

Gore Bay Water Treatment

Large Municipal Residential Drinking Water System

January 1, 2018 – December 31, 2018

O.Reg 170/03 Schedule 22 Summary Report

O.Reg 170/03 Section 11 Annual Report

&

O.Reg 387/04 Annual Record of Water Taking

Prepared by the Ontario Clean Water Agency
For The Corporation of the Town of Gore Bay



Ontario Clean Water Agency
Agence Ontarienne Des Eaux



Drinking-Water System Number: 210002208
Drinking-Water System Name: GORE BAY DRINKING WATER SYSTEM
Drinking-Water System Owner: The Corporation of the Town of Gore Bay
Drinking-Water System Category: Large Municipal Residential

SECTION 1: INTRODUCTION

This document is prepared in accordance with Section 11 and Schedule 22 of O.Reg.170/03 under the Safe Drinking Water Act and with Section 9 of O.Reg.387/04 under the Ontario Water Resources Act. The reports are prepared by the Ontario Clean Water Agency. Acronyms and definitions can be found at the end of the report..

A copy of the Summary Report must be provided to the members of the municipal council by March 31, 2019.

SECTION 2: REQUIREMENTS OF THE REPORTS

Schedule 22 Report

The report must list the requirements of the Act, the regulations, the system's approval and any order that the system **failed to meet** at any time during the period covered by the report. 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.

For the purpose of enabling the owner of the system to assess the rated capability of their system to meet existing and future planned water uses, the following information is required to be included in this report:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the systems approval.

Section 11 Report

The annual report must contain the following:

- A brief description of the drinking water system and a list of chemicals used by the system.
- A description of any major expenses incurred during the period covered by the report to install, repair or replace required equipment.
- A summary of all adverse water quality incidents (AWQI) reported to the Ministry
- A summary of corrective actions taken in response all AWQIs
- A summary of all test results required under the regulation, under an approval, municipal drinking water licence or order, including an OWRA order.
- A statement of where a Schedule 22 report will be available for inspection.

The report must be prepared not later than February 28 of the following year.

Regulation 387 Report

On or before March 31 in every year, every holder of a permit to take water (PTTW) shall submit to a Director the data collected and recorded for the previous year.

A record of annual water taking can be found in [Appendix A](#).



SECTION 3: SCHEDULE 22 REPORT

Flows - Treated

In accordance with the Municipal Drinking Water License (MDWL), the Gore Bay WTP shall not be operated to exceed a maximum flow of 1250 m³/d to the distribution system.

The highest daily treated water maximum flow was 1393.4 m³ in July and represents 109% of capacity.

The quantity of treated water supplied during the reporting period **did** exceed the rated maximum capacity.

