Barry's Bay Drinking Water System

Waterworks # 210000942
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Township of Madawaska Valley

Reporting Period of January 1st – December 31st 2021

Issued: February 25th, 2022

Revision: 0

Operating Authority:

OCWA
ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

This report has been prepared to satisfy the annual reporting requirements in O.Reg 170/03 Section 11 and Schedule 22

Table of Contents

Report Availability **1**

Compliance Report Card **1**

System Process Description **2**

Raw Source 2

Treatment 2

Distribution 3

Treatment Chemicals used during the reporting year: 3

Summary of Non-Compliance **4**

Adverse Water Quality Incidents 4

Non-Compliance 4

Non-Compliance Identified in a Ministry Inspection 4

Flows **5**

Raw Water Flows 5

Total Monthly Flows 5

Monthly Rated Flows 5

Treated Water Flows 6

Monthly Rated Flows 6

Annual Total Flow Comparison- 6

Regulatory Sample Results Summary **7**

Microbiological Testing 7

Operational Testing 7

Inorganic Parameters 7

Schedule 15 Sampling: 8

Organic Parameters 8

Additional Legislated Samples 10

Major Maintenance Summary **10**

Distribution Maintenance 11

O.Reg 319/08 Small Drinking Systems Summary **12**

Sampling Summary 12

Maintenance Highlights 12

WTRS/RSRS Data and Submission Confirmation ..... **A**

Report Availability

The annual report will be available to residents at the Township of Madawaska Valley Municipal Office and copies provided free of charge if requested. The Township of Madawaska Valley Municipal Office is located at, 85 Bay Street, Barry's Bay, Ontario.

There are no additional drinking water systems that receive water from this facility.

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1 MECP Inspection on July 19th 2021 100% Rating
Ministry of Labour Inspections	0
QEMS External Audit	1 Audit completed on September 17th 2021 by SAI Global. No major or minor non-conformances were identified.
AWQI's/BWA	0/0
Non-Compliance	0
Community Complaints	12
Spills	0
Watermain Breaks	2

System Process Description

Raw Source

Barry's Bay DWS receives raw water from Kamaniskeg Lake. The intake for the water treatment plant is roughly 823 m from shore and located approximately 12.2 m below the water surface. Raw water flows by gravity to a wet well, which equipped with a coarse screen. Three vertical turbine low lift pumps, each rated at 26.1 L/s at 19 m total dynamic head (TDH), convey water into the treatment system. A flow meter is installed on the low lift discharge header to allow accurate monitoring of water takings.

Treatment

The Barry's Bay Water Treatment Plant is a direct filtration plant. The raw water is injected with aluminum sulphate (alum), and soda ash to assist with coagulation and pH adjustment. The chemicals are mixed via inline static mixers prior to entering two (2) parallel rapid mixers, and two (2) parallel flocculation tanks. Water flows through a splitter box then is directed to three (3) dual media gravity filters. Filter effluent is disinfected using chlorine gas before entering the clearwell. The clearwells have a total volume of 260 m^3. There are three high lift constant speed drive vertical turbine pumps, each rated at 26.1 L/s at a TDH of 70 m, that supply water to the distribution system. Chlorine is injected again to maintain secondary disinfection chlorine residuals and soda ash is added for pH control just prior to leaving the plant. Flows are measured with a treated flow meter.

Process wastewater is directed to a holding tank that discharges to the sanitary sewage system for treatment at the Barry's Bay Wastewater Treatment Plant. This facility also has the ability to add polymer to aid flocculation and to add ammonia sulphate for chloramination but does not utilize these processes at this time.


