



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Haileybury Drinking Water System

2019 ANNUAL/SUMMARY REPORT

Prepared by the Ontario Clean Water Agency
on behalf of the City of Temiskaming Shores



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INTRODUCTION

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act* (SDWA) since June 2003. The Act was passed following recommendations made by Commissioner O'Conner after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

O. Reg. 170/03 requires the owner to produce an Annual Report, under Section 11. This report must include the following:

1. Description of system and chemical(s) used
2. Summary of any adverse water quality reports and corrective actions
3. Summary of all required testing
4. Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28 of each year.

The regulation also requires a Summary Report which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

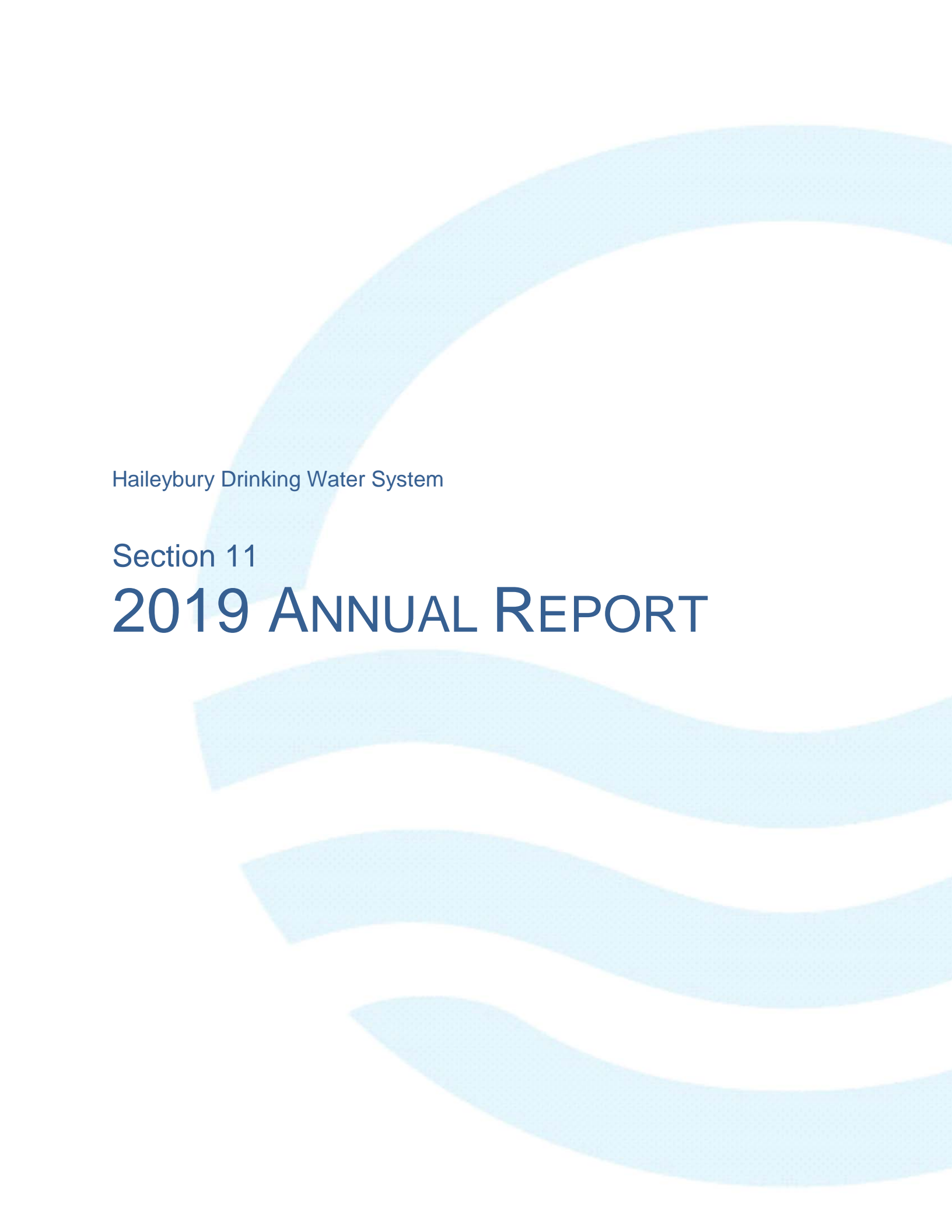
The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any regulatory requirement the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act*, 2002 and the drinking water regulations can be viewed at the following website: <http://www.e-laws.gov.on.ca>.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

1. A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
2. A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The reports have been prepared by the Ontario Clean Water Agency (OCWA) on behalf of the Owner and presented to council as the 2019 Annual/Summary Report.



Haileybury Drinking Water System

Section 11

2019 ANNUAL REPORT



Section 11 - ANNUAL REPORT

1.0 INTRODUCTION

Drinking-Water System Name	Haileybury Drinking Water System
Drinking-Water System Number	210000309
Drinking-Water System Owner	The Corporation of the City of Temiskaming Shores
Drinking-Water System Category	Large Municipal, Residential System
Reporting Period	January 1, 2019 to December 31, 2019

Does your Drinking-Water System serve more than 10,000 people? No

Is your annual report available to the public at no charge on a web site on the Internet?

Yes at: <http://www.temiskamingshores.ca/en/index.asp>

Location where Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:

City of Temiskaming Shores
325 Farr Drive, P.O. Box 2050
Haileybury, ON P0J 1K0

Drinking-Water Systems that receive drinking water from the Haileybury Drinking Water System

The Haileybury Drinking Water System provides all of its drinking water to the community of Haileybury within the City of Temiskaming Shores.

