



# **MATTICE DRINKING WATER SYSTEM 2019 ANNUAL COMPLIANCE AND SUMMARY REPORT**

Prepared by the Ontario Clean Water Agency  
on behalf of the Township of Mattice – Val Côté



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## INTRODUCTION

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act, 2002*. 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. Description of any major expenses incurred to install, repair or replace equipment
3. Summary of all required testing
4. Summary of any adverse water quality reports and corrective actions

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), and any Provincial Officer Order 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 two reports have been combined and presented to council as the Annual Compliance and Summary Report.

## SECTION 11 ANNUAL REPORT

### SYSTEM INFORMATION

Drinking-Water System Name:	MATTICE DRINKING WATER SYSTEM
Drinking-Water System No.:	210001781
Drinking-Water System Owner:	The Corporation of the Township of Mattice-Val Côté
Drinking-Water System Category:	Large Municipal, Residential System
Population:	600
Reporting Period:	January 1 to December 31, 2019

### REPORT AVAILABILITY

Hard Copy Available at:	Mattice - Val Côté Municipal Office; 500 Highway 11; Mattice ON POL 1T0
Electronic Copy Available:	N/A
Public Notification via:	Public access/notice

### DESCRIPTION OF THE DRINKING WATER SYSTEM

The Water Treatment System is located at 249 Parkview Avenue in the community of Mattice. The system is designed to treat raw water from the Missinaibi River for the removal of colour, turbidity and other impurities in order to provide a high quality effluent for potable and domestic use.

Raw water is introduced to the system via one of two (one standby) pumps, each rated at 11.0 L/s located in the wet well building adjacent to the river. The raw water inlet valve opens on plant start up, low clearwell level, or another control signal. The valve closes automatically on plant shutdown.

The facility houses a dual train package water treatment plant, chlorine contact tank, chemical storage, dosing equipment, high lift pumps, office, laboratory and personnel facilities. The treatment process is a completely automatic, gravity flow operation consisting of two-process trains with a treatment capacity of 905 m<sup>3</sup>/day. The trains provide flash mixing, coagulation, flocculation, and upflow clarification using settling tubes and high rate filtration through a dual media system. The filter is comprised of sand and anthracite and is backwashed when a pressure transmitter indicates total headloss, when filtered turbidity values are high, or by elapsed time. The turbidity off each filter is continuously monitored and information is relayed to the plant control panel.

Backwash water and sludge from the bottom of the clarifier is automatically removed and discharged to the sanitary sewer.

The plant is provided with five chemical storage and dosing systems: alum, sodium hydroxide, sodium hypochlorite, polymer and ammonia solution. Each system consists of a solution tank, chemical feed pumps, and a mixer where applicable.

The treated water enters a baffled chlorine contact tank (reservoir/storage) that has a capacity of 808 m<sup>3</sup> before it is distributed to the residents of Mattice. Free chlorine residual is continuously

monitored in the reservoir where primary disinfection has been achieved. Ammonium sulphate is added at the discharge of the chlorine contact tank to produce a combined chlorine residual before entering the distribution system.

Standby power consists of a 130 kW diesel generator and is located in a separate room with the ability to provide power for the entire facility including the low lift building

## WATER TREATMENT CHEMICALS USED

- Sodium hypochlorite - disinfection by chlorination
- Ammonium sulphate - disinfection by chloramination
- Aluminum sulphate - coagulation/flocculation
- Polymer - aids in coagulation/flocculation
- Sodium hydroxide or soda ash – pH and alkalinity adjustment

All treatment chemicals are NSF/ANSI approved.

## MAJOR EXPENSES INCURRED TO INSTALL, REPAIR OR REPLACE EQUIPMENT

### Capital Work – 2019

- Replaced DR2000 spectrophotometer
- Soda ash trial

## REPORTING ADVERSE TEST RESULTS AND OTHER PROBLEMS

Details on the notices required 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

Date	Details (Parameter, Limit, Result, Corrective Action, Date, etc)
AUGUST 31	<p>Loss of Pressure for Approximately 70 Minutes (AWQI 147730)</p> <p>Pressure was lost on August 31 at 11:26 and restored at approximately 12:34. The power supply on the SCADA computer failed thus draining the UPS. There was no power interruption. The operator was notified of the loss of pressure by the Township Foreman (Denis Lemieux). The operator ran the high lift pumps on hand to restore pressure to the system; could not restart the SCADA computer; ran the plant on 'panel view'. Combined chlorine residuals were taken throughout the distribution system at the grocery store (1.52 mg/L), Town Hall (1.30 mg/L), Jack's Corner Store (1.46 mg/L), and the Arena (1.45 mg/L). The operator tried several times to reach the PHU but was unable to until the following Monday due to a technical error with their phone service. SAC (Aaron Daya) was notified at 14:40. A BWA was issued and two sets of bacti samples were taken 24-48 hours apart on August 31 and September 1. When both sets of lab reports were received on September 5, the BWA was lifted. The resolution paperwork was provided to the PHU, SAC and the owner via fax.</p>