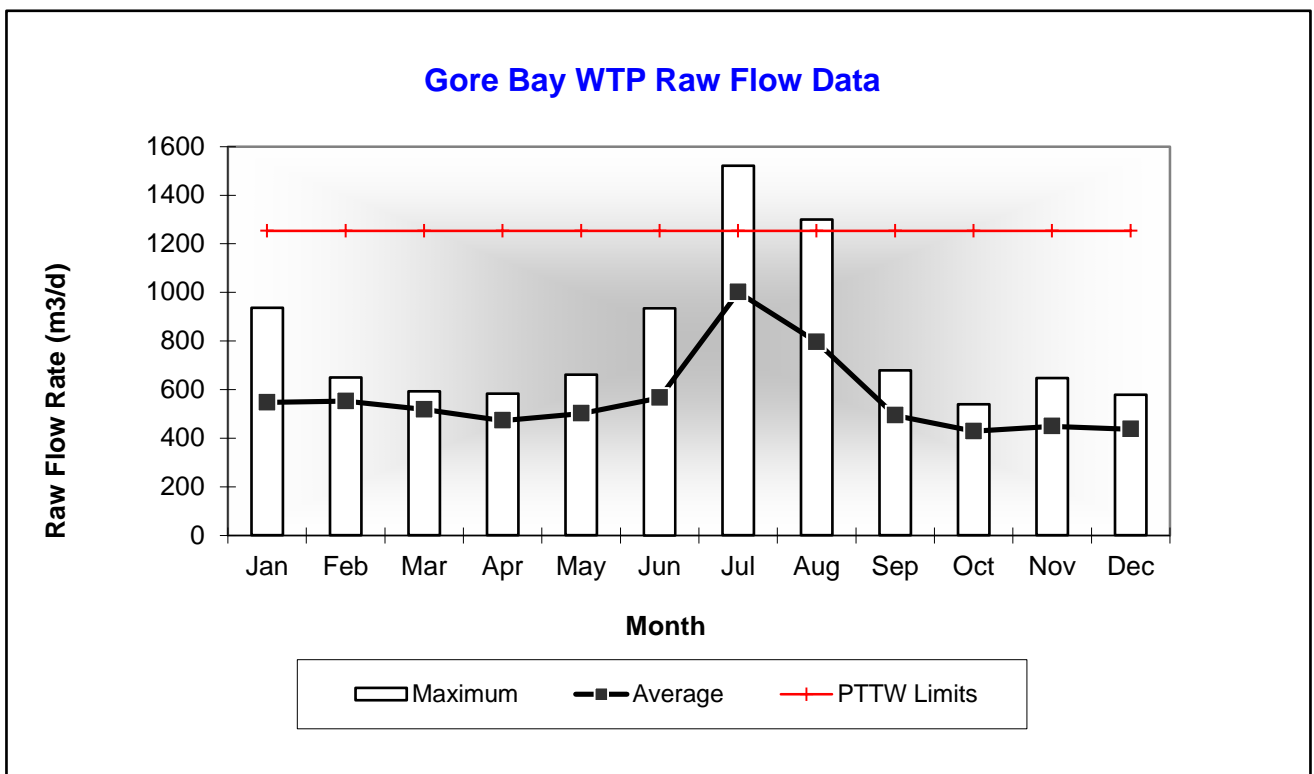
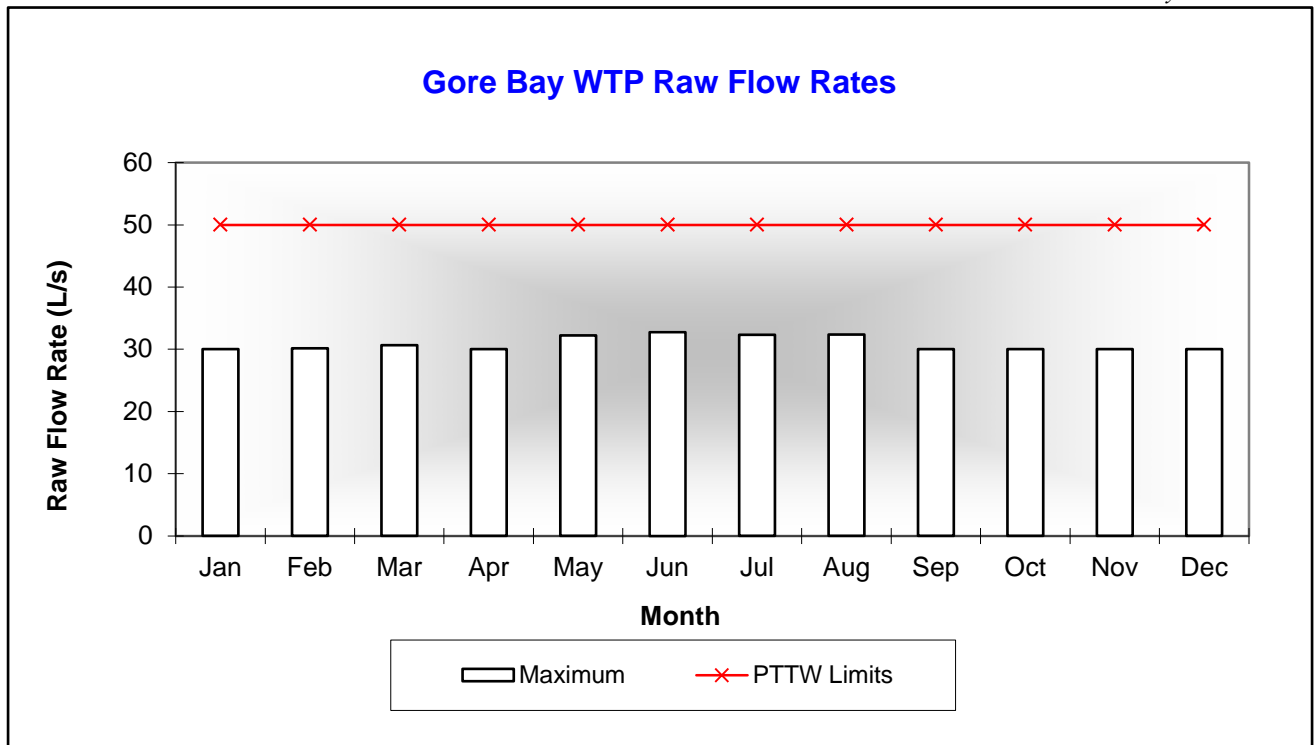
Flows – Raw

Daily raw maximum instantaneous flow is stated in the PTTW at a maximum rate of flow of 50 L/s and a maximum daily volume of 1252.8 m³/d.

The average monthly raw water flow for this reporting period was 564.41m³/d. The maximum daily flow was 1520.3 m³/d representing 121.4% of water taking limits.

The quantity of raw water taken **did** exceed the limits stipulated within the PTTW.

