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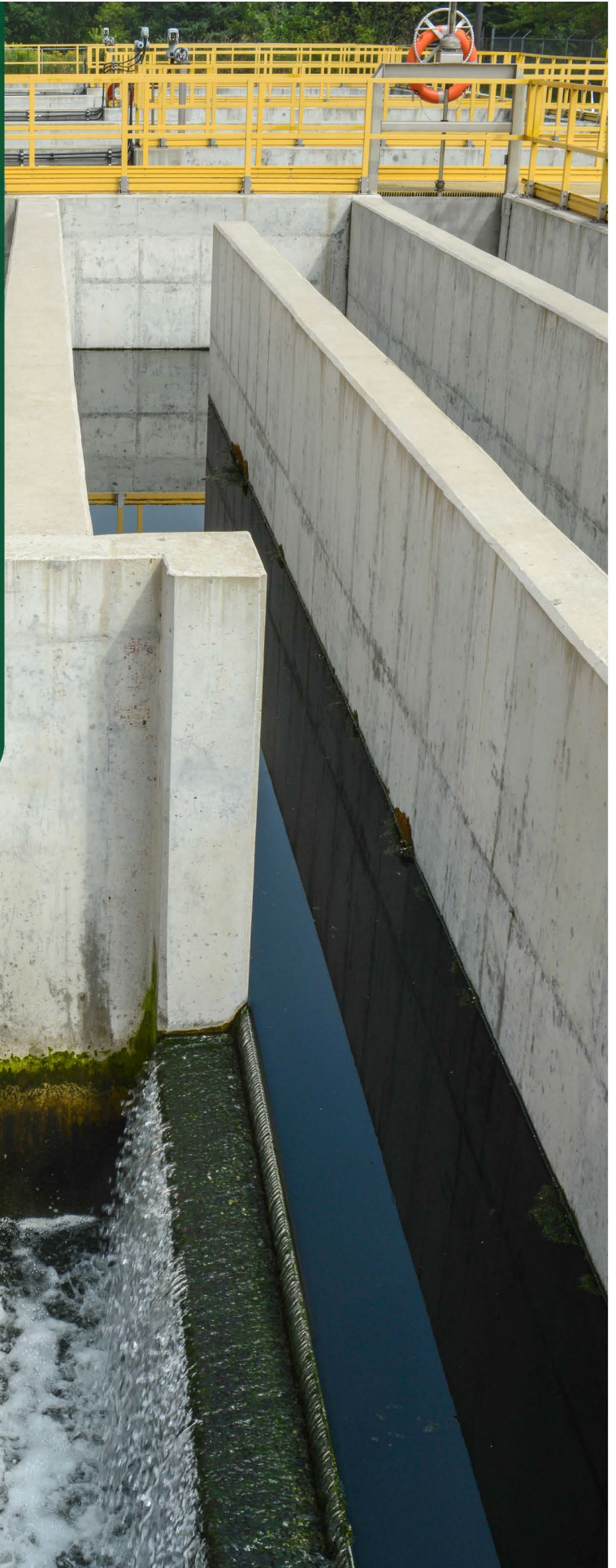
PORT HOPE

WORKS & ENGINEERING

WASTEWATER TREATMENT PLANT



**2021 Annual
Performance
Report**





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February 15, 2022

Municipality of Port Hope
56 Queen Street
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Re: 2021 Annual Performance Report - Port Hope Wastewater Treatment Plant

Dear Mr. David Smith,

We are pleased to provide the 2021 Annual Performance Report for the Municipality of Port Hope's **Wastewater Treatment Plant**, located at 100 Lake Street, Port Hope, Ontario. This report has been completed in accordance with the Environmental Compliance Approval #8519-BKNN7C, Section 11 (4), dated March 26, 2020 and issued to The Corporation of the Municipality of Port Hope.

The report covers the period from January 1, 2021 to December 31, 2021.