The Annual Report was not provided to any other Drinking Water System Owners

The Ontario Clean Water Agency prepared the 2019 Annual/Summary Report for the Haileybury Drinking Water System and provided a copy to the system owner; the City of Temiskaming Shores. The Haileybury Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

Notification to system users that the Annual Report is available for viewing is accomplished through:

Public access/notice via the web

Public access/notice via City's Facebook page

Public access/notice via a community bulletin Public access/notice via a newspaper



2.0 HAILEYBURY DRINKING WATER SYSTEM (DWS No. 210000309)

The Haileybury Drinking Water System is owned by the Corporation of the City of Temiskaming Shores and consists of a Class 3 water treatment subsystem and a Class 2 water distribution subsystem. It is a surface water system that services the Town of Haileybury. The Ontario Clean Water Agency is the accredited operating authority and is designated as the Overall Responsible Operator for both the water treatment and water distribution facilities.

Raw Water Supply

The water treatment plant, located at 322 Browning Street obtains its raw water from Lake Temiskaming. A 197 m long, 450 mm diameter raw water intake pipe extends 168 m into the lake. The intake structure is an upturned bell inside a cribbed structure. The intake is approximately 12.5 m below the low recorded water level and 2 m above the lake bottom.

Water flows into the intake structure by gravity, through two removable inlet screens and is stored in the raw water wet well. The wet well contains a heated superstructure and has a storage volume of 37.2 m³. The low lift pumping station is equipped with three low lift duty pumps; all are vertical turbine pumps which operate on an alternating basis. A magnetic flow meter is located in the water treatment plant to monitor raw water flows.

Water Treatment

Raw water is pumped to the water treatment building where it is injected with sodium carbonate (soda ash) for pH and alkalinity adjustment and aluminum sulphate for the coagulation/flocculation process. The process water undergoes rapid mixing, flows into two flocculation basins, where polymer is added as a coagulant aid, and then to a settling tank for clarification. The process water flows through three dual media filters consisting of anthracite and silica sand. The filter system is equipped with an automated backwash sequence, filter-to-waste capabilities, air blower and an underdrain system. The backwash wastewater and the settled solids from the settling tank are discharged to the municipal sanitary system. On-line turbidity analyzers are used to monitor the turbidity off each filter.

After filtration, the process water is chlorinated and pH adjusted with soda ash before entering the dual celled clearwell. Three high lift pumps are located at the end of the clearwell, where a magnetic flow meter is used to measure flow on the discharge main. In a separate room, with outside access only, a gas chlorine system equipped with automatic switchover is used for post-filtration chlorination in the clearwell.

Water Storage and Pumping Capabilities

The water is then directed from the clearwell to an off-site reservoir. The Niven Street reservoir is a baffled contact tank consisting of two reservoirs and one pumping chamber that provide sufficient chlorine contact time to meet CT requirements. An ammonium sulphate dosing system is used to chloramine the treated water before being gravity fed or pumped to the



distribution system by four high lift pumps equipped with variable frequency drives (VFDs).

Emergency Power

A 250 kW diesel generator is available at the water treatment plant and a 200 kW diesel engine generator is on hand at the reservoir for emergency purposes.

Distribution System

The Haileybury drinking water system is classified as a Large Municipal Residential Drinking Water System that provides water to a population of approximately 4,200 residents. The distribution system has approximately 1940 service connections and is comprised of various pipe materials including 4" - 12" cast iron with lead joints or ductile iron, 10" and 12" asbestos cement, and PVC with mechanical joints.

The system consists of four pressure zones. Zone 1 is a gravity fed area in downtown Haileybury, Zone 2 is an intermediate pressure region located at higher elevations along the west side of Haileybury, Zone 3 is an controlled pressure system which is fed off of the high pressure system and is located in the central part of Haileybury and North Cobalt and Zone 4 is a high pressure zone in North Cobalt. The water distribution piping system is continuous between the four identified pressure zones; however the various zones are isolated from each other via closed valves.

3.0 LIST OF WATER TREATMENT CHEMICALS USED OVER THE REPORTING PERIOD

The following chemicals were used in the Haileybury Drinking Water System treatment process:

- Aluminum Sulphate (Alum) – Coagulation/Flocculation
- Ammonium Sulfate – Secondary Disinfection
- Chlorine Gas – Primary Disinfection
- Polyelectrolyte (Polymer) - Coagulant Aid
- Soda Ash – pH and Alkalinity Adjustment

All treatment chemicals meet AWWA and NSF/ANSI standards.

4.0 SIGNIFICANT EXPENSES INCURRED TO THE DRINKING WATER SYSTEM

OCWA is committed to maintaining the assets of the drinking water system and sustains a program of scheduled inspection and maintenance activities using a computerized Work Management System (WMS).

Significant expenses incurred in the drinking water system include the following:



- Sedimentation tank repair (replaced flights, shafts, wear shoes, sprockets, chains and wall brackets)
- Installed an in-line static mixer prior to the discharge to the recirculation basins.
- Installed a raw flow control valve on the raw inlet pipe between the flow meter and mixer.
- Replaced the intrusion alarm keypad at the garage entrance

5.0 DETAILS ON NOTICES OF ADVERSE TEST RESULTS AND OTHER PROBLEMS REPORTED TO & SUBMITTED TO THE SPILLS ACTION CENTER

Based on information kept on record by OCWA, three (3) adverse water quality incidents were reported to the MOE's Spills Action Centre.

AWQI 144986 – Loss of Free Chlorine Residual Monitoring at the Reservoir, March 14: The water pump feeding the chlorine analyzer failed causing a loss of free chlorine monitoring at the Niven Street reservoir from 0105 hours to 0230 hours on March 14th. The on-call operator repaired the pump and monitoring continued. Chlorine residual before the pump failed was 1.60 mg/L and after the pump failed was 1.48 mg/L. The incident was immediately reported to the local Health Unit, Ministry's Spills Action Center (SAC) and the Owner and the issue was resolved on March 14th.