<i>RAW WATER FLOW DATA - TOTAL ALL SOURCES</i>						
Month	Total Monthly Flow (m ³)	Average Flow (m ³ /d)	Maximum Flow (m ³ /d)	Maximum Flow Rate (L/s)	Limits	
					L/s (PTTW)	m ³ /d (PTTW)
January	16,957.7	547.02	935.7	30	50	1252.8
February	15,466.8	552.39	649	30.13	50	1252.8
March	16,071.1	518.42	592	30.63	50	1252.8
April	14,174.2	472.47	582.4	30	50	1252.8
May	15,545.4	501.46	660.5	32.2	50	1252.8
June	16,980.3	566.01	934.6	32.77	50	1252.8
July	31,022	1,000.71	1,520.3	32.3	50	1252.8
August	24,679.8	769.12	1,298.9	32.34	50	1252.8
September	14,817	493.9	678.2	30	50	1252.8
October	13,287.9	428.64	538.7	30	50	1252.8
November	13,463.3	448.78	646.6	30	50	1252.8
December	13,542.8	436.86	577.9	30	50	1252.8
Total	206,008.3					
Average		564.41				
Maximum			1,520.3	32.77	50	1252.8





Annual Raw Water Review

Raw Water Taking	Total Taking (m3/d)	Average Day (m3/d)	Max Day (m3/d)	Max Day % of PTTW allowable 1,252.8 (m3/d)
2018	206,008.3	564.41	1,520.3	121.4 %
2017	179,542.7	491.9	1,562.3	124.7 %
2016	186,284	509	913	73.0 %
2015	198,314	543	1,885	150.8 %
2014	248,166	680	1,755	140.4 %
2013	268,916	737	1,247	99.8 %
2012	250,156	683	1,118	89.4 %

System Failures and Corrective Actions

The latest inspection of the drinking water facility took place on **June 28, 2018**. The facility scored **0/713** providing a rating of **100%**.

AWQIs reported to the Ministry

Incident Date	Parameter	Result	Unit of Measure	Corrective Action/Comment	Corrective Action Date
20-Nov-18	TC	1	CFU	AWQI#143929 for 1 TC on a distribution sample. Operator collected two sets of bacti samples	20-Nov-18

SECTION 4: SECTION 11 REPORT

Information to be provided

Population Served 867 (Stats Canada – 2016)	
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
Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.	Town of Gore Bay, Municipal Office 15 Water Street Gore Bay, Ontario POP 1H0
Number of Designated Facilities served:	0
Did you provide a copy of your annual report to all Designated Facilities you serve?	NA
Number of Interested Authorities you report to:	0
Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?	NA
List all Drinking-Water Systems (if any), and their DWS Number which receive all of their drinking water from your system:	NA



Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?	NA
Indicate how you notified system users that your annual report is available, and is free of charge.	Public access/notice via a Public Library
Indicate if you notified system users that your annual report is available and is free of charge using an alternate method	Yes

Facility Description

A US Filter membrane filtration plant supplying water to the Town of Gore Bay, drawing water from the North Channel of Lake Huron, consisting of two packaged membrane units, each with 32 microfiltration membrane modules, chlorine contact tank, clean water reservoir and high lift pump well supplying the Town. The rated capacity of the system is 1250 m3/d. The plant consists of various chemical feed systems and utilizes sodium hypochlorite for disinfection. There is a 237 kW standby diesel generator to provide power during emergency situations. Non-chemical membrane wash water is returned to Gore Bay while chemical membrane wash water is neutralized and discharged to the sanitary sewer system.

Chemicals Used

Sodium Hypochlorite 12%	- Disinfection
Calcium Thiosulphate (Captor)	- De-chlorination of wastewater
Citric Acid	- Cleaner for membranes
Sodium Hydroxide	- Neutralize the citric acid before disposal

Significant Expenses

Significant expenses incurred to

- Install required equipment
- Repair required equipment
- Replace required equipment

Work Order	Completion Date	Comment
700186	09-Mar-18	Replacement Parts Ordered and installed new chemical lines and fittings
781750	18-May-18	CMF 2 Ordered two new CMF filter boots. One for stock and one to replace on the unit

Adverse Water Quality Incidents

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action/Comment	Corrective Action Date
20-Nov-18	TC	1	CFU	AWQI#143929 for 1 TC on a distribution sample. Operator collected two sets of bacti samples	20-Nov-18



Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03.

