

Fenelon Falls Drinking Water System

Waterworks # 210000327
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1st – December 31st 2022

Issued: February 13, 2023

Revision: 0

Operating Authorities:



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

Table of Contents

Annual Water Report	1
Report Availability	1
Compliance Report Card	1
System Process Description	2
Raw Source	2
Treatment	2
Treatment Chemicals used during the reporting year:	3
Summary of Non-Compliance.....	3
Adverse Water Quality Incidents	3
Non-Compliance.....	4
Non-Compliance Identified in a Ministry Inspection:	4
Flows	4
Raw Water Flows	4
Total Monthly Flows (m ³ /d).....	5
Monthly Rate Flows (L/s)	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	9
Additional Legislated Samples	11
Major Maintenance Summary	12
WTRS Data Submission Confirmation.....	A

Report Availability

This system does not serve more than 10,000 residences. The annual reports will be available to residents at the City of Kawartha Lakes Public Works Administration Office by appointment and on the [City's website](#). Notification that reports are available free of charge will be made on the City of Kawartha Lakes website. The City of Kawartha Lakes Public Works Administration Office is located at 322 Kent Street West in Lindsay, Ontario.

Compliance Report Card

Drinking Water System Number: 210000327

Drinking Water System Name: Fenelon Falls DWS

Drinking Water System Owner: City of Kawartha Lakes

Drinking Water System Category: Large Municipal Residential

Period Being Reported: January 1, 2022 - December 31, 2022

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	1	November 24, 2022	Announced detailed inspection. Inspection not complete at time of issuance of this report.
AWQI's	1	Q2 2022	THM Running Average exceeded second quarter of 2022.
	3	July 21, 2022 July 23, 2022 July 26, 2022	13 TC in distribution sample. 2 TC in distribution resample 1 TC in distribution resample
	87	October 8, 2022 – December 20, 2022	Ongoing Total Coliform contamination in distribution samples taken from sample locations along newly constructed/commissioned watermain. Various AWQI events, and various adverse locations. BWA advisory issues to residents on Murray St.

	# of Events	Date	Details
			throughout incident. Contamination cleared December 20 th .
Number of Non-Compliances	0		
Number of Boil Water Advisories	1	October 21 – December 20, 2022	Murray St. Watermain Total Coliform Contamination

System Process Description

Raw Source

The Fenelon Falls Water Treatment Plant is supplied with surface water from Cameron Lake.

Treatment

The treatment system is a dual train conventional filtration package plant consisting of the following:

- Raw water is sourced from Cameron Lake through a wooden intake crib and then directed to the intake chamber and further to the low lift pumping station consisting of three low lift pumps
- Inlet line connected to sodium hypochlorite diffuser for seasonal zebra mussel control, if required
- Raw water flow meter and turbidity analyzer
- Coagulant injection system
- Two in-ground flocculation tanks each equipped with three mechanical flocculators
- Dual train microfiltration system (Zeeweed) consisting of two compartments each containing two sets of six membrane modules.
- Continuously monitoring particle counters and turbidity analyzers on each filter line
- Waste backwash holding tank with discharge to sanitary sewer
- UV disinfection system consisting of two medium pressure units (duty and standby) and UVT monitor
- Chlorine dosing and injection system
- Single in-ground clearwell consisting of two interconnected baffled cells
- In-ground dual celled high lift wet well consisting of four highlift pumps
- Ammonia sulphate dosing and injection system
- Chlorine residual (free and total) and pH analyzers prior to distribution connection
- Water tower
- SCADA computer control system
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag, Flochem
Polyaluminium Chloride	Flocculation	Kemira
Ammonia Sulphate	Secondary Disinfection	FloChem

