2020 Annual Summary Report

The Corporation of the Town of Cobourg

Cobourg Drinking Water System

Prepared by: Lakefront Utility Services Inc.

CONTENTS

1. PURPOSE

The purpose of the Annual Water Quality Report is to provide information to residents and stakeholders of the Town of Cobourg. Furthermore, satisfying the regulatory requirements of the *Safe Drinking Water Act*, *2002* including the Drinking Water Quality Management Standard (DWQMS) reports to owner, and regulatory reporting required under *Ontario Regulation 170/03*. This annual water quality report fulfills all requirements of *Ontario Regulation 170/03* Section 11 Annual Reports and Schedule 22 Summary Reports for Municipalities.

The annual water quality report is prepared by Lakefront Utility Services Inc. (operating authority) on behalf of The Town of Cobourg (owner).

Scope

This annual water quality report includes information pertaining to the Town of Cobourg's Drinking Water System (Cobourg DWS) for the period of January 1, 2020 to December 31, 2020. *Ontario Regulation 170/03* requires reported information be provided to:

- **Drinking Water System Owners (Mayor and Council)**
- **Owner and Operating Authority Top Management**
- **The Public**

Availability

The Cobourg DWS is a large municipal residential system that serves more than 10,000 people. Copies of this annual water quality report are available online at https://www.lakefrontutilities.com/regulatory-water/. Hard copies are also available at the LUSI's office at 207 Division St, Cobourg ON, K9A 4L3.

Customers of the Cobourg DWS are notified that the annual water quality report is available via "What's New" https://www.lakefrontutilities.com/whats-new/, social media posts and "Stay Connected" LUSI bill insert.

Council Resolution

Ontario Regulation 170/03 requires Summary Reports be distributed to municipal council no later than March 31 of each year. The Town of Cobourg must provide LUSI with a copy of council resolution indicating the report has been accepted.

2. COBOURG DRINKING WATER SYSTEM OVERVIEW

The Cobourg Water Treatment Plant (WTP) takes water from Lake Ontario through an 860m-long intake pipe. Raw water is pre-chlorinated for zebra-muscle control before it enters a full conventional treatment process. The treatment process includes coagulation, flocculation, sedimentation, and filtration. *Aluminum sulphate* is used as the coagulation agent, with an addition of *Flowpam AN 934 PWG* (polymer) to aid in the process. Primary disinfection is achieved with *gaseous chlorine* after water undergoes an appropriate contact time, after which the water is stored in a 6240m^3 in-ground reservoir, from where it is then pumped to the distribution system.

The distribution system consists of two pressure zones, with an elevated water storage tank in each of the zones. The Water Treatment Plant supplies water to the zone 1 tower, with a holding capacity of 1332m^3. The booster station, located at the boundary of the two zones, supplies water to the zone 2 tower, with a holding capacity of 3734m^3. Zone 1 tower, zone 2 tower and the booster station are all equipped with *sodium hypochlorite* and rechlorination equipment to maintain proper disinfection.

Water from the Cobourg DWS is conveyed to Hamilton Township, as an extension of the Cobourg DWS, agreed upon in writing.

3. 2020 COMPLIANCE

3.1 MECP INSPECTION

The MECP began an announced focused inspection of the Cobourg DWS on July 22, 2020. A final inspection rating of 100% was achieved. There were no non-compliances with regulatory requirements, and no identified recommendations or issues related to best practices.