Distribution

The Barry's Bay distribution system is a Class 2 Distribution System that serves a population of approximately 1300. The distribution system includes an estimated 101 fire hydrants, and a standpipe with a storage capacity of 1364 m^3 tank located at 65 Tower Hill. Levels in the stand-pipe start and stop the highlift pumps at the treatment plant. A free chlorine analyzer at the Barry's Bay Sewage Treatment Plant continuously monitors the chlorine residual in the distribution system. The distribution piping runs as far north as Parkway Ave and south as far as Lakeshore Drive. The system also extends west to Lane Street and east to Old Barry's Bay Road.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Aluminum Sulphate (Alum)	Coagulation & Flocculation	Kemira
Soda Ash	pH Adjustment	Univar
Chlorine Gas	Disinfection	Brenntag

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
None to report.						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
None to report.				

Non-Compliance Identified in a Ministry Inspection

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
None to report.				

Flows

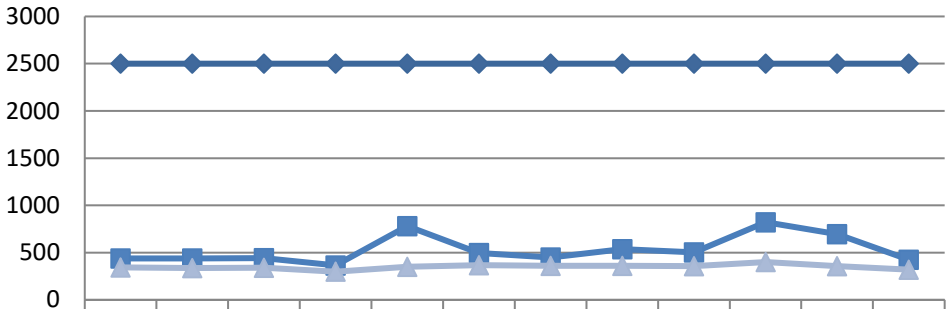
The Barry's Bay Drinking Water System is operating under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water (PTTW). 2021 Raw Flow Data was submitted to the Ministry electronically under permits #6233-8MXPXP & #P-300-1136917810. The confirmation and a copy of the data that was submitted are attached in Appendix A.

Total Monthly Flows

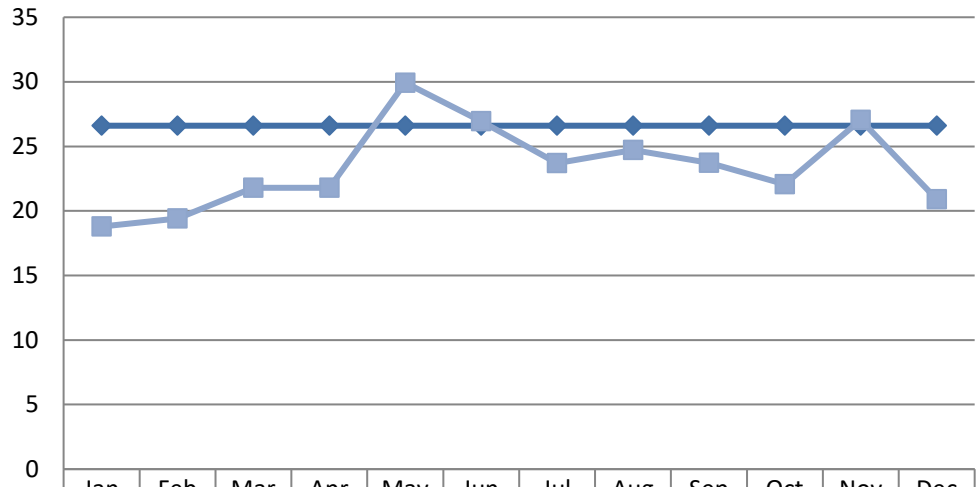
Max Allowable – PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
Max Flow (m3/d)	440	438	443	365	779	496	448	535	504	822	696	425
Avg (m3/d)	342	337	340	298	351	368	359	362	356	400	358	321

Monthly Rated Flows

Max allowable rate – PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Max Rate (L/s)	18.8	19.4	21.8	21.8	29.9	26.9	23.7	24.7	23.7	22.1	27.0	20.9