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
Q2 2022	159007	Distribution	Trihalomethanes	RAA of 105.5ug/L	O. Reg. 170/03	Adjust chlorine dose, flow, & clearwell levels. RAA met in Q3
July 21	159241	Distribution	Total Coliforms	13	O. Reg. 170/03	Flushed, resampled
July 23	159254	Distribution	Total Coliforms	2	O. Reg. 170/03	Flushed, increased combined chlorine residual, resampled
July 23	159298	Distribution	Total Coliforms	1	O. Reg. 170/03	Flushed, increased combined chlorine residual, additional disinfection of sample hydrant, resampled
Oct 20	160380, 160403, 160407, 160411, 160416, 160417, 160434, 160435, 160440, 160441, 160461, 160462, 160472, 160473, 160482, 160488, 160499, 160500, 160501, 160502, 160503, 160516, 160517, 160518, 160519, 160520, 160534, 160535, 160536,	Distribution	NDOGT then high TC		O. Reg. 170/03	Flushed and resampled, BWA. When resample failed – rechlorination /swabbing/hydrant repair/hydrant isolation/hydrant disassemble and rebuild/pressure test, isolation of main, excavation

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
	160537, 160538, 160539, 160550, 160551, 160552, 160553, 160555, 160567, 160570, 160571, 160574, 160575, 160619, 160620, 160621, 160634, 160638, 160656, 160674, 160682, 160683, 160696, 160701, 160705, 160706, 160707, 160708, 160802, 160804, 160807, 160814, 160839, 160840, 160862, 160863, 160876, 160877, 160883, 160884, NH202212031143 , 160889, 160903, 160904, 160912, 160913, 160914, 160916, 160917, 160918, 160924, 160925, 160935, 160938, 160958, 160959, 160960, 160961, 160962, 160970, 160992, 160993, 160994					of main

RAA is the Running Annual Average of four consecutive quarterly sampling results. The RAA limit for Trihalomethanes is 100ug/L.

Non-Compliance

Legislation requirement(s) system failed to meet duration of the failure

There were no non-compliances during this period.

Non-Compliance Identified in a Ministry Inspection:

There were no non-compliances identified in a Ministry Inspection for 2021-22. Inspection for 2022-23 in progress at time of issuance of this report.

Flows

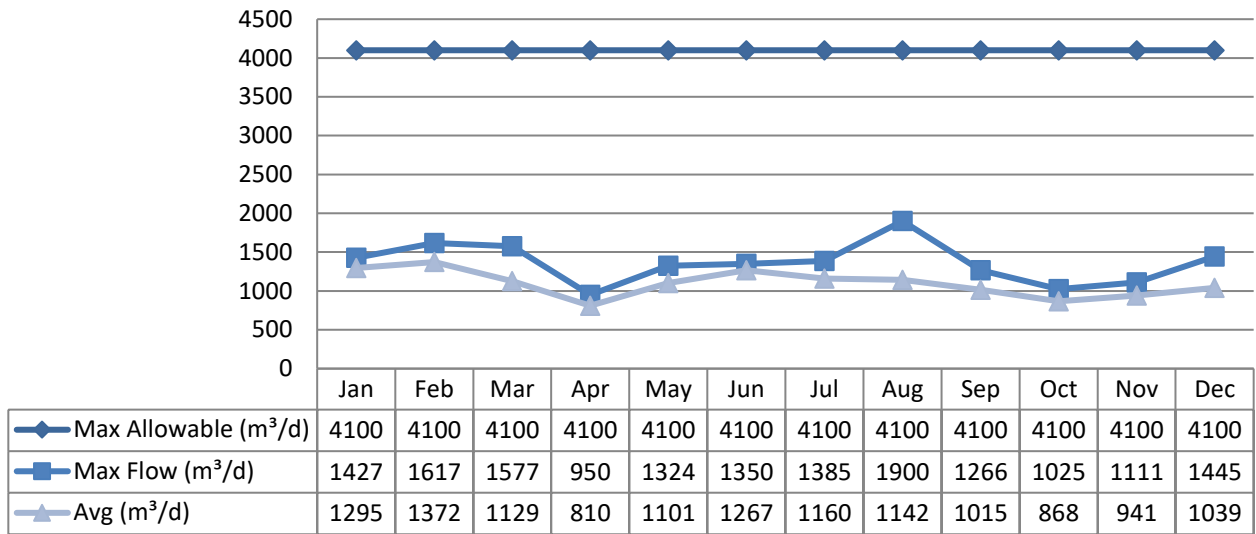
The Fenelon Falls Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water takings are regulated by the Permit to Take Water (PTTW). 2022 Raw Flow Data was submitted to the Ministry electronically under permit #5830-AQFGZR. The confirmation for the data that was submitted is attached in Appendix A.