Sincerely,

Kevin Yule
Manager, Wastewater
Municipality of Port Hope

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Executive Summary

The Port Hope Wastewater Treatment Plant (WWTP) is located at 100 Lake Street, in the Municipality of Port Hope, and services the community of Port Hope with a population of approximately 16,800. The facility is owned and operated by the Municipality of Port Hope in accordance with Environmental Compliance Approval (ECA) # 8519-BKNN7C, issued March 26, 2020. The WWTP is a Class III Treatment Plant and has a rated capacity of 11,300 m³/day.

The facility is described as an extended aeration activated sludge treatment plant with aerobic digestion. The facility is equipped with a septage receiving station, which receives raw sewage and septic wastes from hauler trucks. The headworks equipment provides for screening and grit removal and is present to protect the mechanical equipment downstream from damage by removing solid particles contained in the raw sewage as well as providing preliminary treatment. By gravity, the screened and dewatered wastewater, from the headworks, flows into three (3) aeration tanks, on a flow displacement basis. The mixed liquor from the aeration tanks flows into the three (3) rectangular secondary clarifiers, on a flow displacement basis. In the clarifiers, the solids are settled to the bottom of the tank and the clarified liquid at the top of the tank overflows into several rectangular weirs located at the discharge end of the clarifiers. This clarified liquid (secondary effluent) is then conveyed to the chlorine contact tanks for disinfection. Final effluent is then dechlorinated with sodium bisulphate, prior to being discharged to Lake Ontario.

The Wastewater Treatment Plant performed well, on average producing a final effluent with results lower than the objectives specified in the Wastewater Treatment Plant ECA. During the Reporting Period (January 1st - December 31st, 2021), no by-pass or overflow events occurred, and no customer complaints were reported for the WWTP or the on-site pumping station. Three (3) Reportable Incidents (see Table G and L below for more details), involving Total Chlorine Residual measurement of Final Effluent, were observed during the Reporting Period. Corrective actions were implemented, and each incident was reported to the Ministry of the Environment, Conservation and Parks (MECP). No MECP inspection occurred during the Reporting Period.

2021 Annual Performance Report – Wastewater Treatment Plant

In accordance with the Environmental Compliance Approval #8519-BKNN7C, Section 11 (4) - REPORTING, the Municipality of Port Hope, as the Owner of the Port Hope Wastewater Treatment Plant, shall prepare a performance report on a calendar year basis and submit to the Ministry of the Environment, Conservation and Parks (MECP) by March 31 of the calendar year following the period being reported upon.

Section 11(4) - REPORTING requires the Performance Report to contain the following:

- (a) a summary and interpretation of all Influent, monitoring data, and a review of the historical trend of the sewage characteristics and flow rates.
- (b) a summary and interpretation of all Final Effluent monitoring data, including concentration, flow rates and a comparison to the design objectives and compliance limits in this Approval, including an overview of the success and adequacy of the Works.
- (c) a summary of all operating issues encountered, and corrective actions taken.
- (d) a summary of all normal and emergency repairs and maintenance activities carried out on any major structure, equipment, apparatus, or mechanism forming part of the Works.
- (e) a summary of any effluent quality assurance or control measures undertaken.
- (f) a summary of the calibration and maintenance carried out on all Influent, Imported Sewage and Final Effluent monitoring equipment to ensure that the accuracy is within the tolerance of that equipment as required in this Approval or recommended by the manufacturer.
- (g) a summary of efforts made to achieve the design objectives in this Approval, including an assessment of the issues and recommendations for pro-active actions if any are required under the following situations:
 - i. when any of the design objectives is not achieved more than 50% of the time in a year, or there is an increasing trend in deterioration of Final Effluent quality,
 - ii. when the Annual Average Daily Influent Flow reaches 80% of the Rated Capacity.
- (h) a tabulation of the volume of sludge generated, 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,
- (i) a summary of any complaints received, and any steps taken to address the complaints,
- (j) a summary of all Bypasses, Overflows, other situations outside Normal Operating Conditions and spills within the meaning of Part X of EPA and abnormal discharge events,
- (k) a summary of all Notice of Modifications to Sewage Works completed under Paragraph 1.d. of Condition 10, including a report on status of implementation of all modification,
- (l) a summary of efforts made to achieve conformance with Procedure F-5-1 including but not limited to projects undertaken and completed in the sanitary sewer system that result in overall Bypass/Overflow elimination including expenditures and proposed projects to eliminate Bypass/Overflows with estimated budget forecast for the year following that for which the report is submitted, and
- (m) a summary of maintenance, inspections, and monitoring details.