AWQI 115995 – Boil Water Advisory (BWA) during Category 2 Watermain Break/Repair, June 28 at 0715 hours: Loss of pressure due to a watermain break/repair on Rorke Avenue and Main Street. The gravity zone of the distribution system was isolated in order to conduct the repair which resulted in approximately 100 residents having low or zero water pressure (Category 2 break). The local Health Unit was notified and a precautionary boil water advisory (BWA) was issued for the affected area. All materials were disinfected and the area flushed. Repair was completed and the pressure was restored on June 28, 2019 at 1145 hrs. SAC and the local MECP inspector were notified.

The area was flushed and 2 sets of 3 bacteriological samples were collected (upstream, downstream and at site). Sample results indicated no total coliforms or *E.coli*. BWA was lifted on June 30th at 1445 hours. Incident was resolved on July 2nd.

AWQI 149265 – Boil Water Advisory (BWA) during Category 2 Watermain Break/Repair, December 13 at 0700 hours: A precautionary boil water advisory (BWA) was issued by the local Health Unit when contaminated water entered the pipe during a watermain repair. An isolation valve broke resulting in a Category 2 break. The BWA was issued for 4 buildings on Broadway Street. (the Seniors Building, a Food Bank, a Funeral Home and an EMS Building).

After the main was repaired, the affected area was flushed until satisfactory residuals were achieved and two sets of bacteriological samples were collected 24 hours apart on December 13th and 14th. Two samples were collected on December 13th and three on December 14th as discussed with the local Public Health Inspector. Results indicated zero total coliforms, and



E.coli. The BWA was lifted on Sunday, December 15th at approximately 5:30 PM. Notices provided early morning on December 16th. Resolution report submitted on December 17th.

6.0 MICROBIOLOGICAL TESTING PERFORMED DURING THE REPORTING PERIOD

Summary of Microbiological Data

Sample Type	# of Samples (see Note 2)	Range of <i>E.coli</i> Results (min to max)	Range of Total Coliform Results (min to max)	# of HPC Samples	Range of HPC Results (min to max)
Raw	53	<2 to 84	<2 to 400	N/A	N/A
Treated	53	0 to 0	0 to 0	53	< 10 to 730
Distribution	159	0 to 0	0 to 0	54	< 10 to 920

Maximum Acceptable Concentration (MAC) for *E. coli* = 0 Counts/100 mL

MAC for Total Coliforms = 0 Counts/100 mL

“<” denotes less than the laboratory’s method detection limit.

Notes:

- One microbiological sample is collected and tested each week from the raw and treated water supply. A total of three microbiological samples are collected and tested each week from the Haileybury distribution system. At least 25% of the distribution samples are tested for HPC bacteria.

7.0 OPERATIONAL TESTING PERFORMED DURING THE REPORTING PERIOD

Continuous Monitoring in the Treatment Process

Parameter	# of Samples	Range of Results (min to max)	Unit of Measure	Standard
Turbidity (Filter 1)	8760	0.026 to 0.87	NTU	≤ 1.0 (for >15 minutes)
Turbidity (Filter 2)	8760	0.025 to 0.83	NTU	
Turbidity (Filter 3)	8760	0.02 to 1.00	NTU	
Free Chlorine (Reservoir)	8760	0.62 to 2.89	mg/L	CT

Notes:

- For continuous monitors 8760 is used as the number of samples.
- Effective backwash procedures, including filter to waste and automatic filter shut down features are in place to ensure that the effluent turbidity requirements as described in the Filter Performance Criteria are met all times. Filters will backwash if turbidity reaches 0.7 NTU and will shut down at 1.0 NTU. The system performed as programmed and no high turbidity water was directed to the next phase of the process.
- CT is the concentration of chlorine in the water times the time of contact that the chlorine has with the water. It is used to demonstrate the level of disinfection treatment in the water. CT calculations are performed for the Haileybury water plant if the free chlorine residual level drops below 0.30 mg/L to ensure primary disinfection is achieved.

Summary of Chlorine Residual Data in the Distribution System

Parameter	No. of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine Residual	366	0.26 to 1.96	mg/L	≥ 0.25 and < 3.0



Notes:

1. A total of seven operational checks for chlorine residual in the distribution system are collected each week. Four (4) samples are tested one day and three (3) on a second day. The sample sets are collected at least 48-hours apart and samples collected on the same day are from different locations.

Refer to *Appendix B* for a monthly summary of the above operational data.

Summary of Nitrate & Nitrite Data (sampled at the plant's point of entry into the distribution every quarter)

Date of Sample	Nitrate Result	Nitrite Result	Unit of Measure	Exceedance
January 8	0.14	< 0.008	mg/L	No
April 8	0.08	< 0.05	mg/L	No
July 8	0.15	< 0.05	mg/L	No
October 7	< 0.05	< 0.05	mg/L	No

Maximum Allowable Concentration (MAC) for Nitrate = 10 mg/L

MAC for Nitrite = 1 mg/L

Summary of Total Trihalomethane Data (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Quarter Average	Running Annual Average	Exceedance
January 8	64.7	ug/L	51.9	77.5	No
April 8	71.3	ug/L	65.9		
July 8	116	ug/L	96.3		
October 7	57.8	ug/L	71.9		

Maximum Allowable Concentration (MAC) for Total Trihalomethanes = 100 ug/L (Four Quarter Running Average)

Haloacetic Acid (HAAs) Sampling and Testing Required under Schedule 13-6.1

New sampling requirements for Haloacetic Acids (HAAs) came into effect on January 1st, 2017. At least one distribution sample must be taken in each calendar quarter, from a point in the drinking water system's distribution system, or plumbing that is likely to have an elevated potential for the formation of HAAs. Over the past three years, samples were collected near the plant, in the middle of the distribution system and at the end of the distribution system as per guidance provided in a Ministry's letter "HAA Concerns" dated May 9, 2018. The sample locations with the highest concentrations of HAAs are City Hall (325 Farr Dr.) in the middle of the system and Stock Bus (580 Main St.) near the plant. OCWA recommends collecting 2 quarters at City Hall and 2 quarters at Stock Bus in 2020.

