25	< 2.00	< 2.00	< 2.00	< 2.40	< 2.00	< 2.00	< 2.00	< 2.00	3.00		< 2.17	< 3.00	25.00
Eff: # of samples of cBOD5 - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00
Loading: cBOD5 - Final Effluent kg/d	< 5.561	< 4.297	< 4.956	< 5.148	< 3.953	< 3.605	< 4.374	< 3.493	< 3.091	< 3.789	< 3.727	< 6.487		< 4.36	< 6.49	
Biochemical Oxygen Demand: BOD5																
Raw: Avg BOD5 - Raw Sewage mg/L	63.00	157.00	50.00	73.00	72.00	122.00	144.00	136.00	113.00	146.00	54.00	105.00		102.92	157.00	0.00
Raw: # of samples of BOD5 - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Total Suspended Solids: TSS																
Raw: Avg TSS - Raw Sewage mg/L	131.00	218.00	207.00	83.00	160.00	191.00	200.00	191.00	172.00	162.00	42.00	132.00		157.42	218.00	0.00
Raw: # of samples of TSS - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Eff: Avg TSS - Final Effluent mg/L	< 2.00	3.25	4.75	4.25	< 3.00	4.50	3.20	< 2.25	3.25	3.60	< 2.75	2.00		< 3.21	< 4.75	25.00
Eff: # of samples of TSS - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00
Loading: TSS - Final Effluent kg/d	< 4.634	6.983	10.462	10.939	< 5.929	8.111	5.832	< 3.930	5.024	6.819	< 5.125	4.325		< 6.44	< 10.94	
Percent Removal: TSS - Raw Sewage %	98.47	98.51	97.71	94.88	98.13	97.64	98.40	98.82	98.11	97.78	93.45	98.48		97.53	98.82	0.00
Total Phosphorus: TP																
Raw: Avg TP - Raw Sewage mg/L	2.51	2.16	0.77	1.00	1.09	2.40	2.34	2.49	2.64	1.82	1.32	1.55		1.84	2.64	0.00
Raw: # of samples of TP - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Eff: Avg TP - Final Effluent mg/L	< 0.03	< 0.04	< 0.05	< 0.04	< 0.03	< 0.06	< 0.05	< 0.03	< 0.03	< 0.04	0.04	< 0.04		< 0.04	< 0.06	
Eff: # of samples of TP - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00
Loading: TP - Final Effluent kg/d	< 0.074	< 0.081	< 0.099	< 0.097	< 0.067	< 0.099	< 0.098	< 0.057	< 0.046	< 0.072	0.079	< 0.086		< 0.08	< 0.10	
Percent Removal: TP - Raw Sewage %	98.73	98.26	94.16	96.25	96.88	97.71	97.69	98.69	98.86	97.91	96.78	97.42		97.45	98.86	0.00

Performance Assessment Report

From 1/1/2023 to 12/31/2023 11:59:59 PM

Nitrogen Series

Raw: Avg TKN - Raw Sewage mg/L	9.60	20.10	18.70	12.10	14.60	19.90	21.10	25.30	29.50	21.10	19.40	17.30		19.06	29.50	0.00
Raw: # of samples of TKN - Raw Sewage	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00			0.00
Eff: Avg TAN - Final Effluent mg/L	0.60	1.30	1.10	< 0.88	2.14	2.38	< 1.04	< 0.20	< 1.05	< 0.70	< 0.95	0.30		1.06	2.38	8.00
Eff: # of samples of TAN - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00
Loading: TAN - Final Effluent kg/d	1.390	2.793	2.423	< 2.252	4.229	4.281	< 1.895	< 0.349	< 1.623	< 1.326	< 1.770	0.649		2.12	4.28	
Eff: Avg NO3-N - Final Effluent mg/L	7.43	5.46	6.03	7.20	8.98	8.49	11.52	14.15	14.02	< 9.07	10.55	9.92		9.40	14.15	0.00
Eff: # of samples of NO3-N - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00
Eff: Avg NO2-N - Final Effluent mg/L	0.50	1.34	0.83	0.19	0.32	0.52	0.27	0.11	< 0.11	< 0.13	0.21	0.40		0.41	1.34	0.00
Eff: # of samples of NO2-N - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00