The following report was generated from the records maintained by the Municipality of Port Hope for the Port Hope Wastewater Treatment Plant for the calendar year 2021:

(a) Influent and Imported Sewage Monitoring Program Summary

The following Tables A, B and C, list a summary of influent and imported sewage (septage receiving) monitoring data, including current and historic sewage characteristics and flows.

Table A - Summary of Monthly Average Influent Concentrations

	Biochemical Oxygen Demand (BOD ⁵) (mg/L)	Total Suspended Solids (TSS) (mg/L)	Total Phosphorus (TP) (mg/L)	Total Kjeldahl Nitrogen (TKN) (as N mg/L)
January	190	258	3.2	24.05
February	272	285	4.3	30.75
March	193	236	3.3	24.48
April	209	289	3.2	21.20
May	195	213	2.9	24.75
June	203	228	3.7	28.94
July	247	249	3.4	25.63
August	232	295	3.8	27.88
September	253	276	3.1	26.15
October	185	210	2.6	22.23
November	153	220	2.6	21.44
December	134	180	2.1	17.45
Average	205	245	3.2	24.58
3-year Average	201	247	2.8	23.91
5-year Average	181	195	2.9	24.19

Table B – Summary of Influent Flows

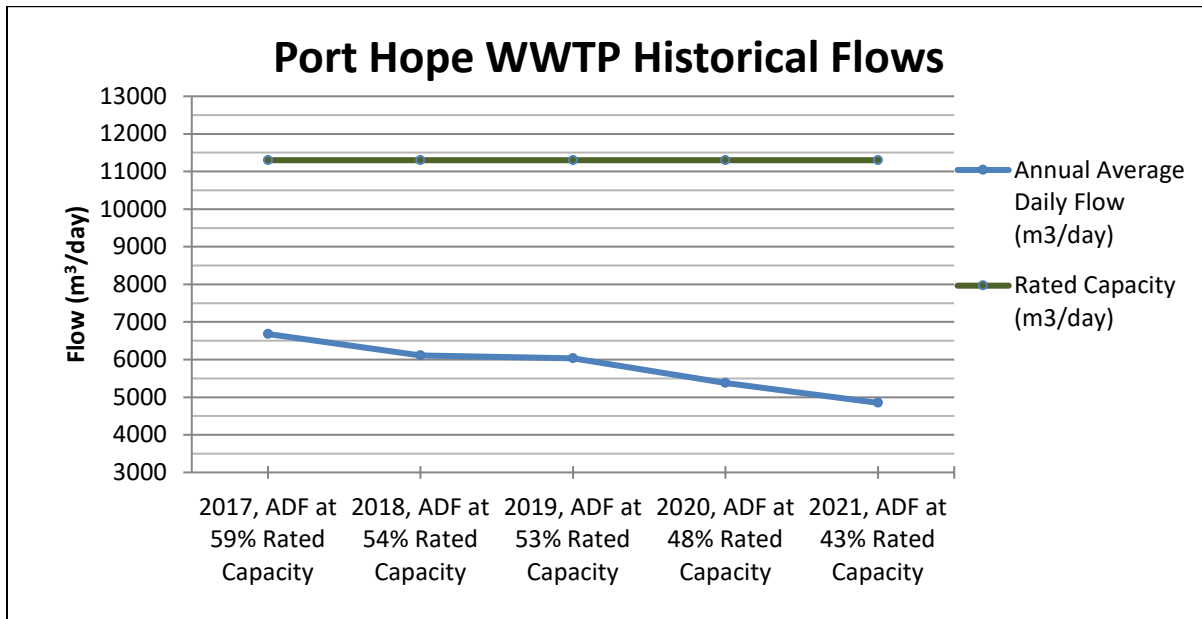
	Monthly Total Flow (m ³)	Average Daily Influent Flow (m ³ /day)	Max Daily Influent Flow (m ³ /day)
January	160,219	5,168	7,913
February	117,480	4,196	5,953
March	152,488	4,919	7,867
April	189,292	6,310	10,729
May	157,902	5,094	7,051
June	117,747	3,925	5,180
July	133,897	4,319	5,588
August	117,117	3,778	4,540
September	135,174	4,506	12,744
October	155,328	5,011	6,882