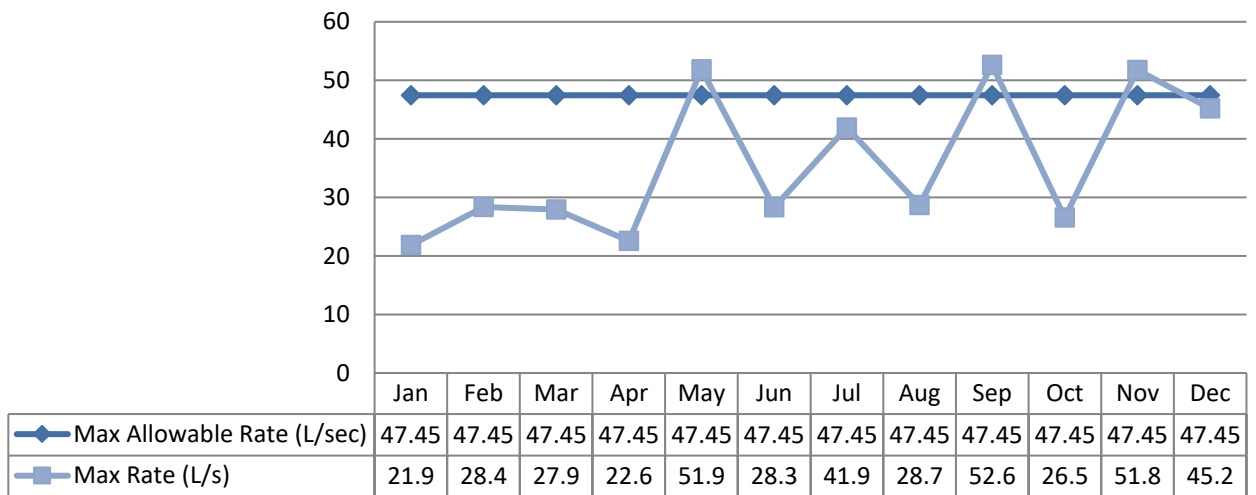
Total Monthly Flows (m³/d)

Max Allowable PTTW- Raw



Monthly Rated Flows (L/s)

