

Massey 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 Township of Sables-Spanish Rivers



Ontario Clean Water Agency
Agence Ontarienne Des Eaux



Drinking-Water System Number: 220003500
Drinking-Water System Name: MASSEY DRINKING WATER SYSTEM
Drinking-Water System Owner: The Corporation of the Township of Sables-Spanish Rivers
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. It 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 Massey WTP shall not be operated to exceed a maximum daily volume of 1500 m³/d to the distribution system.

The daily treated water maximum flow was 716.6 m³ in September and represents 47.8% of capacity.

The quantity of treated water supplied during the reporting period **did not** exceed the rated maximum capacity.

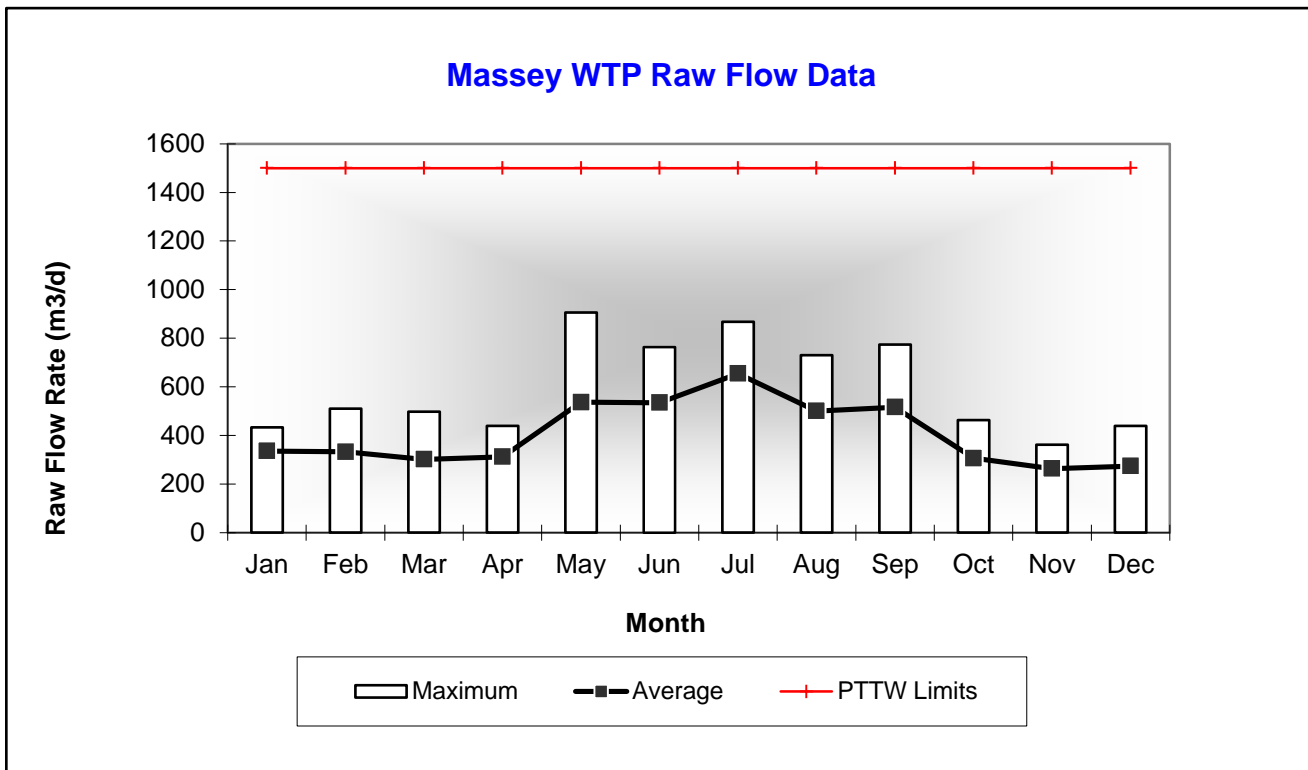
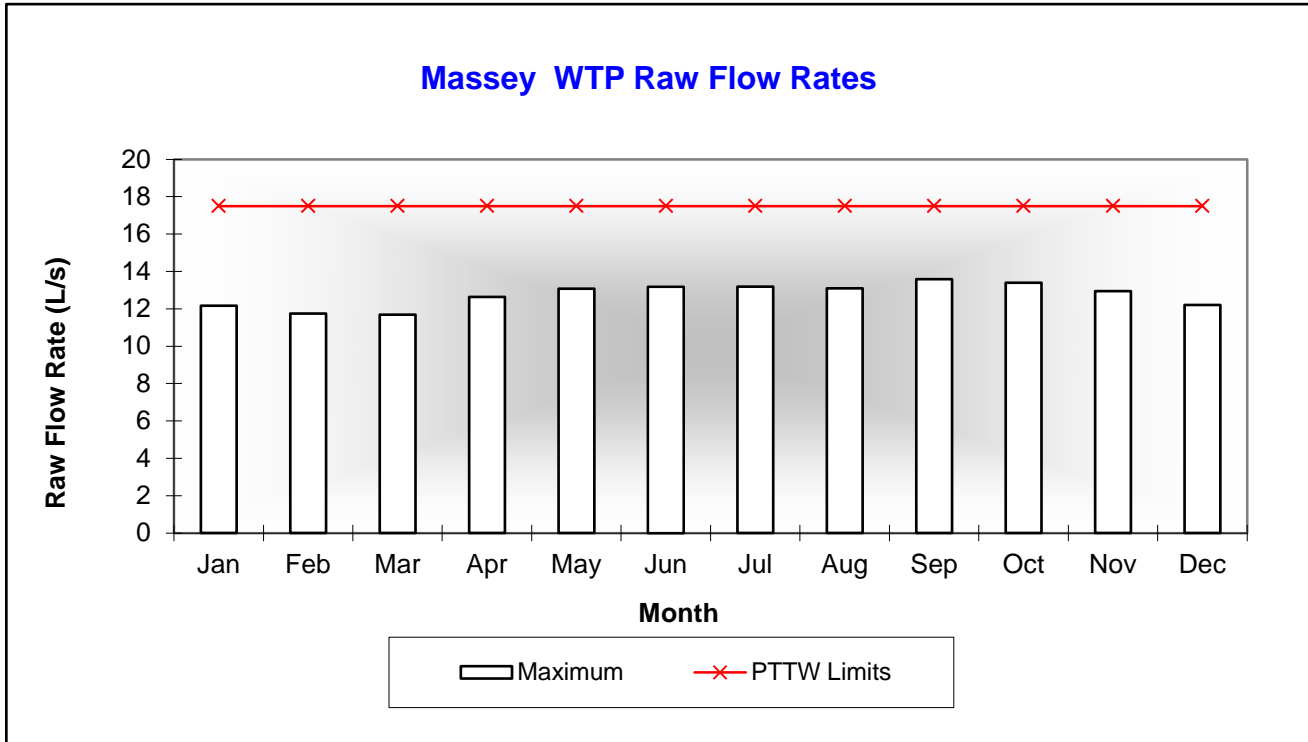
Flows - Raw