	No. of Samples Collected	Range of E.Coli		Range of Total Coliform Results		Number of HPC Samples	Range of HPC Results	
		Min #	Max #	Min #	Max #		Min #	Max #
Raw Water	52	0	9	0	159	N/A	N/A	N/A
Treated Water	52	0	0	0	0	52	0	114
Distribution	116	0	0	0	1	53	0	1260

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03

	No. of Samples Collected	Range of Results		Units of Measure
		Minimum	Maximum	
Turbidity – Filter 1	8760	0.02	0.12	NTU
Turbidity – Filter 2	8760	0.02	0.25	NTU
Free Chlorine Residual – TW	8760	0.82	3.21	mg/L
Free Chlorine Residual – DW 1	103	0.49	1.78	mg/L
Free Chlorine Residual – DW 2	104	0.65	1.88	mg/L
Free Chlorine Residual – DW 3	104	0.7	1.71	mg/L
Free Chlorine Residual – DW 4	53	0.62	1.68	mg/L

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter and limits	Month Sampled	Day Sampled	Result Filter 1	Result Filter 2	Unit of Measure	
MDWL 258-101 24-May-11 Renewed on May 20, 2016	Backwash (BW) Total Suspended Solids (TSS) 25 mg/L annual average	Jan	2	8	11	mg/L	
		Feb					
		Mar					
		Apr	3	4	7	mg/L	
		May					
		Jun					
		Jul	3	17	20	mg/L	
		Aug					
		Sep					
		Oct	1	13	21	mg/L	
		Nov					
		Dec					
		Annual Average				8.67	14.75



Summary of Inorganic parameters tested during this reporting period or the most recent sample results

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW	2018/01/02	0.03	6.0	No	No
Arsenic: As (ug/L) - TW	2018/01/02	0.4	25.0	No	No
Barium: Ba (ug/L) - TW	2018/01/02	12.4	1000.0	No	No
Boron: B (ug/L) - TW	2018/01/02	12.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2018/01/02	0.01	5.0	No	No
Chromium: Cr (ug/L) - TW	2018/01/02	0.18	50.0	No	No
Mercury: Hg (ug/L) - TW	2018/01/02	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2018/01/02	0.14	10.0	No	No
Uranium: U (ug/L) - TW	2018/01/02	0.167	20.0	No	No

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Fluoride (mg/L) - TW	2016/01/05	0.07	1.5	No	No
Nitrite (mg/L) - TW	2018/01/02	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/04/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/07/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/10/01	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2018/01/02	0.254	10.0	No	No
Nitrate (mg/L) - TW	2018/04/03	0.242	10.0	No	No
Nitrate (mg/L) - TW	2018/07/03	0.234	10.0	No	No
Nitrate (mg/L) - TW	2018/10/01	0.21	10.0	No	No
Sodium: Na (mg/L) - TW	2016/01/05	5.48	20*	No	No

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Summary of Lead testing under Schedule 15.1 during this reporting period

Location Type	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Distribution - Lead Results (ug/L)	4	0.17	1.12	10	N/A
Distribution - Alkalinity (mg/L)	4	64	66	N/A	N/A
Distribution - pH In-House	4	7.40	7.80	N/A	N/A



Summary of Organic parameters sampled during this reporting period or the most recent results

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2018/01/02	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2018/01/02	0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2018/01/02	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2018/01/02	<MDL 0.32	5.00	No	No
Benzo(a)pyrene (ug/L) - TW	2018/01/02	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2018/01/02	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2018/01/02	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2018/01/02	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2018/01/02	<MDL 0.16	5.00	No	No
Chlorpyrifos (ug/L) - TW	2018/01/02	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2018/01/02	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2018/01/02	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2018/01/02	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2018/01/02	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2018/01/02	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2018/01/02	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2018/01/02	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2018/01/02	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2018/01/02	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2018/01/02	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2018/01/02	<MDL 0.03	20.00	No	No
Diquat (ug/L) - TW	2018/01/02	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2018/01/02	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2018/01/02	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2018/01/02	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW	2018/01/02	<MDL 0.01	50.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (mg/L) - TW	2018/01/02	<MDL 0.02	N/A	N/A	N/A
Metribuzin (ug/L) - TW	2018/01/02	<MDL 0.3	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2018/01/02	<MDL 1.0	80.00	No	No
Paraquat (ug/L) - TW	2018/01/02	<MDL 0.04	10.00	No	No
PCB (ug/L) - TW	2018/01/02	<MDL 0.15	3.00	No	No
Pentachlorophenol (ug/L) - TW	2018/01/02	<MDL 0.01	60.00	No	No
Phorate (ug/L) - TW	2018/01/02	<MDL 1.0	2.00	No	No
Picloram (ug/L) - TW	2018/01/02	<MDL 0.03	190.00	No	No
Prometryne (ug/L) - TW	2018/01/02	<MDL 0.01	1.00	No	No
Simazine (ug/L) - TW	2018/01/02	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2018/01/02	<MDL 0.35	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2018/01/02	<MDL 0.2	30.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2018/01/02	<MDL 0.01	100.00	No	No
Triallate (ug/L) - TW	2018/01/02	<MDL 0.44	230.00	No	No
Trichloroethylene (ug/L) - TW	2018/01/02	<MDL 0.25	50.00	No	No



2,4,6-Trichlorophenol (ug/L) - TW	2018/01/02	<MDL 0.12	5.00	No	No
Trifluralin (ug/L) - TW	2018/01/02	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2018/01/02	<MDL 0.17	2.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	2018/12/31	58.5	100.00	No	Yes
HAA Total (ug/L) Annual Average – DW1	2018/12/31	46.5		N/A	N/A

SECTION 5: RAW WATER SUBMISSIONS

Raw water flows were submitted to the Ministry on [February 7, 2019](#).