November	148,739	4,958	6,763
December	186,467	6,015	10,450

2021 Total Influent Flow = 1,771,850 m³/year
2021 Annual Average Daily Influent Flow = 4,850 m³/day
2021 Max Day Influent Flow = 12,744 m³/day

On average, the facility operating at 43% of Rated Capacity throughout Reporting Period.

Figure 1 - Historical Flow Comparison



Rated Capacity of Port Hope Wastewater Treatment Plant = 11,300 m³/day
3-year Average Daily Flow = 5,811 m³/day (51% of Rated Capacity)
5-year Average Daily Flow = 5,421 m³/day (48% of Rated Capacity)

Table C - Imported Sewage (Septage Receiving) Monitoring Data

	Total Volume (m ³)	Monthly Average BOD ⁵ (mg/L)	Monthly Average TSS (mg/L)	Monthly Average TP (mg/L)	Monthly Average TKN (as N mg/L)
January	387	1330	1720	45	265
February	375	4660	1930	64	344
March	1289	2240	4900	32.6	220
April	890	492	475	16	97
May	982	1530	3230	85	328
June	673	2830	893	50	336

July	709	437	1350	32	319
August	728	759	1210	23	179
	Total Volume (m³)	Monthly Average BOD⁵ (mg/L)	Monthly Average TSS (mg/L)	Monthly Average TP (mg/L)	Monthly Average TKN (as N mg/L)
September	785	459	415	19	151
October	1014	1290	700	53	293
November	1096	2590	8650	77	457
December	1419	4250	17000	42	379
Total	10348				
Average	862	1906	3539	45	281
3-year Average	8915	2584	6869	116	310
5-year Average	6763	2732	8070	204	361

(b) Final Effluent Monitoring Program Summary

The following Tables D, E, and F list a summary of final effluent concentration results in comparison to final effluent objectives and limits as per Schedule B and Schedule C, a tabulation of un-ionized ammonia monthly average calculations, and a performance assessment of raw influent - final effluent removal efficiencies.

Effluent grab samples are collected and analyzed for acute lethality to Rainbow Trout and Daphnia magna. With approval from the MECP, as per Condition 5, monitoring frequency in respect of Acute Lethality to Rainbow Trout and Daphnia Magna can be reduced to annually, if desired. In 2021, semi-annual grab samples were collected and analyzed. Both samples resulted in a 0% mortality rate for both Rainbow Trout and Daphnia Magna.

In determining compliance with total chlorine residual limits the following data is analyzed: DPD colorimeter grab sample results.