Daily raw maximum instantaneous flow is stated in the PTTW at a maximum rate of flow of 17.5 L/s and a maximum daily volume of 1500 m³/d.

The average monthly raw water flow for this reporting period was 406.14 m³/d. The maximum daily flow was 905.3m³/d representing 60.4% of water taking limits.

The quantity of raw water taken **did not** exceed any limits stipulated within the PTTW

RAW WATER FLOW DATA - TOTAL ALL SOURCES						
Month	Total Monthly Flow (m³)	Average Flow (m³/d)	Maximum Flow (m³/d)	Maximum Flow Rate (L/s)	Limits	
					L/s (PTTW)	m³/d (PTTW)
January	10,401.7	335.54	432.7	12.16	17.5	1500
February	9,306.5	332.38	509.7	11.74	17.5	1500
March	9,337.6	301.21	497.2	11.68	17.5	1500
April	9,360.6	312.02	438.8	12.63	17.5	1500
May	16,637.7	536.7	905.3	13.07	17.5	1500
June	16,035.5	534.52	763.7	13.18	17.5	1500
July	20,291.3	654.56	867.1	13.18	17.5	1500
August	15,500.9	500.03	729.7	13.09	17.5	1500
September	15,489	516.2	773.4	13.58	17.5	1500
October	9,489.7	306.12	462.6	13.39	17.5	1500
November	7,896.3	263.21	361.3	12.94	17.5	1500
December	8,498.5	274.15	438.7	12.2	17.5	1500
Total	148,242.3					
Average		406.14				
Maximum			905.3	13.58	17.5	1500