The maximum allowable concentration (MAC) of 80 ug/L is effective January 1st, 2020 and is based on a running annual average of quarterly results (similar to THMs). Results that exceed the MAC must be reported as an adverse water quality incident (AWQI) starting January 1st, 2020. HAA results for 2019 are summarized below:



Summary of Total Haloacetic Acid Data (sampled in the distribution system every quarter)

Date of Sample	Result Value	Unit of Measure	Quarter Average	Running Annual Average	Exceedance
January 8	80	ug/L	34.7	73.0	N/A
April 8	17	ug/L	56.9		
July 8	127	ug/L	74		
October 7	68	ug/L	55		

Summary of Most Recent Lead Data under Schedule 15.1

(applicable to the following drinking water systems; large municipal residential systems, small, municipal residential systems, and non-municipal year-round residential systems)

The Haileybury Drinking Water System qualified for the ‘Exemption from Plumbing Sampling’ as described in section 15.1-5 (9-10) of Ontario Regulation 170/03. The exemption applies to a drinking water system if; in two consecutive periods at reduced sampling, not more than 10% of all samples from plumbing exceed the maximum allowable concentration of 10 ug/L for lead. As such, the system was required to test for total alkalinity and pH in three distribution samples collected during the periods of December 15 to April 15 (winter period) and June 15 to October 15 (summer period). This testing is required in every 12-month period with lead testing in every third 12-month period.

Two rounds of alkalinity and pH testing were carried out on April 4th and October 7th of 2019. Results are summarized in the table below.

Lead Data (sampled in the distribution system)

Date of Sample	# of Samples	Field pH (min to max)	Field Temperature (°C) (min to max)	Alkalinity (mg/L) (min to max)	Lead (ug/L) (min to max)
April 4	3	7.30 to 7.80	1.4 to 2.1	32 to 233	N/A
October 7	3	7.00 to 7.08	13.9 to 14.9	34 to 35	N/A

Note: Next lead sampling scheduled for 2021

Most Recent Schedule 23 Inorganic Data Tested at the Water Treatment Plant

Parameter	Result Value	Unit of Measure	MAC	MAC Exceedance	½ MAC Exceedance
Antimony	< 0.5	ug/L	6	No	No
Arsenic	< 1	ug/L	10	No	No
Barium	7	ug/L	1000	No	No
Boron	6	ug/L	5000	No	No
Cadmium	< 0.1	ug/L	5	No	No
Chromium	1	ug/L	50	No	No
Mercury	< 0.1	ug/L	1	No	No
Selenium	< 0.5	ug/L	50	No	No
Uranium	< 1	ug/L	20	No	No

Note: Sample required every 12 months (sample date = October 7, 2019)

***Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant***

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Alachlor	< 0.241	ug/L	5	No	No
Atrazine + N-dealkylated metabolites	< 0.5	ug/L	5	No	No
Azinphos-methyl	< 0.181	ug/L	20	No	No
Benzene	< 0.1	ug/L	1	No	No
Benzo(a)pyrene	< 0.009	ug/L	0.01	No	No
Bromoxynil	< 0.0952	ug/L	5	No	No
Carbaryl	< 1	ug/L	90	No	No
Carbofuran	< 2	ug/L	90	No	No
Carbon Tetrachloride	< 0.2	ug/L	2	No	No
Chlorpyrifos	< 0.181	ug/L	90	No	No
Diazinon	< 0.181	ug/L	20	No	No
Dicamba	< 0.238	ug/L	120	No	No
1,2-Dichlorobenzene	< 0.2	ug/L	200	No	No
1,4-Dichlorobenzene	< 0.3	ug/L	5	No	No
1,2-Dichloroethane	< 0.2	ug/L	5	No	No
1,1-Dichloroethylene (vinylidene chloride)	< 0.3	ug/L	14	No	No
Dichloromethane	< 1	ug/L	50	No	No
2,4-Dichlorophenol	< 0.2	ug/L	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	< 0.357	ug/L	100	No	No
Diclofop-methyl	< 0.119	ug/L	9	No	No
Dimethoate	< 0.181	ug/L	20	No	No
Diquat	< 0.2	ug/L	70	No	No
Diuron	< 5	ug/L	150	No	No
Glyphosate	< 20	ug/L	280	No	No
MCPA	< 5.95	ug/L	100	No	No
Malathion	< 0.181	ug/L	190	No	No
Metolachlor	< 0.12	ug/L	50	No	No
Metribuzin	< 0.12	ug/L	80	No	No
Monochlorobenzene	< 0.5	ug/L	80	No	No
Paraquat	< 0.2	ug/L	10	No	No
Pentachlorophenol	< 0.3	ug/L	60	No	No
Phorate	< 0.12	ug/L	2	No	No
Picloram	< 0.0833	ug/L	190	No	No
Polychlorinated Biphenyls (PCBs)	< 0.06	ug/L	3	No	No
Prometryne	< 0.0602	ug/L	1	No	No
Simazine	< 0.181	ug/L	10	No	No
Terbufos	< 0.12	ug/L	1	No	No
Tetrachloroethylene	< 0.3	ug/L	10	No	No
2,3,4,6-Tetrachlorophenol	< 0.2	ug/L	100	No	No

**Most Recent Schedule 24 Organic Data Tested at the Water Treatment Plant**

Parameter	Result Value	Unit of Measure	Standard	MAC Exceedance	½ MAC Exceedance
Triallate	< 0.12	ug/L	230	No	No
Trichloroethylene	< 0.3	ug/L	5	No	No
2,4,6-Trichlorophenol	< 0.2	ug/L	5	No	No
Trifluralin	< 0.12	ug/L	45	No	No
Vinyl Chloride	< 0.1	ug/L	1	No	No

Note: Sample required every 12 months (sample date = October 7, 2019)

Inorganic or Organic Parameter(s) that Exceeded Half the Standard Prescribed in Schedule 2 of Ontario Drinking Water Quality Standards

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg.169/03) during the reporting period.

