



**Cannington Water Pollution Control Plant**

**2022 Annual Performance Report**





## **The Regional Municipality of Durham**

### **Cannington Water Pollution Control Plant 2022 Annual Performance Report**

**Environmental Compliance Approval (ECA): 8730-8CYU2X Dated June 28, 2012**

The Cannington Water Pollution Control Plant (WPCP) 2022 Annual Performance Report provides staff, stakeholders and customers an overview of the performance of the Cannington WPCP. Further, this report fulfills the annual reporting requirements of the Ontario Ministry of the Environment, Conservation and Parks (MECP). This report demonstrates the commitment of ensuring that the WPCP continues to deliver wastewater services to our customers in an environmentally responsible manner.

#### **Water Pollution Control Plant Process Description**

##### **General**

The Cannington WPCP located in the Community of Cannington in the Township of Brock is owned and operated by the Regional Municipality of Durham (Region). The plant is operated according to the terms and conditions of the ECA. This MECP Class 1 wastewater treatment plant is designed to treat wastewater at a rated capacity of 1,068 cubic metres per day (m<sup>3</sup>/d) and utilizes a seasonal retention wastewater stabilization lagoon system. The Cannington WPCP services a population of approximately 2,238 residents. The treated effluent is discharged to the Beaver River in accordance with the conditions listed in the ECA.

##### **Raw Influent Pumping**

Wastewater is collected in approximately 12.6 kilometres of sanitary sewers in the Cannington service area and is conveyed to the treatment facility by a sanitary sewage pumping station (SSPS) located on Laidlaw Street. Aluminum sulphate is added at Laidlaw Street SSPS to enhance the settling of solids and phosphorus removal.

##### **Lagoon Treatment**

The Cannington WPCP is a seasonal wastewater stabilization lagoon facility consisting of a two cell lagoon system that is operated as a seasonal retention facultative waste stabilization pond providing a retention time of approximately 190 days. Flow to the Cannington WPCP is distributed to each cell through an influent distribution chamber. Each cell is equipped with an outlet chamber and one outfall pipe leading to the Beaver River. The ECA permits two seasonal discharge periods per year. Spring discharge is from March 1 to May 31 and fall discharge is from October 1 to December 31. Prior to and during discharge to the Beaver River, samples are collected to verify the effluent meets the limits established in the ECA.



## **Environmental Compliance Approval (ECA)**

Under Condition 9.(4) of ECA #8730-8CYU2X the Region of Durham must produce an annual performance report that must contain the following information:

**a) Summary and interpretation of all monitoring data and a comparison to the effluent limits;**

The raw wastewater flowing into the Cannington WPCP is analyzed for its chemical and physical composition. Monitoring of the raw wastewater is performed in accordance with the conditions in the ECA. Table 2 Raw Influent Analyses summarizes the raw wastewater characteristics during the reporting period.

The Cannington WPCP effluent was determined to be compliant with the approval limits during the reporting period. The plant operated at 81.8% of its rated capacity and received a maximum daily flow of 2,524 cubic metres per day (m<sup>3</sup>/d) on December 31, 2022. The total treated effluent discharged to the Beaver River in 2022 was calculated to be 403,000 cubic metres (m<sup>3</sup>).

**b) Description of any operating problems encountered and corrective actions taken;**

No operating problems were encountered in 2022.

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

No maintenance was performed on major equipment during the reporting period.

**d) Summary of any effluent quality assurance or control measures undertaken in the reporting period;**

In-house lab test results are compared to the results of the Regional Environmental Laboratory on comparable samples to determine the in-house accuracy. Results were found to be in an acceptable range. Temperature and pH are monitored in the field, all other routine process control tests are performed at the Lake Simcoe WPCP laboratory in Beaverton.

**e) Summary of the calibration and maintenance carried out on all effluent monitoring equipment;**

Calibration of the flow meter located at Laidlaw Street SSPS was conducted on June 16 and November 24, 2022.

All monitoring and laboratory equipment is calibrated and maintained according to manufacturer's specifications at Lake Simcoe WPCP.

**f) Estimate of the sludge settling capacity of the lagoons and its annual depletion;**

The annual depletion of the sludge settling capacity was negligible. There was no removal of sludge during the reporting period.

**g) Description of efforts made and results achieved in meeting the effluent objectives;**

The Region continually strives to achieve the best effluent quality at all times and remain below the objectives specified in the ECA:



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- The total suspended solids objective of 20 milligrams per litre (mg/L) was exceeded in 1 of 41 samples (2.4%)
- The CBOD<sub>5</sub> objective of 15.0 mg/L was exceeded in 2 of 11 samples (18.2%)

Best efforts will continue to be applied to maintain results below objectives.

### **h) Summary of any complaints received during the reporting period and any steps taken to address the complaints;**

All complaints received from the public are administered and tracked through a central database. No complaints were received in 2022.

### **i) Summary of all By-pass, Spill or Abnormal Discharge;**

No by-passes, spills or abnormal discharges occurred during the reporting period.

### **j) Status Update of the Initial Effluent Characterization;**

The initial effluent characterization report was submitted to MECP in April 2016.

### **k) Information required by Ministry of the Environment, Conservation and Parks (MECP) District Manager;**

No additional information was requested.