Annual Raw Water Review

Raw Water Taking	Total Taking m3/d	Average Day m3/d	Max Day m3/d	Max Day % of PTTW allowable 1500 m3/d
2018	148,242.3	406.14	905.3	60.4%
2017	156,826.1	429.66	1,134.8	75.8%
2016	166,962.4	456	1120	74.7%
2015	138663.3	380	1011	67.4%
2014	144,668.6	396	972	64.8%
2013	149,315.5	409	1097	73.1%
2012	173,698.0	474	1146	76.4%
2011	180,885.7	495	1117	74.5%

System Failures and Corrective Actions

The latest inspection of the drinking water facility took place on [December 6, 2018](#). A final inspection report has not yet been received.

AWQIs reported to the Ministry

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
N/A	N/A	N/A	N/A	N/A	N/A

SECTION 4: SECTION 11 REPORT

Information to be provided

Population Served ~900
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. Massey Municipal Office 11 Birch Lake Road Massey, Ontario POP 1P0
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:	
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?	N/A
Indicate how you notified system users that your annual report is available, and is free of charge.	NA
Indicate if you notified system users that your annual report is available and is free of charge using an alternate method	Public access/notice via the web - Public access/notice via a Public Library

Facility Description

A proprietary high rate sedimentation treatment unit, rated at 1500 m3/d and housed in the water treatment building, consisting of coagulation, ballasted sand flocculation and sedimentation in a high rate (31 m3/m2/h) plate sedimentation tank, two cell dual media filter, micro sand injection and recirculation systems, hydro cyclones for sludge/sand separation and backwash pumps and air blowers. There are five chemical dosing systems: pH adjustment, alkali adjustment, polymer addition, sodium hypochlorite addition and poly aluminum chloride addition. There are two vertical turbine high lift pumps each rated at 17.4 L/s and two vertical turbine backwash pumps each rated at 49.1 m3/min. Sludge is handled with a waste holding tank, sludge thickening tank and two sludge pumps each rated at 7.0 L/s. The thickened sludge is hauled away for disposal, while the supernatant returns to the Aux Sables River.

Chemicals Used

Poly Aluminum Chloride (PAC)	Coagulation
Magnafloc LT27 AG	Coagulation aide
Sodium Hydroxide (50%)	Alkalinity and pH control
Sodium Hypochlorite (12%)	Disinfection

Significant Expenses

Significant expenses incurred to

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

Work Order	Completion Date	Comment
781417	05-Dec-18	Process pH Ordered new electrode probe
860988	05-Dec-18	Chlorine Analyzer Ordered new electrolyte, gel cap and pH probe



941271	05-Dec-18	Filter 1 Ordered and installed a new actuator on the filter influent valve
941527	05-Dec-18	Polymer System Ordered and installed a new water carry solenoid/valve

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	Comment / Corrective Action	Corrective Action Date
N/A	N/A	N/A	N/A	N/A	N/A

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	Range of HPC Results	
		Min #	Max #	Min #	Max #		Collected	Min #
Raw Water	52	0	55	7	640			
Treated Water	53	0	0	0	0	52	0	6
Distribution	102	0	0	0	0	52	0	2

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, On-Line - Filter 1	8760	0	0.60	(NTU)
Turbidity, On-Line - Filter 2	8760	0	0.90	(NTU)
Free Chlorine Residual, Treated	8760	0.54	2.66	(mg/L)
Free Chlorine Residual, Distribution Location 1	103	0.39	1.71	(mg/L)
Free Chlorine Residual, Distribution Location 2	103	0.39	1.60	(mg/L)
Free Chlorine Residual, Distribution Location 3	103	0.48	1.66	(mg/L)
Free Chlorine Residual, Distribution Location 4	53	0.52	1.39	(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	Unit of Measure
MDWL 215-101	Backwash (BW) Total Suspended Solids (TSS) 25 mg/L annual average	Jan			mg/L
		Feb			mg/L
		Mar			mg/L
		Apr			mg/L
		May			mg/L
		Jun			mg/L
		Jul			mg/L
		Aug			mg/L