SECTION 6: CONCLUSION

The Gore Bay WTP delivers water that, in all its treated and distribution samples, indicates the water to be free of bacteriological contamination.

For the 2018 operating year, the Gore Bay WTP did exceed daily regulatory water taking limits but did not exceed PTTW flow rates. With the installation of a new splash pad and a very hot summer there are indications that the facility is having trouble meeting demands without exceeding the PTTW. It is suggested that the Town considers expanding the membrane units and increasing the PTTW limits.



List of Acronyms and Definitions

Alkalinity	The capacity of water for neutralizing an acid solution
AWQI	Adverse Water Quality Incident- when a water sample test result exceeds the Ontario Drinking Water Quality Standards
Backwash	Water pumped backwards to clean filters
BWA	Boil Water Advisory; Issued when risk of contamination is possible in drinking water
CFU	Colony Forming Units
Chlorine Residual	A low level of chlorine remaining in water after disinfection occurs
DW	Distribution Water
DWA	Drinking Water Advisory; Issued when water cannot be consumed by any means
DWWP	Drinking Water Works Permit - provides a description of the overall system
E.Coli	Bacteria used as indicators to measure the degree of pollution and sanitary quality of water
GUDI 170/03	Groundwater Under Direct Influence – Considered to be surface water under O.Reg
HPC	Heterotrophic Plant Count
L/s	Litres per Second
m ³ /d	Cubic Metres per Day
MAC	Maximum Acceptable Concentration
MDL	Minimum Detection Level
MDWL requirements	Municipal Drinking Water Licence - relates to the operation and performance
mg/L	Miligrams per Litre
Ministry	Ministry of the Environment and Climate Change
MOECC	Ministry of the Environment and Climate Change
O.Reg	Ontario Regulation
PTTW water	Permit to Take Water – Permit which allows water taking from groundwater or surface
RW	Raw Water
TC	Total Coliforms
TSS	Total Suspended Solids
Turbidity	Cloudiness or haziness of water
TW	Treated Water



Appendix A

Raw Water Flows

Ontario Clean Water Agency
Annual Water Taking and Transfer Report
 From 01/01/2018 To 12/31/2018

Facility: GORE BAY DRINKING WATER SYSTEM-1112
 Tag: Raw Flow: Sum (m3/d)
 Tag Group: Raw Water

Permit#: 7461-AK4JRX
 Source Name: Lake Huron
 Source: Lake
 Type:
 Purpose: Other - Water Supply

Coordinate Zone: 17
 Easting: 386484
 Northing: 5086993
 Method deter: Metered

Date Measured	Value (m³/d)	Value (Litres)
01/01/2018	550.6000	550600.0000
02/01/2018	524.5000	524500.0000
03/01/2018	489.6000	489600.0000
04/01/2018	486.8000	486800.0000
05/01/2018	536.7000	536700.0000
06/01/2018	502.4000	502400.0000
07/01/2018	532.2000	532200.0000
08/01/2018	935.7000	935700.0000
09/01/2018	565.4000	565400.0000
10/01/2018	628.0000	628000.0000
11/01/2018	695.0000	695000.0000
12/01/2018	519.3000	519300.0000
13/01/2018	667.4000	667400.0000
14/01/2018	522.4000	522400.0000
15/01/2018	515.8000	515800.0000
16/01/2018	580.9000	580900.0000
17/01/2018	451.4000	451400.0000
18/01/2018	520.6000	520600.0000
19/01/2018	568.2000	568200.0000
20/01/2018	562.6000	562600.0000
21/01/2018	557.5000	557500.0000
22/01/2018	471.2000	471200.0000
23/01/2018	471.1000	471100.0000
24/01/2018	538.3000	538300.0000
25/01/2018	544.7000	544700.0000
26/01/2018	521.6000	521600.0000
27/01/2018	449.2000	449200.0000
28/01/2018	565.9000	565900.0000
29/01/2018	577.7000	577700.0000
30/01/2018	466.8000	466800.0000
31/01/2018	438.2000	438200.0000
01/02/2018	556.2000	556200.0000
02/02/2018	463.3000	463300.0000
03/02/2018	524.3000	524300.0000
04/02/2018	544.1000	544100.0000
05/02/2018	498.1000	498100.0000
06/02/2018	443.9000	443900.0000
07/02/2018	567.2000	567200.0000
08/02/2018	570.5000	570500.0000
09/02/2018	559.1000	559100.0000
10/02/2018	572.0000	572000.0000
11/02/2018	644.3000	644300.0000