## SCHEDULE 7 - OPERATIONAL TESTING WITH CONTINUOUS MONITORING

Continuous Analyzers in Treatment Process	Number of Samples	Range of Results (min to max)	Unit of Measure	Standard
Turbidity (Filter #1)	8760	0.0 – 1.99	NTU	<1.0
Turbidity (Filter #2)	8760	0.0 – 2.00	NTU	<1.0
Chlorine (Free)	8760	0.64 – 5.00	mg/L	-

**Note:** For continuous monitors use 8760 as the number of samples.

Effective backwash procedures, including filter to waste at 0.3 NTU, are in place to ensure that the effluent turbidity requirements are met all times. The plant is configured to shutdown and creates a callout whenever turbidity reaches 1.0 NTU

## SCHEDULE 7 - OPERATIONAL TESTING IN THE DISTRIBUTION SYSTEM

Distribution System	Number of Samples	Range of Results (min to max)	Unit of Measure	Standard
Combined Chlorine	377	0.27 – 1.97	mg/L	>0.25

**Note:** A total of seven operational checks for chlorine residual in the distribution system are required each week. The owner/operating authority can continue to test one sample per day or test four (4) samples one day and three (3) on a second day. The sample sets must be collected at least 48-hours apart and samples collected on the same day must be from different locations.

## SCHEDULE 10 - MICROBIOLOGICAL TESTING

Sample Type	Number of Samples	<i>E.coli</i> Results (min to max)	Total Coliform Results (min to max)	Number of HPC Samples	Range of HPC Results (min to max)
Raw	53	<2 – 22	10 – 400	N/A	N/A
Treated	53	0 – 0	0 – 0	53	<10 – 140
Distribution	112	0 – 0	0 – 0	53	<10 – 30
MAC	-	0	0	-	-

Maximum Acceptable Concentration (MAC) applies only to treated or distribution samples

## SCHEDULE 13 - NITRATE AND NITRITE AT THE WATER TREATMENT PLANT

Date of Sample	Nitrate Result Value (mg/L)	Nitrite Result Value (mg/L)	Exceedance
January 8, 2019	0.1	<0.008	No
April 9, 2019	<0.05	<0.05	No
July 2, 2019	<0.05	<0.05	No
October 7, 2019	<0.05	<0.05	No

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

MAC for Nitrite = 1 mg/L

## SCHEDULE 13 - TOTAL TRIHALOMETHANES IN THE DISTRIBUTION SYSTEM

Date of Sample	Result (ug/L)	Running Four Quarter Average	Exceedance
January 8, 2019	46.4	-	-
January 14, 2019	49.8	-	-
February 11, 2019	51.6	65.9	No
April 9, 2019	43.0	66.1	No
July 2, 2019	90.7	56.9	No
October 7, 2019	83.0	60.8	No

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

## SCHEDULE 13 – HALOACETIC ACIDS (HAA) IN THE DISTRIBUTION SYSTEM

Date of Sample	Result (ug/L)	Running Four Quarter Average	Exceedance
January 8, 2019	68	62	-
April 9, 2019	11	50	-
July 2, 2019	89	54	-
October 7, 2019	34	51	-

HAA MAC comes into effect January 2020

## SCHEDULE 13 – SODIUM AT WATER TREATMENT PLANT

Date of Sample	Result (mg/L)	Maximum Acceptable Concentration	Exceedance
October 18, 2017	38.8	20	Yes – see note

**Note:** sample required every 60 months  
Sodium exceedances are reported if there has not been an adverse reported in the previous 57 months. The last sodium exceedance was reported in October of 2013

## SCHEDULE 13 – FLUORIDE TESTED AT WATER TREATMENT PLANT

Date of Sample	Result (mg/L)	Maximum Acceptable Concentration	Exceedance
October 18, 2017	<0.1	1.5	No

**Note:** sample required every 60 months



## SCHEDULE 15.1 – LEAD IN THE DISTRIBUTION

The Mattice water supply system qualified for the ‘Exemption from Plumbing Sampling’ as described in section 15.1-5 (9) and 15.1-5 (10) of Ontario Regulation 170/03

As such, the system was required to test for total alkalinity and pH in two distribution samples collected during the periods of December 15 to April 15 and June 15 to October 15. This testing is required in every 12-month period with lead testing in every third 12-month period.