	Sep		mg/L
	Oct		mg/L
	Nov		mg/L
	Dec		mg/L
	Annual Average		mg/L

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	2018/01/09	<MDL 0.02	6.0	No	No
Arsenic: As (ug/L) - TW	2018/01/09	<MDL 0.2	25.0	No	No
Barium: Ba (ug/L) - TW	2018/01/09	6.67	1000.0	No	No
Boron: B (ug/L) - TW	2018/01/09	3.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2018/01/09	0.008	5.0	No	No
Chromium: Cr (ug/L) - TW	2018/01/09	0.15	50.0	No	No
Mercury: Hg (ug/L) - TW	2018/01/09	0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2018/01/09	0.05	10.0	No	No
Uranium: U (ug/L) - TW	2018/01/09	0.011	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	2016/02/03	<MDL 0.06	1.5	No	No
Nitrite (mg/L) - TW	2018/01/09	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/04/16	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/07/31	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/10/22	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2018/01/09	0.102	10.0	No	No
Nitrate (mg/L) - TW	2018/04/16	0.135	10.0	No	No
Nitrate (mg/L) - TW	2018/07/31	0.031	10.0	No	No
Nitrate (mg/L) - TW	2018/10/22	0.03	10.0	No	No
Sodium: Na (mg/L) - TW	2016/02/03	8.25	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	No. of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Distribution - Lead Results (ug/L)	4	0.06	0.40	10	0
Distribution - Alkalinity (mg/L)	4	6	9	n/a	n/a
Distribution - pH In-House	4	6.46	7.70	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	2018/01/09	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2018/01/09	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2018/01/09	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2018/01/09	<MDL 0.32	5.00	No	No
Benzo(a)pyrene (ug/L) - TW	2018/01/09	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2018/01/09	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2018/01/09	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2018/01/09	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2018/01/09	<MDL 0.16	5.00	No	No
Chlorpyrifos (ug/L) - TW	2018/01/09	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2018/01/09	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2018/01/09	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2018/01/09	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2018/01/09	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2018/01/09	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2018/01/09	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2018/01/09	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2018/01/09	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2018/01/09	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2018/01/09	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2018/01/09	<MDL 0.03	20.00	No	No
Diquat (ug/L) - TW	2018/01/09	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2018/01/09	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2018/01/09	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2018/01/09	<MDL 0.02	190.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (mg/L) - TW	2018/01/09	<MDL 0.01	N/A	N/A	N/A
Metolachlor (ug/L) - TW	2018/01/09	<MDL 0.02	50.00	No	No
Metribuzin (ug/L) - TW	2018/01/09	<MDL 0.3	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2018/01/09	<MDL 1.0	80.00	No	No
Paraquat (ug/L) - TW	2018/01/09	<MDL 0.04	10.00	No	No
PCB (ug/L) - TW	2018/01/09	<MDL 0.15	3.00	No	No
Pentachlorophenol (ug/L) - TW	2018/01/09	<MDL 0.01	60.00	No	No
Phorate (ug/L) - TW	2018/01/09	<MDL 1.0	2.00	No	No
Picloram (ug/L) - TW	2018/01/09	<MDL 0.03	190.00	No	No
Prometryne (ug/L) - TW	2018/01/09	<MDL 0.01	1.00	No	No
Simazine (ug/L) - TW	2018/01/09	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2018/01/09	<MDL 0.35	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2018/01/09	<MDL 0.2	30.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2018/01/09	<MDL 0.01	100.00	No	No
Triallate (ug/L) - TW	2018/01/09	<MDL 0.44	230.00	No	No
Trichloroethylene (ug/L) - TW	2018/01/09	<MDL 0.25	50.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2018/01/09	<MDL 0.12	5.00	No	No



Trifluralin (ug/L) - TW	2018/01/09	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2018/01/09	<MDL 0.17	2.00	No	No
DISTRIBUTION WATER					
Trihalomethane: Total (ug/L) Annual Average - DW	2018/12/31	47.75	100.00	No	No
HAA Total (ug/L) Annual Average – DW	2018/12/31	41.95		N/A	N/A

SECTION 5: RAW WATER SUBMISSIONS

Raw water flows were submitted to the Ministry on [February 12, 2019](#).

The screenshot shows the Ontario WTRIS (Water Taking Reporting Information System) interface. At the top, the Ontario logo is visible, along with the location path: "Location: WTRS / WT DATA / Input WT Record" and the ID "WTRS-WT-005". A green-bordered box contains the message: "Water Taking Data submitted successfully." Below this, a "Confirmation:" section provides the following details: "Thank you for submitting your water taking data online.", "Permit Number: 5404-83SP4L", "Permit Holder: THE CORPORATION OF THE TOWNSHIP OF SABLES-SPANISH RIVERS.", and "Received on: Feb 12, 2019 4:12 PM". A disclaimer states: "This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above." A "Return to Main Page" button is located at the bottom of the confirmation box. In the bottom right corner, the version information is displayed: "SABLES-SPANISH2 RIVERS2 | 2019/02/12", "version: v4.5.0.21 (build#: 22)", and "Last modified: 2018/09/18". The footer includes the Ontario logo, the text "This site maintained by the Government of Ontario", and the copyright notice "©2019 Queen's Printer for Ontario".