Most Recent Sodium Data Sampled at the Water Treatment Plant

Date of Sample	Number of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 10, 2017	1	23.9	mg/L	20	Yes
October 18, 2017 (resample)	1	21.0	mg/L	20	Yes

Note: Sample required every 60 months. Next sampling scheduled for October 2022.

The aesthetic objective for sodium in drinking water is 200 mg/L at which it can be detected by a salty taste. It is required that the local Medical Officer of Health be notified when the concentration exceeds 20 mg/L so that persons on sodium restricted diets can be notified by their physicians. The adverse sodium result was reported to the Ministry's SAC and the Timiskaming Health Unit on October 16, 2017 as required under Schedule 16 of O. Reg. 170/03 (AWQI# 137331).

Most Recent Fluoride Data Sampled at the Water Treatment Plant

Date of Sample	Number of Samples	Result Value	Unit of Measure	MAC	Exceedance
October 10, 2017	1	0.1	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2022.

Additional Testing Performed in Accordance with a Legal Instrument.

A harmful Algal Bloom (blue green algae), was detected 7 km from the Haileybury drinking water system at the New Liskeard beach in September of 2019. The MECP tested the bloom and found microcystin toxins. OCWA initiated a sampling program for microcystin on the Haileybury raw and treated water. Two sets of water samples were collected and results indicated no microcystin toxins.



Summary of Microcystin Results from the Raw & Treated Water

Date of Sample	Raw Water Results	Treated Water Results	Unit of Measure
October 7, 2019	< 0.15	< 0.15	ug/L
October 15, 2019	< 0.15	< 0.15	ug/L



Haileybury Drinking Water System

Schedule 22

2019 SUMMARY REPORT

FOR MUNICIPALITIES



Schedule 22 - SUMMARY REPORTS for MUNICIPALITIES

1.0 INTRODUCTION

Drinking-Water System Name	Haileybury Drinking Water System
Municipal Drinking Water Licence (MDWL)	218-102-2 (issued August 15, 2016)
Drinking Water Works Permit (DWWP)	218-202-5 (issued August 15, 2016)
Permit to Take Water (PTTW)	6133-82TLT7 (issued February 22, 2010)
Reporting Period	January 1, 2019 to December 31, 2019

2.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

According to information kept on record by OCWA, the Haileybury Drinking Water System failed to meet the following requirements during the 2019 reporting period:

Drinking Water Legislation	Requirement(s) the System Failed to Meet	Duration	Corrective Action(s)	Status
MDWL 218-102, DWWP 218-202, Section 1-2(2)3 of Schedule 6 to O. Reg. 170/03	<p>The system failed to ensure that the treatment equipment was operated in a manner that achieved design capabilities.</p> <p>The continuous monitoring equipment was not recording the minimum, maximum and mean results of tests for free chlorine residual at least every 5 minutes. The analyzer alarmed out and the on-call operator repaired the unit. (AWQI 144986)</p> <p>Disinfection was not properly restored after a WM Break on December 13th. Combined chlorine residuals of 1.0 mg/L were not achieved (AWQI No. 149265)</p>	<p>March 14th, from 1:05am to 2:30am</p> <p>December 13th from 7:00am to 4:30pm</p>	<p>The on-call operator repaired the pump and monitoring continued. Chlorine residual before the pump failed was 1.60 mg/L and after the pump failed was 1.48 mg/L. The incident was immediately reported to the local Health Unit, Ministry's Spills Action Center (SAC) and the Owner and the issue was resolved on March 14th.</p> <p>All operators will review the Ministry's Watermain Disinfection procedure to ensure that they are familiar with the disinfection requirements.</p>	In-progress



Drinking Water Legislation	Requirement(s) the System Failed to Meet	Duration	Corrective Action(s)	Status
Section 27(5)5 of O.Reg. 128/04.	On two occasions during the inspection period the continuous trends in the SCADA system did not record data and the trends appear to flatline. The data was available in the Field Data Manager. However, there were no records made of the abnormal observations (ie. flatlines) by the operator conducting the 72 hour review or indication that the Field Data Manager had been reviewed to confirm disinfection as required by the regulation.	July 2 2019, from 10:02am to 10:18am and November 29, 2019 from 6:07pm to 7:15pm	The operating authority provided training to all operators on December 18th, 2019 after a similar non-compliance was observed during the New Liskeard inspection.	Complete
Condition 2.3 of Schedule B of Drinking Water Works Permit 218-202	<p>All parts of the drinking water system in contact with drinking water which are added, modified, replaced, extended or taken out of service for inspection, repair or other activities that may lead to contamination shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the Ministry's Watermain Disinfection Procedure (Procedure).</p> <p>Condition 3.2.5 and 3.2.6 of the Procedure requires that for emergency repairs the operating authority must: that flushing shall continue until the disinfectant concentration at the point of flushing reaches at least 1.0 mg/L combined chlorine residual. Upon restoration of secondary disinfection, the system can be returned to normal service, defined as having all valves returned to normal operating position.</p>	June 28, August 24 th , October 17 th , and September 13 th	Distribution operators will review the Ministry's Disinfection procedure and flush the area until the disinfectant concentration at the point of flushing reaches at least 1.0 mg/L combined residual in a chloraminated system. If the disinfectant residuals cannot be achieved, flushing shall continue until the disinfectant concentrations at the point of flushing is representative of the system residual in the break area determined by upstream and downstream sampling or by using benchmarks for the area as long as the combined chlorine concentrations are at least 0.25 mg/L. These benchmark residuals will be documented on the Water Report.	In progress

It should also be mentioned that, two (2) additional adverse water quality incidents occurred during watermain breaks and were reported to the Ministry's Spills Action Center. Refer to Section 5.0 – *Details on Notices of Adverse Test Results and Other Problems Reported to & Submitted to the Spills Actions Center* on page 6 of this report for details.