Table D - Summary of Monthly Final Effluent Concentrations

	Carbonaceous Biochemical Oxygen Demand (CBOD ⁵) (mg/L)	TSS (mg/L)	TP (mg/L)	Geometric Mean Density of E. Coli (cfu/100ml)	Monthly MIN pH	Monthly MAX pH	Total Ammonia Nitrogen (TAN) (mg/L)	Calculated Monthly Average Unionized Ammonia (mg/L)	Maximum Total Chlorine Residual (mg/L)
Design Objective	15.0	15.0	0.8	100			MAY 1 to NOV 30: 6.0 DEC 1 to APR 30: 12.0	20	Non-Detectable
Compliance Limit(s)	25.0	25.0	1.0	200	6.0-9.5	6.0-9.5	No Limit	No Limit	>0.02
January	3.3	6.3	0.2	2	6.65	6.87	0.10	0.07	0.02
February	3.8	7.5	0.2	3	6.56	6.90	0.10	0.06	0.02
March	3.4	6.0	0.2	4	6.31	6.75	0.10	0.03	0.05 ¹
April	4.0	6.3	0.3	8	6.34	6.98	0.10	0.07	0.02
May	3.0	7.8	0.3	3	6.51	6.96	0.10	0.10	0.03 ¹
June	3.2	8.4	0.4	18	6.55	6.92	0.10	0.11	0.02
July	2.0	7.8	0.3	9	6.55	6.91	0.10	0.16	0.02
August	3.4	8.0	0.3	14	6.46	6.86	0.10	0.20	0.02
September	3.0	8.0	0.4	7	6.45	6.81	0.20	0.22	0.05 ¹
October	2.3	6.0	0.2	22	6.65	7.09	0.10	0.33	0.02
November	3.2	6.2	0.2	6	6.58	6.95	0.10	0.09	0.02
December	4.0	7.5	0.2	4	6.59	7.21	0.10	0.14	0.02
Average	3.2	7.1	0.3	8			0.11	0.13	
Minimum	2.0	6.0	0.2	2	6.31		0.10	0.03	
Maximum	4.0	8.4	0.4	22		7.21	0.20	0.33	0.05

¹ See Table L - Incidents of By-passes, Spills or Abnormal Discharges and Table G – Summary of Operating Problems Encountered and Corrective Actions Taken for details on exceedance.

Note: The results of the total ammonia concentration, pH and temperature, at the time of sampling, were used for the calculation of the unionized ammonia.

Table E - Port Hope Wastewater Treatment Plant Performance Assessment

	BOD⁵ Influent	CBOD⁵ Effluent	TSS Influent	TSS Effluent	TSS %Removal	TP Influent	TP Effluent	TP %Removal
January	190	3.3	258	6.3	97.6%	3.16	0.23	92.9%
February	272	3.8	285	7.5	97.4%	4.34	0.25	94.3%
March	193	3.4	236	6.0	97.5%	3.27	0.23	92.8%
April	209	4.0	289	6.3	97.8%	3.22	0.34	89.6%
May	195	3.0	213	7.8	96.4%	2.89	0.29	90.1%
June	203	3.2	228	8.4	96.3%	3.66	0.37	89.9%
July	247	2.0	249	7.8	96.9%	3.42	0.30	91.2%
August	232	3.4	295	8.0	97.3%	3.78	0.34	91.1%
September	253	3.0	276	8.0	97.1%	3.08	0.40	87.2%
October	185	2.3	210	6.0	97.1%	2.60	0.23	91.1%
November	153	3.2	220	6.2	97.2%	2.59	0.18	93.1%
December	134	4.0	180	7.5	95.8%	2.11	0.23	89.2%
Average	181	3.1	221	6.9	97.0%	2.60	0.26	91.0%

Note: All values expressed in mg/L unless otherwise specified.

Table F – Summary of Final Effluent Flows

	Monthly Total Flow (m ³)	Average Daily Final Effluent Flow (m ³ /day)	Max Daily Final Effluent Flow (m ³ /day)
January	140,256	4,524	6,599
February	110,040	3,930	5,003
March	135,016	4,355	7,084
April	154,309	5,144	9,302
May	121,062	3,905	5,813
June	95,814	3,194	4,020
July	112,410	3,626	4,956
August	98,137	3,166	4,292
September	117,778	3,926	10,453
October	133,900	4,319	5,787
November	133,647	4,455	6,099
December	161,553	5,211	8,313

2021 Total Final Effluent Flow = 1,513,921 m³/year

(c) Operating Problems and Corrective Actions

Table G - Summary of Operating Problems Encountered and Corrective Actions Taken

Date	Operating Problem	Corrective Action Taken
March 11, 2021	Final Effluent Limit Exceedance. Total Residual Chlorine concentration of final effluent exceeded limit of 0.05 mg/L.	Operator cleaned glassware and sampling container. Operator investigated and initiated operational changes by increasing chemical dosing setpoints as required. Re-sampling and testing were completed to confirm compliance with ECA limit.
May 5, 2021	Final Effluent Limit Exceedance. Total Residual Chlorine concentration of final effluent exceeded limit of 0.03 mg/L.	Operator cleaned glassware and sampling container. Operator investigated and initiated operational changes by increasing chemical dosing setpoints as required. Re-sampling and testing were completed to confirm compliance with ECA limit.
June 11, 2021	Excessive oil and grease solids buildup – Onsite Pumping Station manual bar screen	Operators removed the oil and grease solids buildup from the Onsite Pumping Station bar screen. Operators investigated the collection system upstream maintenance hole structures. Upstream maintenance hole structure flowing normally. Origin of oil and grease solids could not be determined.