Max allowable rate – PTTW- Raw



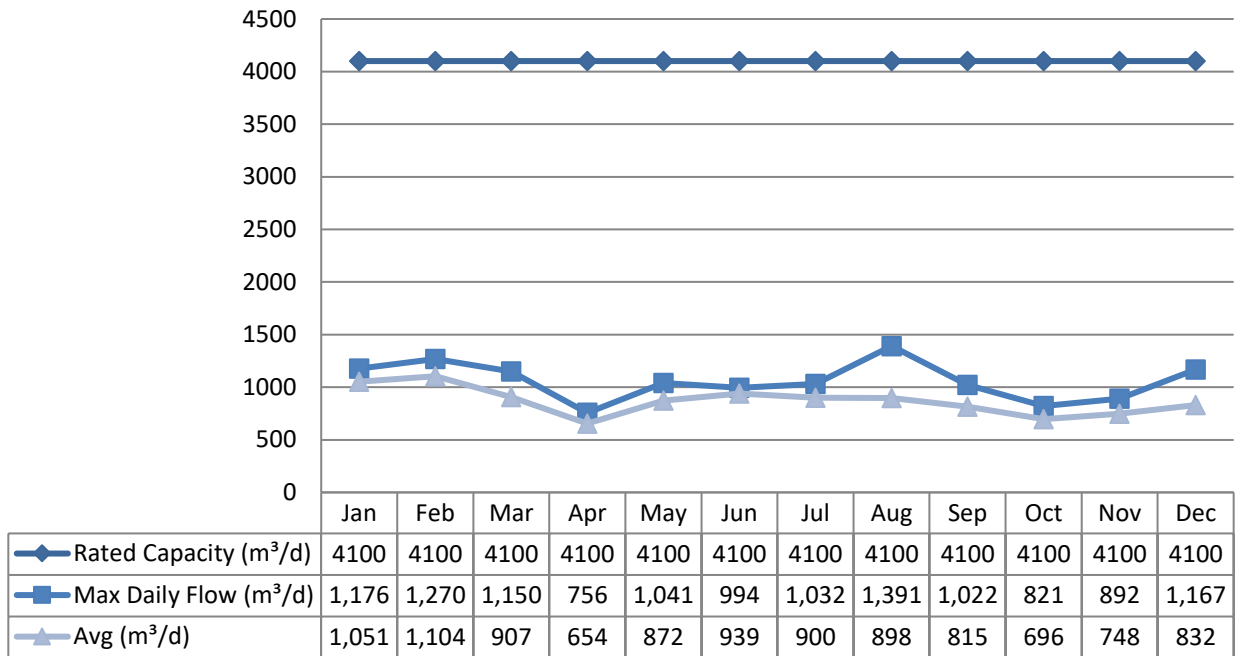
Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s). The actual limit in the PTTW is 2,847L/min. Brief spikes occurred when filters were being filled after inspection/cleaning or City of Kawartha Lakes was flushing distribution.

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

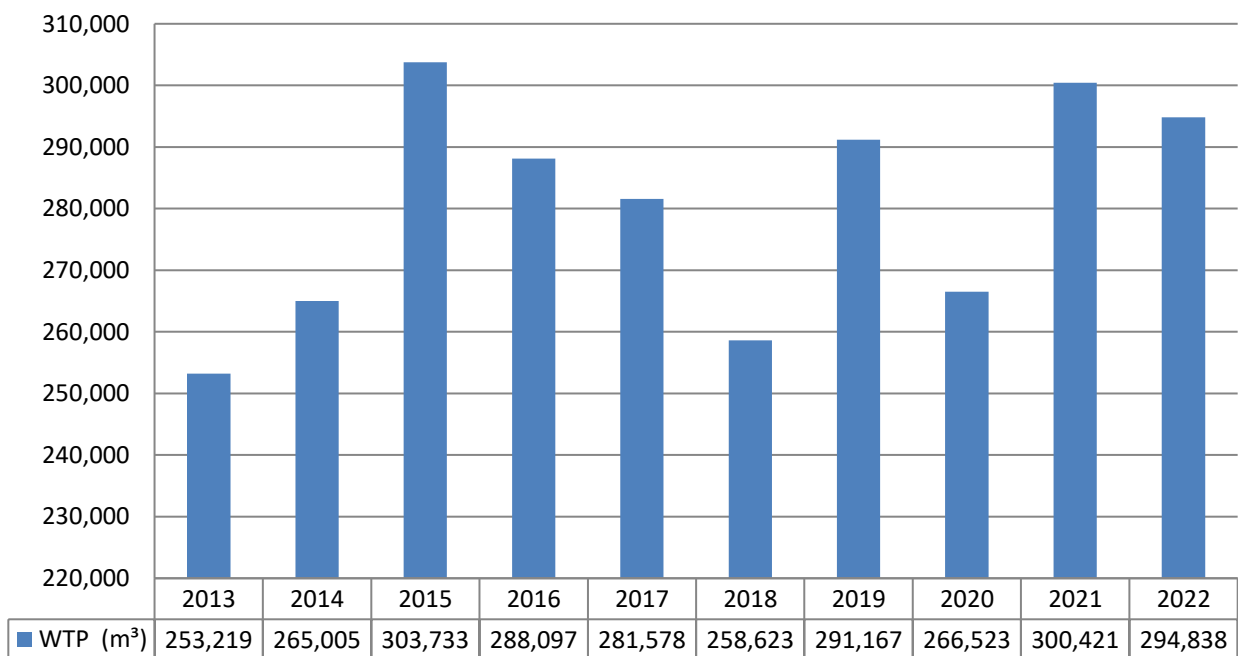
Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