3.0 SUMMARY OF QUANTITIES & FLOW RATES

Flow Monitoring

Municipal Drinking Water Licence (MDWL) #218-102 requires the owner to install a sufficient number of flow measuring devices to permit the continuous measurement and recording of:

- the flow rate and daily volume of water conveyed from the treatment system to the distribution system, and
- the flow rate and daily volume of water conveyed into the treatment system.

The flow monitoring equipment identified in the MDWL is present and operating as required. These flow meters are calibrated on an annual basis as specified in the manufacturers' instructions.

Water Usage

The following Water Usage Tables summarize the quantities and flow rates of water taken and produced during the 2019 reporting period, including average monthly volumes, maximum monthly volumes, total monthly volumes and maximum flow rates.

Raw Water

2019 - Monthly Summary of Water Takings from the Source (Lake Temiskaming)

Regulated by Permit to Take Water (PTTW) #6133-82TLT7, issued February 22, 2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m ³)	76222	69221	78767	76572	80465	85804	94553	84845	77281	78267	78135	78950	959080
Average Volume (m ³ /d)	2459	2472	2541	2552	2596	2860	3050	2737	2576	2525	2604	2547	2627
Maximum Volume (m ³ /d)	3258	2765	3662	3145	3637	3363	3847	3321	3235	2801	4154	3106	4154
PTTW - Maximum Allowable Volume (m ³ /day)	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816	6816
Maximum Flow Rate (L/min)	4657	5368	4692	4469	4692	4575	4709	4699	4643	4724	4681	4221	5368
PTTW - Maximum Allowable Flow Rate (L/min)	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733	4733

Note: February 12 - Raw flow spiked on start-up as 2 low lift pumps were running for a short time to fill clearwell after work on post soda ash pumps were completed. Plant was off for repair.

The system's Permit to Take Water #6133-82TLT7 allows the municipality to withdraw a maximum volume of 6816 cubic meters from the Lake Temiskaming each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit during the reporting period. The Permit also allows a maximum flow rate of 4733 L/minute. The system exceeded this limit on February 12 when two low lift pumps were running at the same time to fill the clearwell after work on the post soda ash pumps were completed. Plant shut down to conduct the repair.



Treated Water

2019 - Monthly Summary of Treated Water Supplied to the Distribution System

Regulated by Municipal Drinking Water Licence (MDWL) #218-102 - Issue 2, issued August 15, 2016

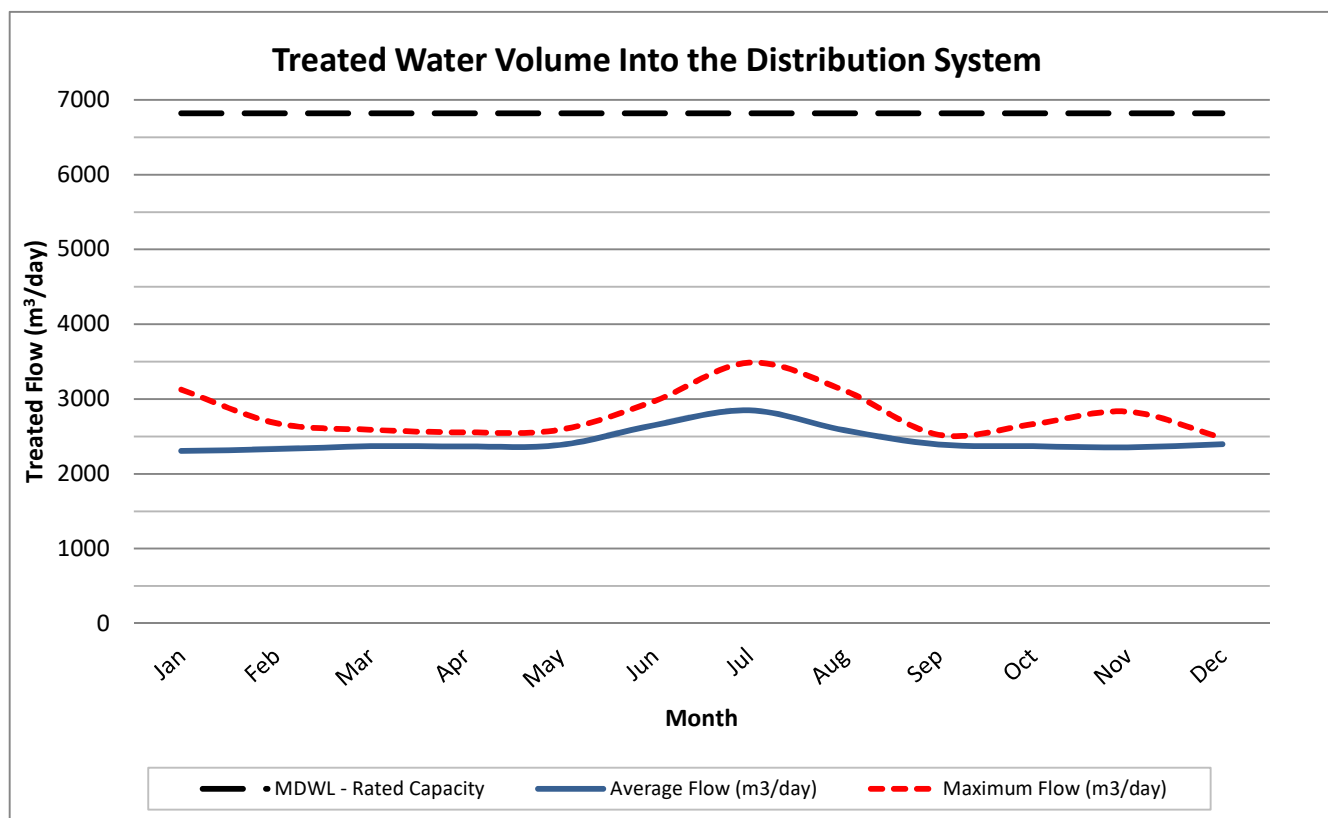
	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Year to Date</i>
<i>Total Volume (m³)</i>	71489	65246	73452	70997	73952	79538	88312	80105	71793	73442	70657	74268	893250
<i>Average Volume (m³/d)</i>	2306	2330	2369	2367	2386	2651	2849	2584	2393	2369	2355	2396	2446
<i>Maximum Volume (m³/d)</i>	3126	2678	2590	2555	2589	2974	3486	3118	2523	2665	2832	2480	3486
<i>MDWL - Rated Capacity (m³/day)</i>	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820