12/02/2018	610.3000	610300.0000
13/02/2018	583.1000	583100.0000
14/02/2018	432.8000	432800.0000
15/02/2018	578.1000	578100.0000
16/02/2018	560.2000	560200.0000
17/02/2018	574.7000	574700.0000
18/02/2018	473.4000	473400.0000
19/02/2018	649.0000	649000.0000
20/02/2018	513.9000	513900.0000
21/02/2018	522.2000	522200.0000
22/02/2018	632.3000	632300.0000
23/02/2018	575.7000	575700.0000
24/02/2018	551.5000	551500.0000
25/02/2018	531.3000	531300.0000
26/02/2018	516.6000	516600.0000
27/02/2018	608.4000	608400.0000
28/02/2018	610.3000	610300.0000
01/03/2018	546.3000	546300.0000
02/03/2018	551.3000	551300.0000
03/03/2018	562.7000	562700.0000
04/03/2018	535.6000	535600.0000
05/03/2018	587.0000	587000.0000
06/03/2018	483.5000	483500.0000
07/03/2018	524.5000	524500.0000
08/03/2018	518.1000	518100.0000
09/03/2018	501.0000	501000.0000
10/03/2018	533.6000	533600.0000
11/03/2018	463.0000	463000.0000
12/03/2018	484.4000	484400.0000
13/03/2018	551.8000	551800.0000
14/03/2018	504.6000	504600.0000
15/03/2018	531.3000	531300.0000
16/03/2018	420.0000	420000.0000
17/03/2018	508.2000	508200.0000
18/03/2018	512.7000	512700.0000
19/03/2018	525.7000	525700.0000
20/03/2018	515.7000	515700.0000
21/03/2018	515.1000	515100.0000
22/03/2018	502.9000	502900.0000
23/03/2018	507.5000	507500.0000
24/03/2018	537.4000	537400.0000
25/03/2018	519.5000	519500.0000
26/03/2018	506.2000	506200.0000
27/03/2018	491.2000	491200.0000
28/03/2018	592.0000	592000.0000
29/03/2018	511.4000	511400.0000
30/03/2018	462.6000	462600.0000
31/03/2018	564.3000	564300.0000
01/04/2018	491.4000	491400.0000
02/04/2018	497.6000	497600.0000
03/04/2018	256.2000	256200.0000
04/04/2018	485.7000	485700.0000
05/04/2018	500.3000	500300.0000
06/04/2018	487.7000	487700.0000
07/04/2018	500.8000	500800.0000
08/04/2018	496.3000	496300.0000
09/04/2018	518.8000	518800.0000
10/04/2018	413.5000	413500.0000
11/04/2018	490.2000	490200.0000
12/04/2018	499.4000	499400.0000
13/04/2018	484.3000	484300.0000

14/04/2018	503.7000	503700.0000
15/04/2018	477.8000	477800.0000
16/04/2018	468.9000	468900.0000
17/04/2018	460.4000	460400.0000
18/04/2018	561.0000	561000.0000
19/04/2018	427.9000	427900.0000
20/04/2018	418.1000	418100.0000
21/04/2018	559.6000	559600.0000
22/04/2018	497.9000	497900.0000
23/04/2018	447.9000	447900.0000
24/04/2018	464.7000	464700.0000
25/04/2018	474.7000	474700.0000
26/04/2018	582.4000	582400.0000
27/04/2018	393.6000	393600.0000
28/04/2018	498.5000	498500.0000
29/04/2018	336.8000	336800.0000
30/04/2018	478.1000	478100.0000
01/05/2018	660.5000	660500.0000
02/05/2018	554.7000	554700.0000
03/05/2018	428.0000	428000.0000
04/05/2018	416.3000	416299.9878
05/05/2018	520.1000	520099.9756
06/05/2018	502.9000	502899.9939
07/05/2018	490.8000	490799.9878
08/05/2018	486.9000	486899.9939
09/05/2018	493.0000	493000.0000
10/05/2018	521.1000	521099.9756
11/05/2018	426.4000	426399.9939
12/05/2018	429.1000	429100.0061
13/05/2018	518.5000	518500.0000
14/05/2018	519.9000	519900.0244
15/05/2018	479.0000	479000.0000
16/05/2018	503.3000	503299.9878
17/05/2018	555.4000	555400.0244
18/05/2018	483.9000	483899.9939
19/05/2018	429.8000	429799.9878
20/05/2018	500.2000	500200.0122
21/05/2018	500.8000	500799.9878
22/05/2018	490.5000	490500.0000
23/05/2018	528.6000	528599.9756
24/05/2018	535.8000	535799.9878
25/05/2018	486.0000	486000.0000
26/05/2018	495.9000	495899.9939
27/05/2018	333.9000	333899.9939
28/05/2018	567.9000	567900.0244
29/05/2018	645.0000	645000.0000
30/05/2018	568.5000	568500.0000
31/05/2018	472.7000	472700.0122
01/06/2018	452.5000	452500.0000
02/06/2018	447.7000	447700.0122
03/06/2018	496.0000	496000.0000
04/06/2018	483.0000	483000.0000
05/06/2018	481.8000	481799.9878
06/06/2018	487.1000	487100.0061
07/06/2018	516.6000	516599.9756
08/06/2018	482.0000	482000.0000
09/06/2018	503.5000	503500.0000
10/06/2018	581.4000	581400.0244
11/06/2018	575.2000	575200.0122
12/06/2018	570.4000	570400.0244
13/06/2018	500.8000	500799.9878