Microbiological Testing

Water Source	No. of Samples Collected	E.Coli Results Min	E.Coli Results Max	Total Coliform Results Min	Total Coliform Results Max	No. of Samples Collected	HPC Results Min	HPS Results Max
Raw	52	0	4	1	79			
Treated	52	0	0	0	0	52	0	2
Distribution	171	0	0	0	13	162	0	24

Operational Testing

	No. of Samples Collected	Minimum	Maximum
Turbidity Filter 1 (NTU)	8760	0.00	2.07
Turbidity Filter 2 (NTU)	8760	0.00	2.07
Chlorine	8760	0.00	4.99
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measure if it is **not** milligrams per litre.

Note: For continuous monitors 8760 is used as the number of samples. 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 O. Reg. 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 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 = Method Detection Limit

Treated Water	Sample Date (yyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedance s ½ MAC
Antimony: Sb (ug/L) - TW	2022/01/05	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2022/01/05	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2022/01/05	21.2	1000.0	No	No
Boron: B (ug/L) - TW	2022/01/05	7.0	5000.0	No	No

Treated Water	Sample Date (yyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedance s ½ MAC
Cadmium: Cd (ug/L) - TW	2022/01/05	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	2022/01/05	0.12	50.0	No	No
Mercury: Hg (ug/L) - TW	2022/01/05	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2022/01/05	0.05	50.0	No	No
Uranium: U (ug/L) - TW	2022/01/05	0.077	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2018/01/15	<MDL 0.06	1.5	No	No
Nitrite (mg/L) - TW	2022/01/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022/04/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022/07/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022/10/04	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2022/01/04	0.079	10.0	No	No
Nitrate (mg/L) - TW	2022/04/05	0.149	10.0	No	No
Nitrate (mg/L) - TW	2022/07/05	0.034	10.0	No	No
Nitrate (mg/L) - TW	2022/10/04	0.030	10.0	No	No
Sodium: Na (mg/L) - TW	2018/01/15	7.28	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.

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	No. of Sampling Points	No. of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Exceedances
Alkalinity(Mg/L)	4	4	50	56	N/A	N/A

Distribution System	No. of Sampling Points	No. of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Exceedances
pH	4	4	7.30	9.04	N/A	N/A
Lead (ug/L)	0	0	N/A	N/A	N/A	N/A

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.

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Alachlor (ug/L) - TW	2022/01/05	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2022/01/05	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2022/01/05	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2022/01/05	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2022/01/05	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2022/01/05	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2022/01/05	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2022/01/05	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2022/01/05	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2022/01/05	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2022/01/05	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2022/01/05	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/05	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/05	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2022/01/05	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/05	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene	2022/01/05	<MDL	50.00	No	No

Fenelon Falls Drinking Water System – 2022 Annual Water Reports

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Chloride) (ug/L) - TW		0.35			
2,4-Dichlorophenol (ug/L) - TW	2022/01/05	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/01/05	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2022/01/05	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2022/01/05	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2022/01/05	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2022/01/05	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2022/01/05	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2022/01/05	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW	2022/01/05	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2022/01/05	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/01/05	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2022/01/05	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2022/01/05	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2022/01/05	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2022/01/05	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2022/01/05	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	2022/01/05	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2022/01/05	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2022/01/05	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2022/01/05	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/05	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2022/01/05	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2022/01/05	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/05	<MDL	5.00	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
		0.25			
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2022/01/05	<MDL 0.12	100.00	No	No
Trifluralin (ug/L) – TW	2022/01/05	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) – TW	2022/01/05	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethanes: Total (ug/L) Annual Average - DW	2022	93.4	100.00	No	Yes
HAA Total (ug/L) Annual Average - DW	2022	55.3	80.00	No	Yes