Sampling Dates	Number of Samples	Range of Results (min to max)		
		Lead (ug/L)	pH	Alkalinity (mg/L)
<b>Winter Period</b>				
March 29, 2017	2	0.78 – 3.09	-	-
April 9, 2019	2	-	7.14 – 7.17	73 – 74
<b>Summer Period</b>				
October 4, 2017	2	0.12 – 0.25	-	-
September 24, 2019	2	-	7.10 – 7.15	78 – 82

MAC for lead is 10 ug/L

## SCHEDULE 23 - INORGANIC PARAMETERS SAMPLED AT THE WATER TREATMENT PLANT

Sample Date: October 23, 2019

Parameter	Result	MAC	MAC Exceedance	1/2 MAC Exceedance
Antimony	<0.5	6.0	No	No
Arsenic	<1.0	10.0	No	No
Barium	7.0	1000.0	No	No
Boron	4.0	5000.0	No	No
Cadmium	<0.1	5.0	No	No
Chromium	2.0	50.0	No	No
Mercury	<0.1	1.0	No	No
Selenium	<0.5	50.0	No	No
Uranium	<1.0	20.0	No	No

MAC – Maximum Acceptable Concentration

No inorganic parameter(s) exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standards (ODWS) during the reporting period

**SCHEDULE 24 - ORGANIC PARAMETERS SAMPLED AT THE WATER TREATMENT PLANT**

Sample Date: October 23, 2019

Parameter	Result	MAC	MAC Exceedance	1/2 MAC Exceedance
Alachlor	<0.228	5.0	No	No
Atrazine + N-dealkylated metabolites	<0.5	5.0	No	No
Azinphos-methyl	<0.171	20.0	No	No
Benzene	<0.1	1.0	No	No
Benzo(a)pyrene	<0.009	0.01	No	No*
Bromoxynil	<0.091	5.0	No	No
Carbaryl	<2.0	90.0	No	No
Carbofuran	<2.0	90.0	No	No
Carbon Tetrachloride	<0.2	2.0	No	No
Chlorpyrifos	<0.171	90.0	No	No
Diazinon	<0.171	20.0	No	No
Dicamba	<0.08	120.0	No	No
1,2-Dichlorobenzene	<0.2	200.0	No	No
1,4-Dichlorobenzene	<0.3	5.0	No	No
1,2-Dichloroethane	<0.2	5.0	No	No
1,1-Dichloroethylene	<0.3	14.0	No	No
Dichloromethane (Methylene Chloride)	<1.0	50.0	No	No
2,4-Dichlorophenol	<0.2	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.342	100.0	No	No
Diclofop-methyl	<0.114	9.0	No	No
Dimethoate	<0.171	20.0	No	No
Diquat	<0.2	70.0	No	No
Diuron	<8.0	150.0	No	No
Glyphosate	<20.0	280.0	No	No
Malathion	<0.171	190.0	No	No
Metolachlor	<0.114	50.0	No	No
Metribuzin	<0.114	80.0	No	No
Monochlorobenzene (Chlorobenzene)	<0.5	80.0	No	No
Paraquat	<0.2	10.0	No	No
PCB	<0.05	3.0	No	No
Pentachlorophenol	<0.3	60.0	No	No
Phorate	<0.114	2.0	No	No
Picloram	<0.08	190.0	No	No

Parameter	Result	MAC	MAC Exceedance	1/2 MAC Exceedance
Prometryne	<0.057	1.0	No	No
Simazine	<0.171	10.0	No	No
Terbufos	<0.114	1.0	No	N/A
Tetrachloroethylene	<0.3	10.0	No	No
2,3,4,6-Tetrachlorophenol	<0.3	100.0	No	No
Triallate	<0.114	230.0	No	No
Trichloroethylene	<0.2	5.0	No	No
2,4,6-Trichlorophenol	<0.2	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	<5.7	100.0	No	No
Trifluralin	<0.114	45.0	No	No
Vinyl Chloride	<0.1	1.0	No	No

Note\*: Benzo(a)pyrene – Schedule 13-5 of O. Reg. 170/03 requires increased frequency of sampling if an analytical result obtained for any of the parameters listed in Schedule 24 exceeds one half of the MAC. The Ministry has set the reporting detection limit (RDL) for Benzo[a]pyrene at 50 per cent or more of the MAC, due to the limitations of the current analytical methods to achieve lower detection limits. The RDL for benzo[a]pyrene is 0.01 ug/L. For this parameter, a licenced laboratory must be able to achieve a method detection limit (MDL) at least equal to the RDL. A positive result above their MDL would trigger increased frequency of sampling, but a result equal to their MDL would not

MAC – Maximum Acceptable Concentration

No organic parameter(s) exceeded half the standard found in Schedule 2 of the ODWS during the reporting period

#### ADDITIONAL TESTING AND SAMPLING

There are no requirements for additional sampling and testing

#### SCHEDULE 22 - SUMMARY REPORTS FOR MUNICIPALITIES

This report is a summary of water quality information for the Mattice Water Treatment System. It is published in accordance with Schedule 22 of Ontario's Drinking Water Systems Regulation 170/03 for the reporting period of January 1 to December 31, 2019 and must be submitted to members of council.