Date	Operating Problem	Corrective Action Taken
September 15, 2021	Final Effluent Limit Exceedance. Total Residual Chlorine concentration of final effluent exceeded limit of 0.05 mg/L.	Operator cleaned glassware and sampling container. Sampling container was then replaced with new one. Re-sampling and testing were completed to confirm compliance with ECA limit.
October 28, 2021	Oil and grease sheen – Secondary Clarifiers.	Samples taken of final effluent and analyzed by accredited laboratory. All parameters analyzed were in normal operating range. Origin of oil and grease undetermined. Sheen dissipated and was not present during physical inspection the next day.

(d) Summary of Major Maintenance Activities

The Municipality maintains an active maintenance management program, for general maintenance and repair, to ensure that the facilities are maintained in a fit state of repair. In addition to this program, major works were upgraded or replaced as follows.

1. January 14, 2021 – Headworks screw conveyor press, major maintenance and repairs complete.
2. January 26, 2021 – Septic equalization mixer, major maintenance and repairs complete.
3. March 18, 2021 – Stand-by generator, major maintenance and repairs complete. Rental stand-by generator offsite.
4. June 9, 2021 – Headworks bar screen wash system, major break in wash water line.
5. June 30, 2021 – Headworks screw conveyor press motor, replaced and installed new motor.
6. July 8, 2021 – Aeration tank #2, major maintenance cleaning and replaced fine bubble diffuser membranes.
7. August 20, 2021 – Replaced septage equalization tank level indicating transmitter.
8. August 23, 2021 – Anoxic mixer #1, replaced and installed new anoxic mixer.
9. September 2, 2021 – Return activated sludge pump #1, major maintenance and repairs complete.
10. September 8, 2021 – Septage equalization tank and discharge piping, major maintenance cleaning.
11. September 29, 2021 – Aeration tank #1, major maintenance cleaning and replaced fine bubble diffuser membranes.
12. October 18, 2021 – Grit vortex #2 discharge pipe, major maintenance and repairs.
13. November 1, 2021 – Sludge feed inline grinder, replaced and installed new inline grinder.

14. November 16, 2021 – Stand-by generator coolant pump, replaced and installed new coolant pump.
15. November 30, 2021 – Anoxic mixer #3, major maintenance and repairs complete.

All maintenance was performed on behalf of the Owner, by licenced Operators or qualified contracted services providers who exercise due diligence in ensuring the Works and the related equipment are properly operated and maintained to achieve compliance with the Approval. Daily rounds of the WWTP and pumping stations are conducted by the Operators and any observations are being recorded.

(e) Effluent Quality Assurance/Control Measures

Final effluent quality assurance is maintained by utilizing accredited laboratories (SGS Environmental Services and AquaTox Testing & Consulting Inc.) for analysis of all final effluent parameters. Sampling requirements are issued to plant personnel that denote required parameters and frequency of sampling. A spreadsheet is used to track in-house lab results to perform several calculations used to monitor and measure the effectiveness of the plant performance.

(f) Calibration and Maintenance on Monitoring Equipment

Calibration of the flow meters, lab equipment and analyzers were conducted as per regular annual maintenance. Cleaning of effluent monitoring equipment is performed on a regular routine basis. Accuracy of effluent monitoring equipment operation was confirmed by onsite lab effluent samples analysis and offsite third-party accredited laboratory analysis.