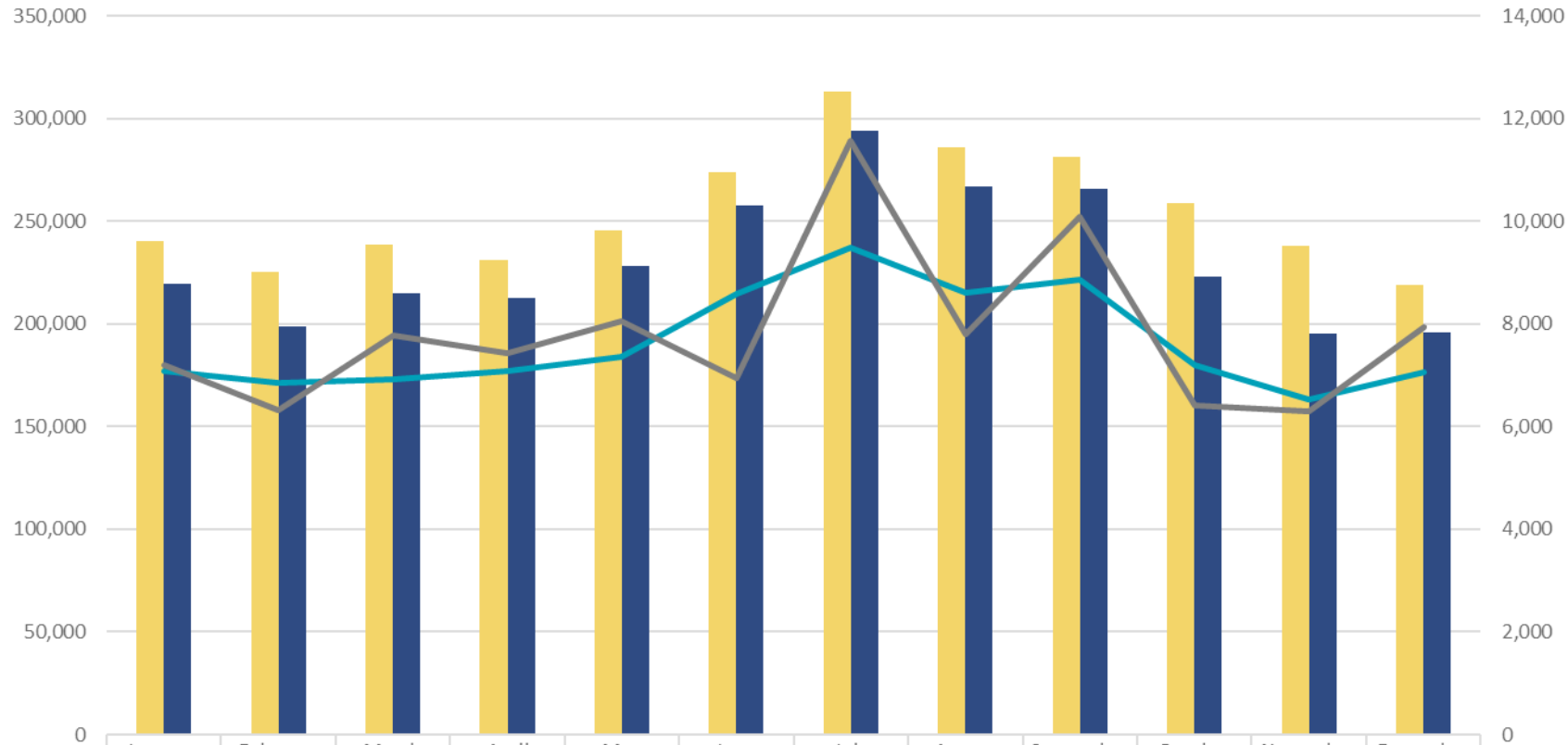
3.2 LICENSE & PERMIT COMPLIANCE

The Cobourg DWS maintained compliance with all applicable legislation, and all terms and conditions of the Municipal Drinking Water License, Drinking Water Works Permit and Permit to Take Water in 2020.

The Cobourg DWS Permit to Take Water (Permit No. 6423-8X8HF2) allows the taking of 31,822 m^3 of water from Lake Ontario per day at a rate of 31,177L/min. The average flow rate from Lake Ontario was 6,000L/min, below the maximum rate.

The total quantity of water taken and discharged from the WTP is illustrated in Figure 1. In 2020 there were no incidents related to surpassing the maximum volume of water permitted to take. In July 2020, the WTP operated at 32% of its maximum rated capacity, as shown in Figure 2. The labels presented in Figure 2 are representative of the maximum flow observed for the respective month (m^3).