Disinfection

Eff: GMD E. Coli - Final Effluent cfu/100mL	1.74	1.68	1.68	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.68	1.41				200.00
Eff: # of samples of E. Coli - Final Effluent	5.00	4.00	4.00	4.00	5.00	4.00	5.00	4.00	4.00	5.00	4.00	4.00	52.00			0.00

Calibration Reports for 2023

Appendix B

With Flow Meter Reports

IndusControl Inc
3170 Ridgeway Drive Unit 11
Mississauga, ON, L5L 5R4

PORTABLE pH METER VERIFICATION / CALIBRATION REPORT

Customer Name:	Township of Tay	Address	150 INDUSTRIAL ROAD, VICTORIA HARBOUR,ON L0K2A0
Plant Name:	Victoria Harbour WWTP		
Location:	Victoria Harbour WWTP	Date	August 2, 2023
Tag:	0000350064	Report No	CO1478-2308-12
Device Discription:	Lab pH Analyzer	Job No	CO1478-2308

Device Information			pH Sensor Information		pH Sensor Information	
Instrument Make:	Hach		Sensor Make:	Hach	Sensor Make:	Hach
Model/Part No:	HQ40d		Model/Part No:	PHC101	Model/Part No:	LD0101
Serial No:	150900015832		Serial No:	191962614607	Serial No:	1.52613E+11
As Found	Slope	-54.44 mV/pH	Offset	7.6 mV		
DO As Found	Slope	-54%	Offset	-0.80 mg\\L		

pH Calibration Test Details

Standard Solution	Calculated Value(pH)	UUT Display(pH)	UUT Display(mV)	Temp(Celcius)	Test Result
pH 4.0	4.00	4.03	170.7	26.3	Passed
pH 7.0	7.00	7.01	11.40	26.2	Passed
pH 10.0	10.00	10.02	-154.40	25.8	Passed

pH after calibration	Slope	-54.18 mV/pH	Offset	9.7 mV
DO after calibration	Slope	100%	Offset	0.00 mg\\L

Overall Test Result:	☑ Passed	☐ Fail	☐ Not Verified
Notes:	Device is working as per Specification.Calibration Test Passed.		
Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 2, 2023		

End of Report

Version: 20-01

INDUS CONTROL	IndusControl Inc 3170 Ridgeway Drive Unit 11 Mississauga, ON, L5L 5R4	**PORTABLE SPECTROPHOTOMETER VERIFICATION / CALIBRATION REPORT**

Customer Name	Township of Tay	Address	150 INDUSTRIAL ROAD, VICTORIA HARBOUR,ON L0K2A0
Plant Name	Victoria Harbour WWTP		
Location	Victoria Harbour WWTP	Date	August 2, 2023
Tag:	0000350065	Report No	CO1478-2308-13
Device Discription	Spectrophotometer	Job No	CO1478-2308

Device Information	
Instrument Make:	HACH
Model/Part No:	DR/2800
Serial No:	1228461

Verification / Calibration Test Details					Instrument Use for Calibration		
Test Method	Test Filter	Nominal Value	Actual Value	Test Result	Device Details	Set No.	Valid Till.
Stray Light Check	KV450/3	>2.8 Abs	4.601 Abs	Passed	Test Filter Set	5334	May-24
Photometrical Accuracy	NG9/1	1.508 Abs	1.511 Abs	Passed			
	NG5/2	0.628 Abs	0.628 Abs	Passed			
	NG11/2	0.306 Abs	0.307 Abs	Passed			
Wavelength Accuracy	Ho	358.0-364.0 nm	360.8 nm	Passed			
	BG20/2	804.0-810.0 nm	807.6 nm	Passed			

Overall Test Result:	☑ Passed	☐ Fail	☐ Not Verified
Notes:	Device working as per specification.Wavelength Accuracy Test Passed.		
Service Technician :	Sanket Trada	Stamp/Signature	
Printed Date:	August 2, 2023		