SECTION 6: CONCLUSION

The Massey 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 Massey WTP was able to meet the demand of water use without exceeding the PTTW or the MDWL.



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: MASSEY DRINKING WATER SYSTEM-6636
 Tag: Raw Flow: Sum (m3/d)
 Tag Group: Raw Water

Permit#: 5404-83SP4L
 Source Name: River Aux Sables
 Source: River
 Type:
 Purpose: Municipal

Coordinate Zone: 17
 Easting: 417083
 Northing: 5119776
 Method deter: Metered

Date Measured	Value (m³/d)	Value (Litres)
01/01/2018	313.6000	313600.0000
02/01/2018	191.6000	191600.0000
03/01/2018	425.7000	425700.0000
04/01/2018	389.8000	389800.0000
05/01/2018	228.3000	228300.0000
06/01/2018	408.2000	408200.0000
07/01/2018	316.7000	316700.0000
08/01/2018	308.3000	308300.0000
09/01/2018	289.1000	289100.0000
10/01/2018	267.6000	267600.0000
11/01/2018	274.3000	274300.0000
12/01/2018	418.0000	418000.0000
13/01/2018	320.9000	320900.0000
14/01/2018	294.8000	294800.0000
15/01/2018	306.6000	306600.0000
16/01/2018	297.2000	297200.0000
17/01/2018	321.4000	321400.0000
18/01/2018	432.7000	432700.0000
19/01/2018	392.9000	392900.0000
20/01/2018	320.1000	320100.0000
21/01/2018	336.1000	336100.0000
22/01/2018	250.4000	250400.0000
23/01/2018	414.8000	414800.0000
24/01/2018	415.7000	415700.0000
25/01/2018	346.6000	346600.0000
26/01/2018	283.2000	283200.0000
27/01/2018	338.4000	338400.0000
28/01/2018	340.3000	340300.0000
29/01/2018	338.3000	338300.0000
30/01/2018	389.5000	389500.0000
31/01/2018	430.6000	430600.0000
01/02/2018	321.2000	321200.0000
02/02/2018	297.1000	297100.0000
03/02/2018	320.8000	320800.0000
04/02/2018	299.7000	299700.0000
05/02/2018	504.6000	504600.0000
06/02/2018	280.7000	280700.0000
07/02/2018	278.4000	278400.0000
08/02/2018	264.9000	264900.0000
09/02/2018	476.9000	476900.0000
10/02/2018	357.1000	357100.0000
11/02/2018	347.8000	347800.0000

12/02/2018	270.1000	270100.0000
13/02/2018	257.2000	257200.0000
14/02/2018	509.7000	509700.0000
15/02/2018	298.5000	298500.0000
16/02/2018	288.0000	288000.0000
17/02/2018	277.8000	277800.0000
18/02/2018	428.2000	428200.0000
19/02/2018	335.9000	335900.0000
20/02/2018	283.1000	283100.0000
21/02/2018	263.3000	263300.0000
22/02/2018	252.0000	252000.0000
23/02/2018	332.9000	332900.0000
24/02/2018	429.1000	429100.0000
25/02/2018	327.5000	327500.0000
26/02/2018	244.0000	244000.0000
27/02/2018	382.1000	382100.0000
28/02/2018	377.9000	377900.0000
01/03/2018	325.5000	325500.0000
02/03/2018	187.8000	187800.0000
03/03/2018	497.2000	497200.0000
04/03/2018	318.6000	318600.0000
05/03/2018	272.2000	272200.0000
06/03/2018	264.9000	264900.0000
07/03/2018	265.7000	265700.0000
08/03/2018	267.1000	267100.0000
09/03/2018	367.8000	367800.0000
10/03/2018	393.1000	393100.0000
11/03/2018	268.4000	268400.0000
12/03/2018	256.7000	256700.0000
13/03/2018	251.3000	251300.0000
14/03/2018	296.1000	296100.0000
15/03/2018	263.9000	263900.0000
16/03/2018	248.7000	248700.0000
17/03/2018	453.7000	453700.0000
18/03/2018	303.0000	303000.0000
19/03/2018	257.3000	257300.0000
20/03/2018	258.9000	258900.0000
21/03/2018	254.1000	254100.0000
22/03/2018	259.5000	259500.0000
23/03/2018	261.4000	261400.0000
24/03/2018	309.8000	309800.0000
25/03/2018	439.0000	439000.0000
26/03/2018	284.4000	284400.0000
27/03/2018	294.5000	294500.0000
28/03/2018	288.2000	288200.0000
29/03/2018	292.1000	292100.0000
30/03/2018	338.5000	338500.0000
31/03/2018	298.2000	298200.0000
01/04/2018	329.2000	329200.0000
02/04/2018	285.0000	285000.0000
03/04/2018	391.1000	391100.0000
04/04/2018	373.8000	373800.0000
05/04/2018	263.7000	263700.0000
06/04/2018	268.7000	268700.0000
07/04/2018	325.2000	325200.0000
08/04/2018	301.5000	301500.0000
09/04/2018	259.0000	259000.0000
10/04/2018	438.8000	438800.0000
11/04/2018	320.4000	320400.0000
12/04/2018	260.4000	260400.0000
13/04/2018	244.6000	244600.0000