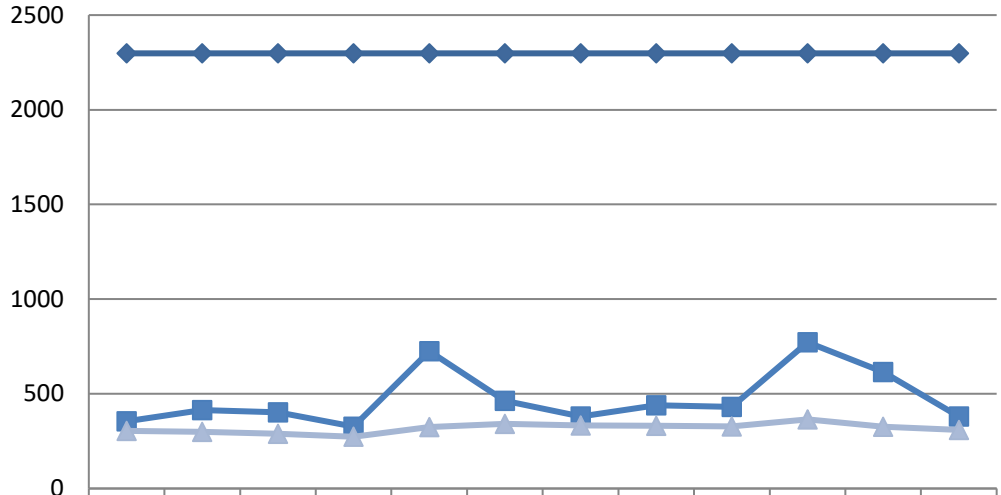
*Note spikes in flow rate that are above max allowable rate were on low lift pump start up and lasted less than a minute, events under a minute are not reportable as a PTTW exceedance

Treated Water Flows

The Treated Water flows are regulated under Municipal Drinking Water Licence (MDWL).

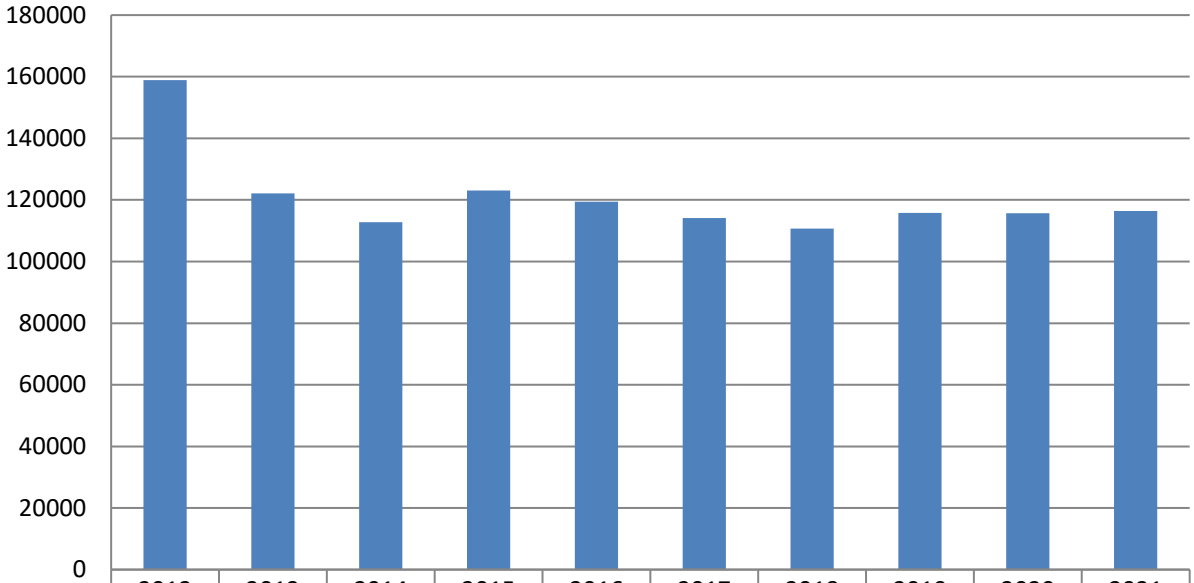
Monthly Rated Flows

Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	2298	2298	2298	2298	2298	2298	2298	2298	2298	2298	2298	2298
Max Daily Flow (m3/d)	355	414	403	327	725	464	380	440	431	772	616	381
Avg (m3/d)	304	299	289	273	325	342	334	332	328	365	327	310