Table H - Summary of Calibration and Maintenance of Monitoring Equipment

Analyzer	Location	Date Calibrated/Service	Calibrated/Service by Whom
Influent Flow Meter – Vortex #1	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
Influent Flow Meter – Vortex #2	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
Septage Flow Meter	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
Bypass Flow Meter	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
Centrifuge	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
RAS to Aeration Flow Meter	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
Polymer	WWTP	July 26, 2021	Franklin Empire, Mitch Manley
WAS to Aeration Flow Meter	WWTP	July 26, 2021	Franklin Empire, Mitch Manley

Analyzer	Location	Date Calibrated/Service	Calibrated/Service by Whom
Final Effluent Flow Meter	WWTP	July 15, 2021	Tower Electronics Canada Inc., Dan Matchett
Gas Detector	WWTP	July 27, 2021	Franklin Empire, Mitch Manley
Dissolved Oxygen (DO)	WWTP	May 25, 2021	Cancoppas, James Griffin
Lab Equipment, Portable pH, Turbidimeter, Spectrophotometer, Colorimeter, Portable DO	WWTP	June 7, 2021	Nichol Water Services, Randy Nichol
ORPs – Pre and Post Dechlorination	WWTP	November 3, 2021	Franklin Empire, Mitch Manley
Composite Samplers	WWTP	July 13, 2021	Avensys Solutions, David Criss

(g) Summary of Efforts Made to Achieve Design Objectives

Municipal staff put forth all efforts to operate the plant at maximum removal efficiencies and within the rated capacity of the facility. The final effluent design objectives in Schedule B were consistently met for CBOD⁵, Total Phosphorus, E. Coli, Total Suspended Solids, Total Ammonia Nitrogen, Toxicity to Rainbow Trout and Daphnia Magna, and Total Residual Chlorine. See Table D of this report for a summary of monthly final effluent concentrations.

No overflow or bypass events occurred within the Reporting Period and the average day influent flows were well within the rated capacity of the wastewater treatment plant. Final effluent was observed to be essentially free of floating and settleable solids and did not appear to contain oil or any other substance in amounts sufficient to create a visible film or sheen or discolouration of the receiving waters.

(h) Summary of Sludge Generation

The following Tables I, J and K list the volume of sludge generated, total suspended solids, nutrient and metal analysis. The anticipated volume for the next Reporting Period is not expected to be appreciably different from this Reporting Period. No change is expected from the current sludge handling methods, Wakely Transportation Services (C. of A. A840183) and Don Oliver's Excavating (C. of A. A841032). The sludge disposal area utilized in 2021 was to a private contractor ECA #0031-7UTRSS.

Table I - Aerobic Digested Sludge Generated

	Volume (m³)
January	1253
February	1744
March	1653
April	1219
May	839
June	1470
July	1254
August	848
September	1117
October	930
November	670
December	1552
Total Volume	14549
Average	1212
3-year Average Total Volume	9326
5-year Average Total Volume	11844

Table J - Aerobic Digester Sludge Solids/Nutrient Analysis

	Total Solids (mg/L)	TP (mg/L)	Ammonia + Ammonium (N) (as N mg/L)	Nitrite + Nitrates (as N) (mg/L)	TKN (as N mg/L)	E. Coli (cfu/1g dried weight)
January	21700	490	306	95	1020	13393
February	19000	360	3	62	1040	29577
March	17500	350	3	46	768	32544
April	16660	400	1	2	739	4938
May	14400	450	8	1	258	5612
June	17700	580	3	1	549	3933
July	16500	620	8	8	447	5848
August	13200	420	10	2	134	12270
September	3330	110	1	37	135	13043
October	19100	620	1	52	562	10945
November	7410	190	1	60	302	9921
December ¹						
Average	15136	417	31.2	33	541	12911

¹No samples were collected/analyzed in December.