The report must include:

- Any requirements the system failed to meet during the reporting period
- A summary of quantities and flow rates and a comparison to the imposed limits

## PERMITS AND LICENCES

Municipal Drinking Water Licence (MDWL)	291-101 Issued March 3, 2016
Drinking Water Works Permit (DWWP)	291-201 Issued February 29, 2016
Permit to Take Water (PTTW)	0836-AXHN4F – expires February 21, 2028

## REQUIREMENTS THE SYSTEM FAILED TO MEET

The following table lists the requirements of the Safe Drinking Water Act (2002), the drinking water regulations, the system’s approval, drinking water works permit, municipal drinking water works licence, and any other orders applicable to the system that were not met at any time during the reporting period. This table is based on documentation available to the Ontario Clean Water Agency. The duration of the failure and details of the actions that were taken to correct the failure must be described.

Legislation	Requirement(s) the System Failed to Meet, Corrective Actions and Status
None	None that OCWA is aware of at this time

## SUMMARY OF FLOW RATES

For the purpose of enabling the owner of the system 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. Under schedule 22-2(3) of Ontario Regulation 170/03, the Summary Report must include the following:

1. A summary of the quantities and flow rates of water supplied, including the monthly average and the maximum daily flows
2. A comparison of both the average and maximum flow rate summary to the rated capacity approved in the systems approval, drinking water works permit or municipal drinking water licence

The following tables indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and the total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system’s Municipal Drinking Water Licence

## DAILY RAW WATER USAGE SUMMARY

	Maximum (L/min)	Maximum (m <sup>3</sup> /d)	Average (m <sup>3</sup> /d)	Total Usage (m <sup>3</sup> )
January	151	289	186	5,752
February	130	284	186	5,215

	Maximum (L/min)	Maximum (m <sup>3</sup> /d)	Average (m <sup>3</sup> /d)	Total Usage (m <sup>3</sup> )
March	131	265	190	5,875
April	130	277	168	5,037
May	135	254	163	5,040
June	132	286	181	5,431
July	130	284	197	6,116
August	129	334	184	5,703
September	128	251	166	4,983
October	126	231	182	5,628
November	130	278	185	5,555
December	130	243	187	5,788

## DAILY VOLUME OF TREATED WATER INTO THE DISTRIBUTION SYSTEM

	Total Usage (m <sup>3</sup> )	Average (m <sup>3</sup> /d)	Maximum (m <sup>3</sup> /d)	% Rated Capacity
January	5,258	170	193	18.7
February	4,823	172	214	19.0
March	5,413	175	194	19.3
April	4,631	154	176	17.1
May	4,910	158	181	17.5
June	4,915	164	198	18.1
July	5,537	179	211	19.7
August	5,158	166	263	18.4
September	4,843	167	191	18.5
October	5,108	165	193	18.2
November	4,970	166	190	18.3
December	5,238	169	182	18.7

## SUMMARY OF FLOW COMPARISON

### COMPARISON OF RAW FLOWS TO SYSTEM'S PERMIT TO TAKE WATER

Permit to Take Water Limits (PTTW) - maximum	1,309 m <sup>3</sup> /day	909 L/min
Average Daily Flow for 2019	181 m <sup>3</sup> /day	126 L/min
Maximum Daily Flow for 2019	334 m <sup>3</sup> /day	151 L/min
Total Raw Water Used in 2019	66,123 m <sup>3</sup>	-

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**COMPARISON OF TREATED FLOWS TO THE SYSTEM'S MUNICIPAL DRINKING WATER LICENCE**

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Rated Capacity of the Plant (MDWL)	905 m <sup>3</sup> /day	
Average Daily Flow for 2019	167 m <sup>3</sup> /day	18.5 % of the rated capacity
Maximum Daily Flow for 2019	263 m <sup>3</sup> /day	29.1 % of the rated capacity
Total Treated Water Produced in 2019	60,804 m <sup>3</sup>	

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Based on the information above, the plant is able to meet the demands of the consumers.