14/06/2018	567.5000	567500.0000
15/06/2018	540.4000	540400.0244
16/06/2018	535.0000	535000.0000
17/06/2018	559.5000	559500.0000
18/06/2018	510.8000	510799.9878
19/06/2018	499.0000	499000.0000
20/06/2018	506.4000	506399.9939
21/06/2018	484.8000	484799.9878
22/06/2018	650.1000	650099.9756
23/06/2018	546.8000	546799.9878
24/06/2018	493.2000	493200.0122
25/06/2018	665.4000	665400.0244
26/06/2018	546.6000	546599.9756
27/06/2018	734.3000	734299.9878
28/06/2018	785.8000	785799.9878
29/06/2018	842.1000	842099.9756
30/06/2018	934.6000	934599.9756
01/07/2018	947.4000	947400.0244
02/07/2018	839.0000	839000.0000
03/07/2018	1066.2000	1066199.9512
04/07/2018	1023.2000	1023200.0122
05/07/2018	920.0000	920000.0000
06/07/2018	1114.0000	1114000.0000
07/07/2018	957.3000	957299.9878
08/07/2018	796.1000	796099.9756
09/07/2018	1288.5000	1288500.0000
10/07/2018	1363.3000	1363300.0488
11/07/2018	1089.3000	1089300.0488
12/07/2018	1123.5000	1123500.0000
13/07/2018	805.3000	805299.9878
14/07/2018	838.3000	838299.9878
15/07/2018	829.0000	829000.0000
16/07/2018	1023.7000	1023700.0122
17/07/2018	843.0000	843000.0000
18/07/2018	891.2000	891200.0122
19/07/2018	970.8000	970799.9878
20/07/2018	1024.6000	1024599.9756
21/07/2018	604.4000	604400.0244
22/07/2018	711.6000	711599.9756
23/07/2018	824.0000	824000.0000
24/07/2018	784.2000	784200.0122
25/07/2018	1042.6000	1042599.9756
26/07/2018	1065.5000	1065500.0000
27/07/2018	980.4000	980400.0244
28/07/2018	1204.2000	1204199.9512
29/07/2018	1520.3000	1520300.0488
30/07/2018	1312.1000	1312099.9756
31/07/2018	1219.0000	1219000.0000
01/08/2018	1251.7000	1251699.9512
02/08/2018	1298.9000	1298900.0244
03/08/2018	1151.1000	1151099.9756
04/08/2018	1156.2000	1156199.9512
05/08/2018	1121.1000	1121099.9756
06/08/2018	1007.9000	1007900.0244
07/08/2018	942.0001	942000.1221
08/08/2018	698.3000	698299.9878
09/08/2018	677.5000	677500.0000
10/08/2018	660.9000	660900.0244
11/08/2018	653.8000	653799.9878
12/08/2018	737.5000	737500.0000
13/08/2018	744.6000	744599.9756

14/08/2018	849.8000	849799.9878
15/08/2018	745.9000	745900.0244
16/08/2018	835.0000	835000.0000
17/08/2018	970.3000	970299.9878
18/08/2018	886.7000	886700.0122
19/08/2018	915.2000	915200.0122
20/08/2018	771.1000	771099.9756
21/08/2018	592.7000	592700.0122
22/08/2018	740.8000	740799.9878
23/08/2018	616.6000	616599.9756
24/08/2018	710.2000	710200.0122
25/08/2018	498.5000	498500.0000
26/08/2018	558.3000	558299.9878
27/08/2018	640.8000	640799.9878
28/08/2018	545.4000	545400.0244
29/08/2018	509.5000	509500.0000
30/08/2018	582.9000	582900.0244
31/08/2018	608.6000	608599.9756
01/09/2018	495.3000	495299.9878
02/09/2018	678.2000	678200.0122
03/09/2018	552.1000	552099.9756
04/09/2018	572.7000	572700.0122
05/09/2018	545.1000	545099.9756
06/09/2018	489.4000	489399.9939
07/09/2018	619.2000	619200.0122
08/09/2018	520.9000	520900.0244
09/09/2018	483.0000	483000.0000
10/09/2018	635.4000	635400.0244
11/09/2018	499.8000	499799.9878
12/09/2018	581.5000	581500.0000
13/09/2018	515.8000	515799.9878
14/09/2018	480.3000	480299.9878
15/09/2018	506.9000	506899.9939
16/09/2018	498.6000	498600.0061
17/09/2018	454.0000	454000.0000
18/09/2018	580.3000	580299.9878
19/09/2018	338.0000	338000.0000
20/09/2018	449.9000	449899.9939
21/09/2018	501.0000	501000.0000
22/09/2018	438.2000	438200.0122
23/09/2018	410.8000	410799.9878
24/09/2018	430.5000	430500.0000
25/09/2018	413.8000	413799.9878
26/09/2018	431.9000	431899.9939
27/09/2018	356.8000	356799.9878
28/09/2018	508.2000	508200.0122
29/09/2018	415.4000	415399.9939
30/09/2018	414.0000	414000.0000
01/10/2018	431.6000	431600.0061
02/10/2018	432.1000	432100.0061
03/10/2018	409.4000	409399.9939
04/10/2018	526.4000	526400.0244
05/10/2018	407.6000	407600.0061
06/10/2018	337.1000	337100.0061
07/10/2018	356.0000	356000.0000
08/10/2018	403.3000	403299.9878
09/10/2018	447.8000	447799.9878
10/10/2018	461.2000	461200.0122
11/10/2018	371.7000	371700.0122
12/10/2018	499.9000	499899.9939
13/10/2018	486.1000	486100.0061