Figure 1 - Flow Quantities for the Cobourg Drinking Water System



	January	February	March	April	May	June	July	August	September	October	November	December
Water Taken (m3)	240,192	225,166	238,549	231,263	245,247	273,755	312,837	285,840	281,212	258,625	237,962	218,725
WTP Discharge (m3)	219,317	198,831	214,882	212,550	228,178	257,389	293,793	266,638	265,584	223,128	195,525	195,970
Daily Average Discharge (m3)	7,075	6,856	6,932	7,085	7,361	8,580	9,477	8,601	8,853	7,198	6,518	7,056
Maximum Daily Discharge (m3)	7,188	6,314	7,776	7,437	8,054	6,947	11,557	7,806	10,083	6,404	6,300	7,941

Water Taken (m3) WTP Discharge (m3) Daily Average Discharge (m3) Maximum Daily Discharge (m3)

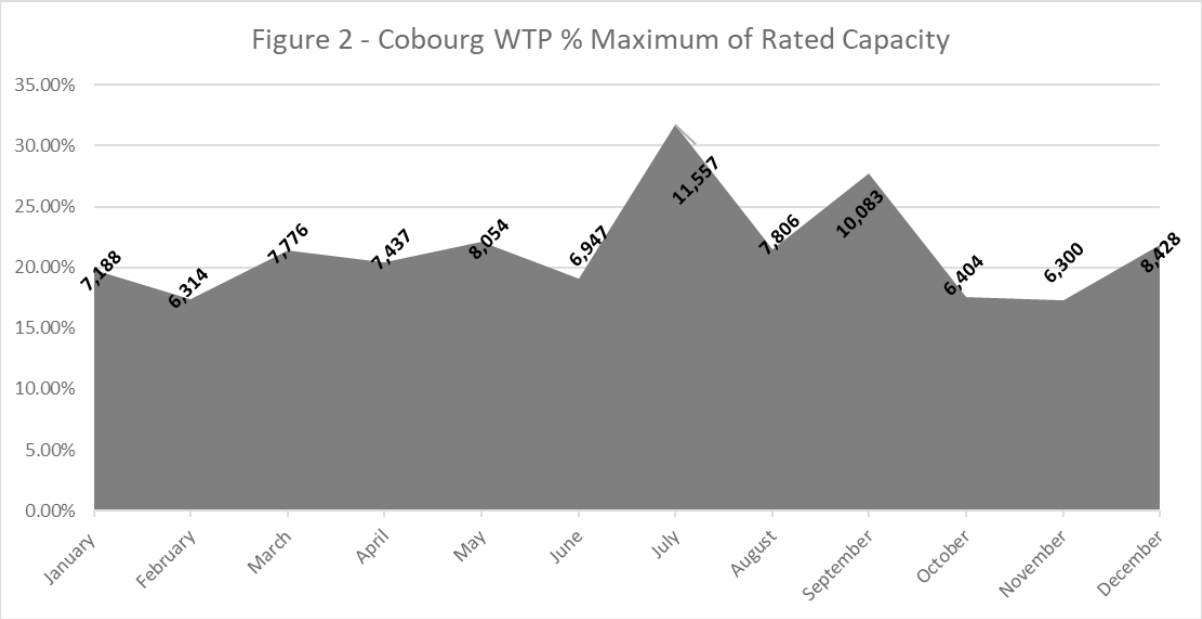


Figure 2 - Cobourg WTP % Maximum of Rated Capacity
35.00%
30.00%
25.00%
20.00%
15.00%
10.00%
5.00%
0.00%
7,188
6,314
7,776
7,437
8,054
6,947
11,557
7,806
10,083
6,404
6,300
8,428
January
February
March
April
May
June
July
August
September
October
November
December

3.3 ADVERSE WATER QUALITY INCIDENT(S)

Incident #1 – July 17, 2020
During a routine watermain break repair on King St E insufficient water pressure was maintained for four customers, 540, 55, 551 and 570 King St E. The Public Health Unit issued a boil water advisory for the customers on July 17, 2020. Upon completion of the repair the watermain was directionally flushed and two consecutive bacti samples, including HPC, were taken. Laboratory results indicating no presence of E. Coli or total coliform were obtained on July 22, 2020. The Public Health Unit rescinded the boil water advisory on July 23, 2020.