Schedule C, Section 1.0 (1.1) of MDWL No. 218-102 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 6820 m³/day. The Haileybury DWS complied with this limit having a recorded maximum volume of 3486 m³/day in July, which represents 51.1% of the rated capacity.

The following table and graph compare the average and maximum flow rates into the distribution system to the approved rated capacity of the system as identified in the MDWL.

Figure 1: 2019 - Monthly Volume of Treated Water into the Distribution System

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
<i>Average Flow (m³/day)</i>	2306	2330	2369	2367	2386	2651	2849	2584	2393	2369	2355	2396
<i>Maximum Flow (m³/day)</i>	3126	2678	2590	2555	2589	2974	3486	3118	2523	2665	2832	2480
<i>MDWL - Rated Capacity</i>	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820	6820
<i>% Rated Capacity</i>	46	39	38	37	38	44	51	46	37	39	42	36





Summary of System Performance

The following information is provided to enable the Owner to assess the capability of the system to meet existing and future water usage needs:

Rated Capacity of the Plant (MDWL)	6820 m ³ /day	
Average Daily Flow for 2019	2446m ³ /day	38.9 % of the rated capacity
Maximum Daily Flow for 2019	3486 m ³ /day	51.1 % of the rated capacity
Total Treated Water Produced in 2019	893,250 m ³	

CONCLUSION

The Haileybury Drinking Water System was able to operate in accordance with the terms and conditions of the Permit to Take Water and in accordance with the rated capacity of the licence while meeting the community's demand for water use.

The following non-compliances with were observed during the reporting period.

The system failed to ensure that the treatment equipment was operated in a manner that achieved design capabilities.

The continuous monitoring equipment was not recording the minimum, maximum and mean results of tests for free chlorine residual at least every 5 minutes. The analyzer alarmed out and the on-call operator repaired the unit. (AWQI 144986)

Disinfection was not properly restored after a WM Break on December 13th. Combined chlorine residuals of 1.0 mg/L were not achieved (AWQI No. 149265)

No comments were documented during the 72 hour review when the SCADA system did not record data on two occasions during the reporting period. Training on reviewing trends was provided to all operators on December 18, 2019.

The system was returned to normal service after a watermain repair before the disinfectant combined chlorine residuals of 1.0 mg/L were achieved. Operators will review the Ministry's Watermain Disinfection Procedure to ensure that they are familiar with the disinfection requirements.



APPENDIX A

Monthly Summary of Microbiological Test Results

HAILEYBURY DRINKING WATER SYSTEM
2019 SUMMARY OF MICROBIOLOGICAL TEST RESULTS

Facility Works Number: 210000309
Facility Owner: Municipality: City of Temiskaming Shores
Facility Classification: Class 3 Water Treatment

RAW WATER	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Total	Avg	Max	Min
Lake Timiskaming / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	50	42	50	400 >	400	308	18	40	268	186	202 >	400			400	
Mean Lab	40.8	27	33.5	145 >	272	169	< 7.6	13.5	109.6	124.5	155 >	176	?	104.385		
Min Lab	22	16	8	34 >	142	44	< 2	4	6	84	86	48				< 2
Lake Timiskaming / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	< 2	< 8	< 4	84	6	10	< 2	< 5	< 26	8	< 32	< 4			84	
Mean Lab	< 2	< 3.5	< 2.5	< 24.5	< 3.5	< 5	< 2	< 3.75	< 7.6	< 4.5	< 10	< 2.4	<	5.75		
Min Lab	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2				< 2
TREATED WATER	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Total	Avg	Max	Min
Treated Water / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / E. Coli: EC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
Treated Water / HPC - cfu/mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 60	< 730	< 10	< 60	< 10	< 10	< 20			730	
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 22.5	< 218	< 10	< 20	< 10	< 10	< 12	<	31.698		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
TREATED WATER	01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Total	Avg	Max	Min
1st Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
1st Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
2nd Bacti/Residual / HPC - cfu/mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 920	< 10	< 10	< 10	< 10	< 10			920	
Mean Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 192	< 10	< 10	< 10	< 10	< 10	<	27.17		
Min Lab	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10				< 10
3rd Bacti/Residual / Total Coliform: TC - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
3rd Bacti/Residual / E. Coli - cfu/100mL																
Count Lab	5	4	4	5	4	4	5	4	5	4	4	5	53			
Max Lab	0	0	0	0	0	0	0	0	0	0	0	0			0	
Mean Lab	0	0	0	0	0	0	0	0	0	0	0	0		0		
Min Lab	0	0	0	0	0	0	0	0	0	0	0	0				0
3rd Bacti/Residual / HPC - cfu/mL																
Count Lab	0	0	0	0	0	0	0	1	0	0	0	0	1			
Max Lab								20							20	
Mean Lab								20						20		
Min Lab								20								20