14/04/2018	294.5000	294500.0000
15/04/2018	276.3000	276300.0000
16/04/2018	389.1000	389100.0000
17/04/2018	360.0000	360000.0000
18/04/2018	286.6000	286600.0000
19/04/2018	149.5000	149500.0000
20/04/2018	424.8000	424800.0000
21/04/2018	308.4000	308400.0000
22/04/2018	321.3000	321300.0000
23/04/2018	314.4000	314400.0000
24/04/2018	318.3000	318300.0000
25/04/2018	305.7000	305700.0000
26/04/2018	304.6000	304600.0000
27/04/2018	371.8000	371800.0000
28/04/2018	285.5000	285500.0000
29/04/2018	306.0000	306000.0000
30/04/2018	282.4000	282400.0000
01/05/2018	282.5000	282500.0000
02/05/2018	438.4000	438400.0000
03/05/2018	226.9000	226899.9939
04/05/2018	218.0000	218000.0000
05/05/2018	321.8000	321799.9878
06/05/2018	150.8000	150800.0031
07/05/2018	305.5000	305500.0000
08/05/2018	180.2000	180199.9969
09/05/2018	741.7000	741700.0122
10/05/2018	624.5000	624500.0000
11/05/2018	518.5000	518500.0000
12/05/2018	619.7000	619700.0122
13/05/2018	479.4000	479399.9939
14/05/2018	626.1000	626099.9756
15/05/2018	808.9000	808900.0244
16/05/2018	869.3000	869299.9878
17/05/2018	821.0000	821000.0000
18/05/2018	797.8000	797799.9878
19/05/2018	759.9000	759900.0244
20/05/2018	775.1000	775099.9756
21/05/2018	850.2000	850200.0122
22/05/2018	905.3000	905299.9878
23/05/2018	534.2000	534200.0122
24/05/2018	587.0000	587000.0000
25/05/2018	344.8000	344799.9878
26/05/2018	303.3000	303299.9878
27/05/2018	489.8000	489799.9878
28/05/2018	552.5000	552500.0000
29/05/2018	508.0000	508000.0000
30/05/2018	617.7000	617700.0122
31/05/2018	378.9000	378899.9939
01/06/2018	395.8000	395799.9878
02/06/2018	434.9000	434899.9939
03/06/2018	403.0000	403000.0000
04/06/2018	351.4000	351399.9939
05/06/2018	421.2000	421200.0122
06/06/2018	372.9000	372899.9939
07/06/2018	489.4000	489399.9939
08/06/2018	435.5000	435500.0000
09/06/2018	630.3000	630299.9878
10/06/2018	598.4000	598400.0244
11/06/2018	692.3000	692299.9878
12/06/2018	683.3000	683299.9878
13/06/2018	451.4000	451399.9939