Annual Total Flow Comparison-



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
WTP (m3)	158913	122154	112790	123052	119441	114102	110719	115773	115718	116453

Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	Range of E.Coli Results		Range of Total Coliform Results		Range of HPC Results	
		Min	Max	Min	Max	Min	Max
Raw Water	51*	0	19	0	91	N/A	N/A
Treated Water	52	0	0	0	0	0	2
Distribution Water	114	0	0	0	0	0	820

NOTE: 52 raw water samples were collected though the sample collected July 6th 2021 was NDOGT - No Data: Overgrown with Target Bacteria.

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	247	0.43	4.16
Turbidity, On-Line (NTU) - TW	8760	0	1.07
Turbidity, In-House (NTU) - TW	249	0.06	0.73
Turbidity, On-Line (NTU) - Filt1	8760	0	0.48
Turbidity, On-Line (NTU) - Filt2	8760	0	0.47
Turbidity, On-Line (NTU) - Filt3	8760	0	0.34
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.70	3.11
Free Chlorine Residual, In-House (mg/L) - TW	247	1.32	3.59
Distribution Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.30	2.31
Distribution Free Chlorine Residual, In-House (mg/L) - DW	129	0.23	1.86

NOTE: spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O.Reg 170/03

Inorganic Parameters

These parameters are tested as a requirement under 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- <MDL = Less than Method Detection Limit

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2021/01/11	<MDL 0.9	6.0	No	No
Arsenic: As (ug/L) - TW	2021/01/11	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2021/01/11	17.4	1000.0	No	No
Boron: B (ug/L) - TW	2021/01/11	4.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2021/01/11	0.005	5.0	No	No
Chromium: Cr (ug/L) - TW	2021/01/11	1.1	50.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Mercury: Hg (ug/L) - TW	2021/01/11	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2021/01/11	<MDL 0.04	50.0	No	No
Uranium: U (ug/L) - TW	2021/01/11	0.021	20.0	No	No
Additional Inorganics					
Nitrite (mg/L) - TW	2021/01/11	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/07/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/10/04	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2021/01/11	0.086	10.0	No	No
Nitrate (mg/L) - TW	2021/04/06	0.137	10.0	No	No
Nitrate (mg/L) - TW	2021/07/06	0.108	10.0	No	No
Nitrate (mg/L) - TW	2021/01/11	<MDL 0.003	10.0	No	No
Fluoride (mg/L) - TW	2018/01/09	<MDL 0.06	1.5	No	No
Sodium: Na (mg/L) - TW	2019/01/08	17.4	20*	No	Yes

*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 mg/L 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.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O.Reg 170/03. This system is under reduced sampling. No plumbing samples were collected.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	2	4	32	37	N/A	N/A
pH	2	4	7.05	7.53	N/A	N/A
Lead (ug/l)	2	4	0.12	3.86	10	0

Organic Parameters

These parameters are tested annually as a requirement under O.Reg 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O. Reg. 169/03
- <MDL = Less than Method Detection Limit