Incident #2 – October 26, 2020
On October 26, 2020 the residents at 310 and 316 Lakeview Crt had their irrigation systems winterized. The winterization was performed improperly at 316 Lakeview Crt resulting in air in the distribution system and plumbing systems of 309, 310, 315 and 316 Lakeview Crt. LUSI operations flushed the affected area, receiving normal chlorine and turbidity values for the area. The Haliburton, Kawartha and Pine Ridge District Health Unit requested a bacteriological sample be taken from the affected area. Results were received from the laboratory on October 28, 2020 indicating no presence of E.Coli or total coliform.

4. CONTINUAL IMPROVEMENT

LUSI's commitment to continual improvement requires investigating and investing in, where appropriate, methods and technologies to improve

- The quality of processes used to ensure production of ample clean water, and
- The quality and effectiveness of the distribution system.

During the 2020 reporting year, LUSI demonstrated this commitment by completing all the activities listed in Table 1. Table 1 also satisfies O. Reg 170/03 requirement to describe major expenses occurred during the reporting period.

Table 1 - 2020 Major Expenses Incurred at the Cobourg WTP, Distribution System and Misc. Activities

Cobourg Water Treatment Plant	Intake/Crib Repairs	$6,400
	Filter Room Mold Rehabilitation	$174,000
	Raw Water Actuator Valve	$9,100
	Waste Tank Pump #1 Replacement and Upgrade	$7,500
	Surge Anticipator Valve Upgrade	$4,400
	High Lift Motor 3 Rebuild	$8,600
	High Lift ROV	$3,300
Cobourg Distribution System	Matthew St Watermain Replacement	$550,00
	Distribution Sampling Stations	$9,000
	Tower 2 Generator Upgrades	$28,600
	Booster Station Generator Upgrades	$13,500
	Watermain Repair Truck	$100,000
	Hydraulic De-watering pump	$4,200

Table 1 - 2020 Major Expenses Incurred at the Cobourg WTP, Distribution System and Misc. Activities		
Miscellaneous	Water Master Plan	$150,000
	Work Order Management System	$25,000
	Office, Lab and Tunnel Mold Rehabilitation	$41,800

5. SAMPLING AND ANALYSIS

The Cobourg DWS exhibited compliance with all sampling and testing as required by *Ontario Regulation 170/03* in the 2020 calendar year. Table 2 illustrates all microbiological testing done under Schedule 10 of *Ontario Regulation 170/03*. There were no instances of adverse water quality results as a result of a parameter exceeding its respective maximum acceptable concentration.

Table 2 – Cobourg DWS Microbiological Sampling						
	E. Coli, (cfu/100mL)		**Total Coliform**, (cfu/100mL)		**HPC**, (cfu/1mL)	
	# of Samples	Range of Results (min # - max #)	# of Samples	Range of Results (min # - max #)	# of Samples	Range of Results (min # - max #)
Raw	52	0 - 5	52	0 - 540	0	N/A
Treated	52	0 – 0	52	0 – 0	52	0 – 3
Distribution	416	0 – 0	416	0 – 0	257	0 – 380

Note: Table 2 contains microbiological sampling taken within the Hamilton Township Stand-alone Distribution System.

Operational testing done under Schedule 7 of Ontario Regulation 170/03 during the 2020 reporting period are tabulated in Table 3.

Table 3 – Cobourg DWS Schedule 7 Operational Monitoring Samples		
	Number of Grab Samples	Range of Results (min # - max #)
Filter Turbidity (NTU)	8760 (continuous monitoring)	0.0 – 0.30
Contact Chamber Effluent Free Chlorine Residual (mg/L)	8760 (continuous monitoring)	0.88 – 2.15

The Cobourg DWS Municipal Drinking Water License (MDWL) requires monthly composite samples of backwash wastewater at the point of discharge to Lake Ontario. Table 4 summarizes the results of the sampling program.