14/10/2018	349.8000	349799.9878
15/10/2018	429.7000	429700.0122
16/10/2018	437.8000	437799.9878
17/10/2018	538.7000	538700.0122
18/10/2018	389.5000	389500.0000
19/10/2018	465.0000	465000.0000
20/10/2018	414.6000	414600.0061
21/10/2018	495.7000	495700.0122
22/10/2018	396.5000	396500.0000
23/10/2018	461.1000	461100.0061
24/10/2018	489.1000	489100.0061
25/10/2018	345.6000	345600.0061
26/10/2018	480.5000	480500.0000
27/10/2018	355.9000	355899.9939
28/10/2018	486.1000	486100.0061
29/10/2018	347.7000	347700.0122
30/10/2018	491.9000	491899.9939
31/10/2018	342.5000	342500.0000
01/11/2018	484.7000	484700.0122
02/11/2018	363.5000	363500.0000
03/11/2018	480.2000	480200.0122
04/11/2018	484.9000	484899.9939
05/11/2018	352.3000	352299.9878
06/11/2018	494.5000	494500.0000
07/11/2018	444.0000	444000.0000
08/11/2018	403.1000	403100.0061
09/11/2018	483.3000	483299.9878
10/11/2018	355.6000	355600.0061
11/11/2018	487.7000	487700.0122
12/11/2018	353.4000	353399.9939
13/11/2018	532.1000	532099.9756
14/11/2018	497.7000	497700.0122
15/11/2018	440.6000	440600.0061
16/11/2018	469.9000	469899.9939
17/11/2018	525.5000	525500.0000
18/11/2018	462.2000	462200.0122
19/11/2018	435.9000	435899.9939
20/11/2018	364.7000	364700.0122
21/11/2018	551.1000	551099.9756
22/11/2018	392.4000	392399.9939
23/11/2018	405.1000	405100.0061
24/11/2018	395.0000	395000.0000
25/11/2018	435.8000	435799.9878
26/11/2018	452.9000	452899.9939
27/11/2018	146.8000	146800.0031
28/11/2018	646.6000	646599.9756
29/11/2018	629.6000	629599.9756
30/11/2018	492.2000	492200.0122
01/12/2018	440.7000	440700.0122
02/12/2018	452.4000	452399.9939
03/12/2018	386.6000	386600.0061
04/12/2018	336.7000	336700.0122
05/12/2018	310.3000	310299.9878
06/12/2018	287.8000	287799.9878
07/12/2018	569.9000	569900.0244
08/12/2018	443.9000	443899.9939
09/12/2018	511.2000	511200.0122
10/12/2018	377.2000	377200.0122
11/12/2018	514.9000	514900.0244
12/12/2018	377.5000	377500.0000
13/12/2018	515.0000	515000.0000

14/12/2018	372.3000	372299.9878
15/12/2018	516.9000	516900.0244
16/12/2018	377.5000	377500.0000
17/12/2018	494.1000	494100.0061
18/12/2018	382.2000	382200.0122
19/12/2018	503.5000	503500.0000
20/12/2018	363.0000	363000.0000
21/12/2018	463.7000	463700.0122
22/12/2018	499.9000	499899.9939
23/12/2018	421.3000	421299.9878
24/12/2018	356.8000	356799.9878
25/12/2018	534.7000	534700.0122
26/12/2018	577.9000	577900.0244
27/12/2018	468.6000	468600.0061
28/12/2018	441.9000	441899.9939
29/12/2018	354.4000	354399.9939
30/12/2018	523.2000	523200.0122
31/12/2018	366.8000	366799.9878