End of Report

Version: 20-01

Biosolids Quantity and Haulage Records

Appendix C

Date	Site #	NASM #	Victoria Harbour	Concession	Lot	Township
April 17, 2023	S11081	24897	270.00	2	27	Springwater
April 19, 2023	S11081	24897	215.00	2	27	Springwater
May 13, 2023	S12020	60242	369.00	11	12	Oro-Medonte
May 31, 2023	S11017	25157	340.00	9	9,10	Springwater
June 1, 2023	S11017	25157	45.00	9	9,10	Springwater
June 21, 2023	S12099	24339	180.00	4	26, 27	Oro Medonte
July 10, 2023	S5008	25065	268.50	10	24	Essa
July 28, 2023	S12057	25135	225.00	10	22, 23	Oro-Medonte
August 9, 2023	S2003	24021	161.00	3	1, 2	Innisfil
August 29, 2023	S11043	60593	225.00	13	2	Springwater
August 31, 2023	S11043	60593	294.00	13	2	Springwater
October 11, 2023	S11029	60567	180.00	4	18	Springwater
October 16, 2023	S11029	60567	90.00	4	18	Springwater
October 25, 2023	S11008	60843	90.00	3	18, 19	Springwater
October 26, 2023	S5041	25249	90.00	9	31	Essa
October 31, 2023	S2004	60608	135.00	6	5	Innisfil
November 3, 2023	S2004	60608	90.00	6	5	Innisfil
		Total	**3,267.50**			

Sludge Quality Data for 2023

Appendix D

With Metal and Total Solids Concentration Graphs

Ontario Clean Water Agency
Biosolids Quality Report - Liquid
Digestor Type: ANAEROBIC
Solids and Nutrients

Facility: VICTORIA HARBOUR WASTEWATER TREATMENT FACILITY
Works: 1675
Period: 01/01/2023 to 12/31/2023

Facility Works Number: *120003227*
Facility Name: *VICTORIA HARBOUR WASTEWATER TREATMENT FACILITY*
Facility Owner: *The Corporation of the Township of Tay*
Facility Classification: *WWT II, WWC II*
Receiver: *Sturgeon Bay*
Service Population: *4,700*
Total Design Capacity: *2,364 m3/day*
Period Being Reported: 01/01/2023 12/01/2023

Month	Total Sludge Hauled (m3)	Avg. Total Solids (mg/L)	Avg. Volatile Solids (mg/L)	Avg. Total Phosphorus (mg/L)	Ammonia (mg/L)	Nitrate (mg/L)	Nitrite (mg/L)	TKN (mg/L)	Ammonia + Nitrate (mg/L)	Potassium (mg/L)
Site	**VICTORIA HARBOUR WASTEWATER TREATMENT FACILITY**									
Station	**Bslq Station only**									
Parameter Short Name	**HauledVol**	**TS**	**VS**	**TP**	**NH3p_NH4p_N**	**NO3-N**	**NO2-N**	**TKN**	**calculation in report - no T/S**	**K**
T/s	**IH Month.Total**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**	**Lab Published Month Mean**		**Lab Published Month Mean**
Jan	507.000	15,700.000	10,800.000	340.000	2.000	23.000	0.900	899.000	12.500	250.000
Feb	533.000	13,900.000	10,100.000	210.000	4.000	0.400	1.000	885.000	2.200	32.000
Mar	578.000	14,500.000	10,800.000	400.000	9.600	11.000	2.000	841.000	10.300	68.000
Apr	655.000	11,500.000	9,250.000	290.000	13.500	0.600	1.600	684.000	7.050	56.000
May	979.000	16,600.000	12,000.000	360.000	94.200	0.300	2.700	1,010.000	47.250	62.000
Jun	492.000	11,200.000	8,580.000	215.000	173.000	3.000	3.000	784.000	88.000	59.000
Jul	708.500	12,300.000	8,940.000	223.000	272.000	3.000	3.000	895.000	137.500	41.000
Aug	455.000	15,100.000	9,300.000	383.000	34.600	3.000	3.000	525.000	18.800	50.000
Sep		13,300.000	8,920.000	280.000	3.300	20.000	3.000	424.000	11.650	35.000
Oct	450.000	15,200.000	9,840.000	328.000	29.900	3.000	3.000	559.000	16.450	58.000
Nov	90.000	13,100.000	9,070.000	348.000	1.500	30.000	3.000	429.000	15.750	45.000
Dec	315.000	14,500.000	9,330.000	413.000	2.800	54.000	3.000	568.000	28.400	73.000
Average	523.864	13,908.333	9,744.167	315.833	53.367	12.608	2.433	708.583	32.988	69.083
Total	5,762.500	166,900.000	116,930.000	3,790.000	640.400	151.300	29.200	8,503.000	395.850	829.000