14/06/2018	442.1000	442100.0061
15/06/2018	479.5000	479500.0000
16/06/2018	514.6000	514599.9756
17/06/2018	525.4000	525400.0244
18/06/2018	453.8000	453799.9878
19/06/2018	508.3000	508299.9878
20/06/2018	582.4000	582400.0244
21/06/2018	444.7000	444700.0122
22/06/2018	663.5000	663500.0000
23/06/2018	591.0000	591000.0000
24/06/2018	626.7000	626700.0122
25/06/2018	633.5000	633500.0000
26/06/2018	702.6000	702599.9756
27/06/2018	637.5000	637500.0000
28/06/2018	763.7000	763700.0122
29/06/2018	543.9000	543900.0244
30/06/2018	562.5000	562500.0000
01/07/2018	648.5000	648500.0000
02/07/2018	717.9000	717900.0244
03/07/2018	644.0000	644000.0000
04/07/2018	814.4000	814400.0244
05/07/2018	642.9000	642900.0244
06/07/2018	649.9000	649900.0244
07/07/2018	867.1000	867099.9756
08/07/2018	677.7000	677700.0122
09/07/2018	727.5000	727500.0000
10/07/2018	777.8000	777799.9878
11/07/2018	673.7000	673700.0122
12/07/2018	743.1000	743099.9756
13/07/2018	451.9000	451899.9939
14/07/2018	511.6000	511600.0061
15/07/2018	778.6000	778599.9756
16/07/2018	649.8000	649799.9878
17/07/2018	657.8000	657799.9878
18/07/2018	807.6000	807599.9756
19/07/2018	681.2000	681200.0122
20/07/2018	718.9000	718900.0244
21/07/2018	611.9000	611900.0244
22/07/2018	594.3000	594299.9878
23/07/2018	528.7000	528700.0122
24/07/2018	523.4000	523400.0244
25/07/2018	556.3000	556299.9878
26/07/2018	559.7000	559700.0122
27/07/2018	463.1000	463100.0061
28/07/2018	544.8000	544799.9878
29/07/2018	728.7000	728700.0122
30/07/2018	594.4000	594400.0244
31/07/2018	744.1000	744100.0000
01/08/2018	688.7000	688700.0122
02/08/2018	586.4000	586400.0244
03/08/2018	621.6000	621599.9756
04/08/2018	729.7000	729700.0122
05/08/2018	445.8000	445799.9878
06/08/2018	409.2000	409200.0122
07/08/2018	495.5000	495500.0000
08/08/2018	420.9000	420899.9939
09/08/2018	427.7000	427700.0122
10/08/2018	493.3000	493299.9878
11/08/2018	493.0000	493000.0000
12/08/2018	544.0000	544000.0000
13/08/2018	704.3000	704299.9878

14/08/2018	501.0000	501000.0000
15/08/2018	626.5000	626500.0000
16/08/2018	576.3000	576299.9878
17/08/2018	540.2000	540200.0122
18/08/2018	531.6000	531599.9756
19/08/2018	576.1000	576099.9756
20/08/2018	628.2000	628200.0122
21/08/2018	359.0000	359000.0000
22/08/2018	424.9000	424899.9939
23/08/2018	475.5000	475500.0000
24/08/2018	547.1000	547099.9756
25/08/2018	367.5000	367500.0000
26/08/2018	470.5000	470500.0000
27/08/2018	369.5000	369500.0000
28/08/2018	355.0000	355000.0000
29/08/2018	341.0000	341000.0000
30/08/2018	352.4000	352399.9939
31/08/2018	398.5000	398500.0000
01/09/2018	350.5000	350500.0000
02/09/2018	394.6000	394600.0061
03/09/2018	489.1000	489100.0061
04/09/2018	453.4000	453399.9939
05/09/2018	431.6000	431600.0061
06/09/2018	333.7000	333700.0122
07/09/2018	350.3000	350299.9878
08/09/2018	402.5000	402500.0000
09/09/2018	423.8000	423799.9878
10/09/2018	773.4000	773400.0244
11/09/2018	729.6000	729599.9756
12/09/2018	508.0000	508000.0000
13/09/2018	462.0000	462000.0000
14/09/2018	475.2000	475200.0122
15/09/2018	446.5000	446500.0000
16/09/2018	607.5000	607500.0000
17/09/2018	680.1000	680099.9756
18/09/2018	753.5000	753500.0000
19/09/2018	615.6000	615599.9756
20/09/2018	564.2000	564200.0122
21/09/2018	546.8000	546799.9878
22/09/2018	709.1000	709099.9756
23/09/2018	499.0000	499000.0000
24/09/2018	606.0000	606000.0000
25/09/2018	496.7000	496700.0122
26/09/2018	565.8000	565799.9878
27/09/2018	533.1000	533099.9756
28/09/2018	513.7000	513700.0122
29/09/2018	377.6000	377600.0061
30/09/2018	393.1000	393100.0061
01/10/2018	318.6000	318600.0061
02/10/2018	397.0000	397000.0000
03/10/2018	386.8000	386799.9878
04/10/2018	298.0000	298000.0000
05/10/2018	390.4000	390399.9939
06/10/2018	312.6000	312600.0061
07/10/2018	462.6000	462600.0000
08/10/2018	368.6000	368600.0061
09/10/2018	271.2000	271200.0122
10/10/2018	365.8000	365799.9878
11/10/2018	334.8000	334799.9878
12/10/2018	365.9000	365899.9939
13/10/2018	388.9000	388899.9939