MAC = Maximum Allowable Concentration as per O. Reg. 169/03

MDL = Method Detection Limit

Additional Legislated Samples

Municipal Drinking Water Licence	Date Collected	Suspended Solids to Sewer (mg/L)
Settling Tank Discharge Point	January	28
	February	17
	March	16
	April	27
	May	30
	June	34
	July	16
	August	43
	September	46
	October	21
	November	50
	December	28
	Average	17

Note: The Suspended Solids 12 month running average limit of 25 mg/L applies to effluent discharged into the natural environment. Effluent is typically discharged to the sewer system.

Municipal Drinking Water Licence	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Nitrosodimethylamine (NDMA) – DW	2022/01/04	<MDL	0.009	No	No

Municipal Drinking Water Licence	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
		0.0008			
Nitrosodimethylamine (NDMA) – DW	2022/04/11	<MDL 0.0008	0.009	No	No
Nitrosodimethylamine (NDMA) – DW	2022/07/05	<MDL 0.0009	0.009	No	No
Nitrosodimethylamine (NDMA) – DW	2022/10/04	<MDL 0.0009	0.009	No	No

MAC = Maximum Allowable Concentration as per O. Reg. 169/03

MDL = Method Detection Limit

Municipal Drinking Water Licence	Collected Weekly June – Oct	Total Microcystin Raw Results Range (ug/L)	Total Microcystin Treated Water Results Range (ug/L)	Treated Water Total Microcystin Limit 1.5 ug/L Exceeded Y/N
Harmful Algal Blooms Monitoring required June to October at a minimum. Samples collected weekly. Treated water tested only if Total Microcystins detected in Raw Water.	June	<0.1 – <0.1	-	N
As above	July	<0.1 - <0.1	-	N
As above	August	<0.1 - <0.1	-	N
As above	September	<0.1 - <0.1	-	N
As above	October	<0.1 – <0.1	-	N

Method Detection Limit is 0.1ug/L



Major Maintenance Summary incurred to install, repair or replace required equipment

WO #	Description
1102267	Purchase Replacement Blower 1
1102272	Replaced Filter Valve
1259119	Replaced Tower Heater

WO #	Description
1339595	Repaired/Replaced Lifting Device
1536449	Standpipe Structural Assessment
2091005	Valve Replacements
2091969	Replacement Particle Counters Analyzers
2583858	UVT Analyzer Reprogramming
2639067	Chlorine Analyzer Parts
2679060	Annual Membrane Maintenance 2022
2679061	Purchase Replacement Blower (#3)
2679062	Replaced Stealth Valve
2681143	Replaced UV Sleeves
2819949	Replaced Submersible Motor – Flocculator M1
2822585	Rebuild Permeate Pump
2871028	Replaced Mixer Motors
2874082	Relocated Pressure Relief Valves for Chlorine
2917072	Replaced facility's security gate
2917821	SCADA Programming
2919893	Replaced Filter 2 Flow Meter
2967187	Replaced Blower Positive 2 BP852
3017746	Replaced pH Probe for Chlorine Analyzer
3107156	Particle Counter Calibration
3107270	Membrane Filter Cleaning
509742	Intake Inspection and Recommendations

Appendix A

WTRS Data Submission Confirmation



Ministry of the Environment,
Conservation and Parks

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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: 5830-AQFGZR
Permit Holder: THE CORPORATION OF THE CITY OF KAWARTHA LAKES.
Received on: Jan 27, 2023 3:22 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.

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