Table K - Aerobic Digested Sludge Metal Analysis

	As	Cd	Co	Cr	Cu	Hg	Mo	Ni	Pb	Se	U	Zn
January	<0.1	0.017	0.05	0.45	16.00	0.013	0.17	0.30	0.6	<0.10	0.5	14.0
February	<0.1	0.013	0.04	0.32	12.00	0.012	0.14	0.22	0.4	<0.10	0.4	9.0
March	<0.1	0.008	0.03	0.25	9.30	0.006	0.11	0.19	0.3	<0.10	0.3	6.0
April	<0.1	0.008	0.03	0.26	10.00	0.006	0.12	0.22	0.2	<0.10	0.3	6.0
May	<0.1	0.008	0.03	0.32	10.00	0.010	0.14	0.24	0.3	<0.10	0.4	7.0
June	<0.1	0.013	0.04	0.38	13.00	0.011	0.14	0.27	0.4	<0.10	0.5	8.0
July	<0.1	0.012	0.04	0.43	12.00	0.020	0.16	0.27	0.4	<0.10	0.4	8.0
August	<0.1	0.011	0.03	0.33	11.00	0.009	0.10	0.25	0.4	<0.10	0.4	8.0
September	<0.1	0.005	0.01	0.07	2.20	0.002	0.05	0.05	0.1	<0.10	0.1	2.0
October	<0.1	0.018	0.04	0.43	15.00	0.015	0.20	0.30	0.6	<0.10	0.6	14.0
November	<0.1	0.005	0.02	0.14	5.10	0.003	0.07	0.11	0.2	<0.10	0.2	5.0
December ¹												
Average	<0.1	0.011	0.03	0.31	10.51	0.010	0.13	0.22	0.4	<0.10	0.4	7.9

Note: As is Arsenic; Cd is Cadmium; Co is Cobalt; Cr is Chromium; Cu is Copper; Hg is Mercury; Mo is Molybdenum; Ni is Nickel; Pb is Lead; Se is Selenium; U is Uranium; Zn is Zinc. All values expressed in mg/L unless otherwise specified.

¹No samples were collected/analyzed in December.

(i) Summary of Complaints Received

The number of complaints received during the Reporting Period, January 1-December 31, 2021, regarding the Wastewater Treatment Plant and on-site pumping station was zero (0).

Date of Complaint	Address	Complaint	Steps Taken to Address Complaint

(j) Summary of all By-passes, Spills or Abnormal Discharge Events

There were three (3) environmental incidents, such as by-passes, spills, or abnormal discharges, to be reported for 2021. The incidents were recorded, and the appropriate agencies were notified.

Table L - Incidents of By-passes, Spills or Abnormal Discharges including Maximum Sampling Results During Event, if applicable

Date	Approx. Duration (hours)	Type of Bypass/Overflow/Spill, Abnormal Discharge Event	Volume (m ³)	CBOD ⁵	TSS	Total Cl ₂	TP	E. coli (cfu/100mL)	pH (no unit)
March 11, 2021	N/A	Final Effluent Limit Exceedance – Total Chlorine Residual	N/A			0.05			
May 5, 2021	N/A	Final Effluent Limit Exceedance – Total Chlorine Residual	N/A			0.03			
September 15, 2021	N/A	Final Effluent Limit Exceedance – Total Chlorine Residual	N/A			0.05			

Note: Total Cl₂ is Total Chlorine Residual. All values expressed in mg/L unless otherwise specified.

(k) Notice of Modifications Completed

The number modifications completed as a result of paragraph 1.d. of Condition 10, including a report on status of implementation of all modifications totals zero (0). If applicable, completed modifications are itemized below with a corresponding status report on the implementation of each modification.

Date Initiated	Description of Modification	Status	Date Completed/Expected Completed

(l) Efforts to Achieve Conformance with Procedure F-5-1 - Determination of Treatment Requirements for Municipal and Private Sewage Treatment Works

During the 2021 Reporting Period, there were no incidents of a bypass or overflow at the Port Hope Wastewater Treatment Plant and therefore no proposed projects to eliminate bypasses or overflows are forecasted for the 2022 Reporting Period.

During the 2021 Reporting Period, there were no incidents of an overflow in the Port Hope Wastewater Collection System and therefore no new proposed projects to eliminate overflows are forecasted for the 2022 Reporting Period.

(m) Summary of Maintenance, Inspections and Monitoring Details

No additional information to report.

No MECP Inspection occurred during the Reporting Period.