### **MECP Inspection**

The plant was last inspected by the MECP on June 12, 2018.



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**Table 1 Raw Influent Flows**

Month	Total Flow to Plant* cubic metre (m <sup>3</sup> )	Average Daily Flow cubic metre per day (m <sup>3</sup> /d)	Maximum Daily Flow m <sup>3</sup> /d
January	25,002	807	1,021
February	27,318	976	2,006
March	46,513	1,500	2,235
April	37,187	1,240	1,528
May	29,507	952	1,262
June	29,822	994	1,347
July	19,938	643	715
August	16,191	522	650
September	16,811	560	675
October	19,250	621	734
November	20,817	694	1,258
December	30,551	986	2,524
Total	318,907		
Annual Average	26,576	874	
Minimum	16,191		
Maximum	46,513		2,524
ECA Limit		1,068**	
Compliance Met		Yes	

\*Metered at Laidlaw Street Pumping Station

\*\*Annual Average



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**Table 2 Raw Influent Analyses**

Month	Carbonaceous Biochemical Oxygen Demand average (avg.) concentration (conc.) milligrams per litre (mg/L)	Biochemical Oxygen Demand avg. conc. mg/L	Total Suspended Solids avg. conc. mg/L	Total Phosphorus (TP) avg. conc. mg/L	Total Ammonia Nitrogen avg. conc. mg/L	pH minimum	pH maximum	Temperature Degree Celsius avg.
January	113	148	176	5.6	34.30	7.7	8.3	6.2
February	110	136	181	5.7	31.30	8.1	8.3	6.5
March	65	73	98	3.3	15.20	7.8	8.0	7.7
April	72	97	128	3.7	21.00	8.0	8.2	9.3
May	102	118	152	5.0	29.60	7.9	8.3	11.6
June	83	109	149	4.5	26.80	7.8	8.4	13.5
July	125	158	229	5.9	39.80	8.0	8.2	14.8
August	131	167	275	6.9	50.10	8.1	8.3	16.4
September	110	169	249	6.5	49.20	8.1	8.2	15.8
October	142	196	271	7.3	51.40	8.2	8.5	14.9
November	146	189	220	6.3	39.20	8.1	8.3	13.5
December	100	152	188	5.0	32.70	8.0	8.3	11.3
Average	108	143	193	5.5	35.05			11.8
Minimum	65	73	98	3.3	15.20	7.7		6.2
Maximum	146	196	275	7.3	51.40		8.5	16.4
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes



**Table 3 Calculated Effluent Flows**

<b>Month</b>	<b>Effluent Flow cubic metre</b>
January	
February	
March	193,400
April	
May	88,000
June	
July	
August	
September	
October	74,300
November	
December	47,300
Total	403,000
Annual Average	100,750
Minimum	47,300
Maximum	193,400



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**Table 4 Final Effluent Analyses**

Month	Carbonaceous Biochemical Oxygen Demand average (avg.) concentration (conc.) milligrams per litre (mg/L)	Biochemical Oxygen Demand avg. conc. mg/L	Total Suspended Solids avg. conc. mg/L	Total Phosphorus (TP) avg. conc. mg/L	TP loading kilograms per month
January					
February					
March	13.6	14.5	7.7	0.15	29
April					
May	2.2	2.5	14.1	0.13	11
June					
July					
August					
September					
October	1.0	2.5	4.0	0.12	9
November					
December	10.5	15.3	16.2	0.34	16
Annual Loading					65**
Average	6.8	8.7	10.5	0.19	19
Minimum	1.0	2.5	4.0	0.12	9
Maximum	13.6	15.3	16.2	0.34	29
ECA Limit	25*		30*		117**
ECA Objective	15		20	0.5	
Lake Simcoe Phosphorus Reduction Strategy				0.25*	97**
Within Compliance	Yes		Yes	Yes	Yes
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes	

\*Annual Average Concentration

\*\*Total Annual Loading, kg/year





**Table 4 Final Effluent Analyses continued**

Month	Total Ammonia Nitrogen average (avg.) concentration (conc.) milligrams per litre (mg/L)	Un-ionized Ammonia avg. conc. mg/L	pH minimum	pH maximum	Temperature Degree Celsius avg.
January					
February					
March	14.20	0.00	7.2	7.7	4.4
April					
May	7.06	0.10	7.6	7.9	15.2
June					
July					
August					
September					
October	9.69	0.10	7.6	8.0	12.4
November					
December	14.06	0.10	7.7	7.8	2.9
Average	11.25	0.08			8.7
Minimum	7.06	0.00	7.2		2.9
Maximum	14.20	0.10		8.0	15.2
ECA Limit			6.0	9.5	
ECA Objective			6.5	8.0	
Within Compliance			Yes	Yes	
Sampling Frequency Requirement Met	Yes	Yes	Yes	Yes	Yes



**Table 5 Chemical Usage**

<b>Month</b>	<b>Aluminum Sulphate litres</b>
January	5,957
February	9,916
March	11,030
April	10,752
May	7,908
June	7,163
July	4,230
August	3,433
September	3,029
October	3,267
November	5,616
December	5,089
<b>Total</b>	<b>77,390</b>