APPENDIX B

Monthly Summary of Operational Data

HAILEYBURY DRINKING WATER SYSTEM
2019 SUMMARY OF OPERATIONAL RESULTS

Facility Works Number: 210000309
Facility Owner: Municipality: Clty of Temiskaming Shores
Facility Classification: Class 3 Water Treatment

FILTERED WATER		01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Total	Avg	Max	Min
Filter #1 / Turbidity (1 NTU) - NTU																	
Max OL		0.8	0.86	0.55	0.617	0.729	0.66	0.41	0.49	0.47	0.87	0.83	0.768			0.87	
Mean OL		0.07	0.058	0.062	0.086	0.119	0.087	0.056	0.048	0.045	0.044	0.085	0.049		0.067		
Min OL		0.039	0.039	0.04	0.036	0.043	0.048	0.03	0.03	0.03	0.03	0.03	0.026				0.026
Filter #2 / Turbidity (1 NTU) - NTU																	
Max OL		0.4	0.363	0.4	0.67	0.6	0.48	0.43	0.35	0.33	0.79	0.83	0.4			0.83	
Mean OL		0.052	0.044	0.049	0.063	0.085	0.07	0.045	0.039	0.04	0.039	0.068	0.037		0.053		
Min OL		0.033	0.03	0.03	0.029	0.036	0.038	0.029	0.028	0.027	0.028	0.027	0.025				0.025
Filter #3 / Turbidity (1 NTU) - NTU																	
Max OL		0.47	0.54	0.49	0.587	0.67	0.59	0.29	0.14	0.99	0.45	1.001	0.479			1.001	
Mean OL		0.052	0.046	0.048	0.063	0.096	0.078	0.05	0.041	0.043	0.039	0.102	0.036		0.058		
Min OL		0.036	0.032	0.03	0.03	0.04	0.04	0.02	0.029	0.028	0.027	0.02	0.024				0.02

TREATED WATER		01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Total	Avg	Max	Min
Reservoir / CI Residual: Free (0.3 mg/L) - mg/L																	
Max OL		1.78	1.73	1.85	1.74	1.62	1.48	1.59	1.86	2.14	2.08	2.89	2.44			2.89	
Mean OL		1.407	1.581	1.57	1.429	1.354	1.165	1.243	1.501	1.673	1.836	1.948	1.803		1.542		
Min OL		1.08	1.15	1.02	1.03	0.89	0.62	0.86	0.99	1.28	1.51	1.52	1.3				0.62

DISTRIBUTION WATER		01/2019	02/2019	03/2019	04/2019	05/2019	06/2019	07/2019	08/2019	09/2019	10/2019	11/2019	12/2019	Total	Avg	Max	Min
1st Bacti/Residual / CI Residual: Combined - mg/L																	
Count IH		10	7	9	9	9	8	9	9	9	9	7	9	104			
Total IH		13.16	8.02	10.53	10.02	11.8	8.97	9.77	5.95	7.071	8.34	9.05	13.57	116.251			
Max IH		1.7	1.36	1.56	1.42	1.64	1.39	1.5	1.21	1.19	1.36	1.85	1.75			1.85	
Mean IH		1.316	1.146	1.17	1.113	1.311	1.121	1.086	0.661	0.786	0.927	1.293	1.508		1.118		
Min IH		0.5	1	0.33	0.89	0.95	0.49	0.44	0.29	0.32	0.51	0.7	0.81				0.29
2nd Bacti/Residual / CI Residual: Combined - mg/L																	
Count IH		10	7	9	9	9	8	9	9	9	9	8	9	105			
Total IH		9.75	7.7	11.03	9.82	10.73	8.4	9	6.26	8.73	9.63	10.55	11.63	113.23			
Max IH		1.82	1.5	1.78	1.62	1.46	1.56	1.32	1.2	1.44	1.81	1.86	1.85			1.86	
Mean IH		0.975	1.1	1.226	1.091	1.192	1.05	1	0.696	0.97	1.07	1.319	1.292		1.078		
Min IH		0.51	0.66	0.57	0.41	0.74	0.84	0.64	0.26	0.29	0.34	0.81	0.54				0.26
3rd Bacti/Residual / CI Residual: Combined - mg/L																	
Count IH		9	7	9	9	9	8	9	9	9	9	8	9	104			
Total IH		9.13	6.72	10.33	9.08	11.84	9.48	8.58	9.38	7.12	12.32	12.41	13.03	119.42			
Max IH		1.96	1.14	1.63	1.51	1.61	1.7	1.28	1.41	1.48	1.75	1.9	1.9			1.96	
Mean IH		1.014	0.96	1.148	1.009	1.316	1.185	0.953	1.042	0.791	1.369	1.551	1.448		1.148		
Min IH		0.49	0.69	0.38	0.61	1.08	0.67	0.59	0.28	0.3	0.63	0.75	0.42				0.28
4th Residual / CI Residual: Combined - mg/L																	
Count IH		4	4	4	5	4	4	5	4	5	4	5	5	53			
Total IH		3.97	2.36	4.14	4.22	6.02	3.99	5	2.13	3.53	3.79	5.71	5.73	50.59			
Max IH		1.4	0.89	1.38	1.22	1.68	1.12	1.19	1.11	1.4	1.53	1.69	1.69			1.69	
Mean IH		0.992	0.59	1.035	0.844	1.505	0.998	1	0.533	0.706	0.948	1.142	1.146		0.955		
Min IH		0.66	0.29	0.3	0.55	1.42	0.9	0.57	0.28	0.31	0.58	0.68	0.8				0.28