Table 4 – Cobourg DWS Sampling MDWL Requirements				
Date of MDWL	Parameter	# of Samples	Maximum Annual Average Concentration (mg/L)	Annual Average Concentration (mg/L)
June 23, 2016	Total Suspended Solids	12	25	< 2 MDL

In addition to the microbiological sampling and testing requirements, sampling and testing is required for chemical, inorganic and organic parameters. Table 5 illustrates Schedule 13, Schedule 23 and Schedule 24 sample analysis results, with no exceedances during the reporting period. If there were multiple samples taken during the reporting period, the most recent sample result is provided. A parameter below the method detection limit indicated by (<), cannot be detected as the concentration is lower than minimum concentration that can be measured and reported with 99% certainty.

Table 5 – Cobourg DWS Schedule 13, 23 and 24 Sampling			
PARAMETER	**STANDARD (µg/L)**	**SAMPLE RESULT (µg/L)**	**SAMPLE DATE**
Benzene	5	0.32 <MDL	13-Jan-20
Carbon tetrachloride	5	0.17 <MDL	
1,2-Dichlorobenzene	200	0.41 <MDL	
1,4-Dichlorobenzene	5	0.36 <MDL	
1,1-Dichloroethylene (vinylidene chloride)	14	0.33 <MDL	
1,2-Dichloroethane	5	0.35 <MDL	
Dichloromethane	50	0.35 <MDL	
Monochlorobenzene	80	0.3 <MDL	
Tetrachloroethylene (perchloroethylene)	30	0.35 <MDL	
Trichloroethylene	5	0.44 <MDL	
Vinyl Chloride	2	0.17 <MDL	
Diquat	70	1 <MDL	
Paraquat	10	1 <MDL	
Glyphosate	280	1 <MDL	
Polychlorinated Biphenyls (PCBs) - Total	3	0.04 <MDL	
Benzo(a)pyrene	0.01	0.004 <MDL	
Alachlor	5	0.02 <MDL	
Atrazine + N-dealkylated metabolites	5	0.05	
Atrazine	-	0.03	
Desethyl atrazine	-	0.02	
Azinphos-methyl	20	0.05 <MDL	
Carbaryl	90	0.05 <MDL	
Carbofuran	90	0.01 <MDL	

Table 5 – Cobourg DWS Schedule 13, 23 and 24 Sampling			
PARAMETER	**STANDARD (µg/L)**	**SAMPLE RESULT (µg/L)**	**SAMPLE DATE**
Chlorpyrifos	90	0.02 <MDL	
Diazinon	20	0.02 <MDL	
Dimethoate	20	0.06 <MDL	
Diuron	150	0.03 <MDL	
Malathion	190	0.02 <MDL	
Metolachlor	50	0.01 <MDL	
Metribuzin	80	0.02 <MDL	
Phorate	2	0.01 <MDL	
Prometryne	1	0.03 <MDL	
Simazine	10	0.01 <MDL	
Terbufos	1	0.01 <MDL	
Triallate	230	0.01 <MDL	
Trifluralin	45	0.02 <MDL	
2, 4-dichlorophenoxyacetic acid (2,4-D)	100	0.19 <MDL	
Bromoxynil	5	0.33 <MDL	
Dicamba	120	0.20 <MDL	
Diclofop-methyl	9	0.40 <MDL	
MCPA	-	0.00012 <MDL	
Picloram	190	1 <MDL	
2,4-dichlorophenol	900	0.15 <MDL	
2,4,6-trichlorophenol	5	0.25 <MDL	
2,3,4,6-tetrachlorophenol	100	0.20 <MDL	
Pentachlorophenol	60	0.15 <MDL	
Antimony	6	0.15	
Arsenic	25	0.2 <MDL	
Barium	1000	20.5	
Boron	5000	22	
Cadmium	5	0.005	
Chromium	50	0.14	
Mercury	1	0.01 <MDL	
Selenium	10	0.15	
Uranium	20	0.044	
THM: Annual Average	100	25.25	13-Oct-20
HAA: Annual Average	80	5.3 < MDL	
Nitrite	1	< 0.003 MDL	
Nitrate	10	0.310	
Fluoride	1.5	0.06	16-Sept-19
Sodium	20	12.6	