14/10/2018	202.6000	202600.0061
15/10/2018	413.6000	413600.0061
16/10/2018	274.2000	274200.0122
17/10/2018	272.5000	272500.0000
18/10/2018	251.7000	251699.9969
19/10/2018	328.7000	328700.0122
20/10/2018	198.2000	198199.9969
21/10/2018	355.6000	355600.0061
22/10/2018	163.9000	163899.9939
23/10/2018	315.6000	315600.0061
24/10/2018	289.6000	289600.0061
25/10/2018	274.9000	274899.9939
26/10/2018	215.8000	215800.0031
27/10/2018	254.8000	254800.0031
28/10/2018	294.1000	294100.0061
29/10/2018	226.0000	226000.0000
30/10/2018	324.5000	324500.0000
31/10/2018	172.2000	172199.9969
01/11/2018	280.6000	280600.0061
02/11/2018	272.4000	272399.9939
03/11/2018	338.4000	338399.9939
04/11/2018	243.7000	243699.9969
05/11/2018	225.7000	225699.9969
06/11/2018	215.6000	215600.0061
07/11/2018	361.3000	361299.9878
08/11/2018	244.3000	244300.0031
09/11/2018	261.3000	261299.9878
10/11/2018	253.8000	253800.0031
11/11/2018	255.5000	255500.0000
12/11/2018	292.5000	292500.0000
13/11/2018	237.2000	237199.9969
14/11/2018	233.8000	233800.0031
15/11/2018	175.7000	175699.9969
16/11/2018	206.6000	206600.0061
17/11/2018	345.3000	345299.9878
18/11/2018	342.9000	342899.9939
19/11/2018	250.4000	250399.9939
20/11/2018	228.3000	228300.0031
21/11/2018	261.4000	261399.9939
22/11/2018	178.5000	178500.0000
23/11/2018	224.8000	224800.0031
24/11/2018	258.7000	258700.0122
25/11/2018	260.3000	260299.9878
26/11/2018	320.8000	320799.9878
27/11/2018	282.0000	282000.0000
28/11/2018	321.8000	321799.9878
29/11/2018	258.5000	258500.0000
30/11/2018	264.2000	264200.0122
01/12/2018	264.3000	264299.9878
02/12/2018	257.8000	257799.9878
03/12/2018	204.4000	204399.9939
04/12/2018	273.9000	273899.9939
05/12/2018	240.6000	240600.0061
06/12/2018	205.3000	205300.0031
07/12/2018	219.5000	219500.0000
08/12/2018	311.0000	311000.0000
09/12/2018	341.5000	341500.0000
10/12/2018	213.9000	213899.9939
11/12/2018	232.8000	232800.0031
12/12/2018	314.2000	314200.0122
13/12/2018	312.4000	312399.9939

14/12/2018	280.4000	280399.9939
15/12/2018	285.0000	285000.0000
16/12/2018	349.6000	349600.0061
17/12/2018	225.5000	225500.0000
18/12/2018	269.3000	269299.9878
19/12/2018	391.5000	391500.0000
20/12/2018	188.2000	188199.9969
21/12/2018	239.5000	239500.0000
22/12/2018	438.7000	438700.0122
23/12/2018	277.0000	277000.0000
24/12/2018	263.6000	263600.0061
25/12/2018	254.8000	254800.0031
26/12/2018	266.6000	266600.0061
27/12/2018	232.9000	232899.9939
28/12/2018	404.5000	404500.0000
29/12/2018	218.8000	218800.0031
30/12/2018	299.8000	299799.9878
31/12/2018	221.2000	221199.9969