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2021/01/11	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2021/01/11	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L) - TW	2021/01/11	<MDL 0.05	20.0	No	No
Benzene (ug/L) - TW	2021/01/11	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2021/01/11	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2021/01/11	<MDL 0.33	5.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Carbaryl (ug/L) - TW	2021/01/11	<MDL 0.05	90.0	No	No
Carbofuran (ug/L) - TW	2021/01/11	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2021/01/11	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L) - TW	2021/01/11	<MDL 0.02	90.0	No	No
Diazinon (ug/L) - TW	2021/01/11	<MDL 0.02	20.0	No	No
Dicamba (ug/L) - TW	2021/01/11	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2021/01/11	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2021/01/11	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2021/01/11	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2021/01/11	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2021/01/11	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2021/01/11	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2021/01/11	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW	2021/01/11	<MDL 0.4	9.0	No	No
Dimethoate (ug/L) - TW	2021/01/11	<MDL 0.06	20.0	No	No
Diquat (ug/L) - TW	2021/01/11	<MDL 1.0	70.0	No	No
Diuron (ug/L) - TW	2021/01/11	<MDL 0.03	150.0	No	No
Glyphosate (ug/L) - TW	2021/01/11	<MDL 1.0	280.0	No	No
Malathion (ug/L) - TW	2021/01/11	<MDL 0.02	190.0	No	No
Metolachlor (ug/L) - TW	2021/01/11	<MDL 0.01	50.0	No	No
Metribuzin (ug/L) - TW	2021/01/11	<MDL 0.02	80.0	No	No
MCPA (ug/L) - TW	2021/01/11	<0.12	100.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2021/01/11	<MDL 0.3	80.0	No	No
Paraquat (ug/L) - TW	2021/01/11	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2021/01/11	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L) - TW	2021/01/11	<MDL 0.15	60.0	No	No
Phorate (ug/L) - TW	2021/01/11	<MDL 0.01	2.0	No	No
Picloram (ug/L) - TW	2021/01/11	<MDL 1.0	190.0	No	No
Prometryne (ug/L) - TW	2021/01/11	<MDL 0.03	1.0	No	No
Simazine (ug/L) - TW	2021/01/11	<MDL 0.01	10.0	No	No
Terbufos (ug/L) - TW	2021/01/11	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2021/01/11	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/01/11	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2021/01/11	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L) - TW	2021/01/11	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/01/11	<MDL 0.25	5.0	No	No
Trifluralin (ug/L) - TW	2021/01/11	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L) - TW	2021/01/11	<MDL 0.17	1.0	No	No

Distribution samples are tested quarterly for THM's and HAA's in accordance with O. Reg. 170/03.

	Sample Year	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Distribution Water					
Trihalomethane (THM) : Total (ug/L) Annual Average - DW	2021	65	100.0	No	Yes
Haloacetic Acid (HAA): Total (ug/L) Annual Average - DW	2021	46.85	80.0	No	Yes

Additional Legislated Samples

There is no additional sampling required under the Municipal Drinking Water Licence.

Major Maintenance Summary

WO #	Description
2093357	Chlorine system weigh scale replaced
2093359	Tower overflow sensor installed
2316209	Water Tower and Intake ROV Inspection by Dundee Marine
2267681	4" valve replaced on filter 2 drain to waste line
2267158	Replaced Prominent online pH probe
2402274	Repair corroded brake on Low Lift pump #3
2543959	Soda Ash chemical metering pump replaced
2583241	Filter #1 effluent valve replaced

Distribution Maintenance

Date	Location Reference	Category	Details	Corrective Repair
February 20, 2021	3721 Old Barry's Bay Road	1	Emergency repair of a watermain break	Replace two (2) meters of biomax pipe and install new service saddle
March 18, 2021	Peter Street	N/A	Hydrant #88 replaced after being damaged by vehicle	N/A
March 24, 2021	Entire System	N/A	Repairs made to hydrants 62, 68, 92, and 93	N/A
March 26, 2021	Entire System	N/A	Spring flushing program	N/A
June 4, 2021	Birch View Drive	N/A	New watermain commissioning	N/A
June 23, 2021	Jackpine Street	N/A	Repaired distribution equipment in preparation for paving	N/A
July 23, 2021	17 Billings Street	N/A	Repaired damaged curbstop	N/A
July 29, 2021	Needham Street	N/A	Raised curbstop to new grade of fill	N/A
August 27, 2021	165 Ignatus Drive	N/A	Repaired damaged waterline	N/A
September 24, 2021	19574 Opeongo Road	N/A	Leak detected at curbstop, repaired curbstop	N/A
October 7, 2021	Siberia Road	N/A	Service repair at vacant lot	N/A
October 12, 2021	Entire System	N/A	Fall flushing program	N/A
October 13, 2021	19574 Opeongo Line	N/A	Service repair	N/A
November 9, 2021	24 Arena Road	1	Emergency repair of a watermain break	Replace poly pipe at transition coupler
December 21, 2021	Billings Street	N/A	Service repair at Fire Hall	N/A

O.Reg 319/08 Small Drinking Systems Summary

The Ontario Clean Water Agency samples two small Ministry of Health regulated systems owned by the Township of Madawaska Valley.

Sampling Summary

Location	Number of Samples	E.coli Results (Min) - (Max)	Total Coliform Results (Min) – (Max)	HPC Results (Min) - (Max)
Combermere Community Hall	4	0 - 0	0 - 0	N/A
Mission House Museum & Gallery	1	0 - 0	0 - 0	N/A

Maintenance Highlights

- Sediment filters are replaced monthly
- UV unit maintenance as required

Appendix A

WTRS/RSRS Data and Submission Confirmation

Ontario

environet WTRS

Ministry of the Environment, Conservation and Parks

| WT DATA | REPORTS | SEARCH WT DATA | ADMINISTRATION | USER PROFILE | CONTACT US | HELP | HOME | LOGOUT |

Location: WTRS / WT DATA / Input WT Record WTRS-WT-008

Water Taking Data submitted successfully.

Confirmation:

Thank you for submitting your water taking data online.

Permit Number: 6233-8MXPXP
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF MADAWASKA VALLEY.
Received on:Feb 14, 2022 2:34 PM

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.

Ontario **Regulatory Self-Reporting System** **Ministry of the Environment, Conservation and Parks**

Client Name: TOWNSHIP OF MADAWASKA VALLEY **Reporting Year:** 2021 **Service:** PTTW **Permit Number:** P-300-1136917810 **Permit Version:** 1.0 **New or Updated Submission:** NEW

Site Name: Barry's Bay Water Treatment Plant

Source ID: 500000594660 **Source Name:** Kamaniskeg Lake **Source Type:** Lake

UTM(Zone/Easting/Northing): 18/289350.0/5039500.0 **Method of Determination:** Metered **Unit of Measure:** Litre

Description: Lake Kamaniskeg **Purpose Category:** Utilities **Specific Category:** Municipal Supply **Activity** Water Supply

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1											312000.0	312000.0
2										344000.0	448000.0	402000.0
3										344000.0	312000.0	315000.0
4										292000.0	284000.0	315000.0
5										772000.0	394000.0	315000.0
6										388000.0	394000.0	222000.0
7										58000.0	394000.0	284000.0
8										458000.0	325000.0	425000.0
9										458000.0	307000.0	211000.0
10										344000.0	186000.0	345000.0
11										344000.0	186000.0	345000.0
12										715000.0	696000.0	345000.0
13										264000.0	696000.0	335000.0
14										822000.0	696000.0	303000.0
15										344000.0	188000.0	327000.0
16										344000.0	578000.0	248000.0
17										344000.0	107000.0	309000.0
18										412000.0	397000.0	309000.0
19										329000.0	318000.0	309000.0
20										417000.0	318000.0	295000.0
21										403000.0	318000.0	227000.0
22										422000.0	272000.0	298000.0
23										422000.0	329000.0	319000.0
24										422000.0	327000.0	390000.0
25										276000.0	350000.0	390000.0
26										377000.0	336000.0	390000.0
27										435000.0	336000.0	384000.0
28										324000.0	336000.0	384000.0
29										395000.0	291000.0	242000.0
30										395000.0	306000.0	349000.0

31										395000.0		307000.0

Name of Attester
First Name: Kaylee
Last Name: Saar
Company: Ontario Clean Water Agency
Date Certified/Submitted(yyyy/mm/dd): 2022/02/14