

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, 2023

Issued: February 21, 2024

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	1
Raw Source	1
Treatment	2
Treatment Chemicals used during the reporting year	2
Summary of Non-Compliance.....	2
Adverse Water Quality Incidents.....	2
Non-Compliance	2
Non-Compliance Identified in a Ministry Inspection	3
Flows	3
Raw Water Flows.....	3
Total Monthly Flows (m ³ /d)	3
Monthly Rate Flows (L/s)	4
Treated Water Flows	4
Monthly Rated Flows	4
Annual Total Flow Comparison.....	5
Regulatory Sample Results Summary	5
Microbiological Testing	5
Operational Testing	5
Inorganic Parameters	6
Schedule 15 Sampling:.....	7
Organic Parameters.....	7
Additional Legislated Samples.....	9
Major Maintenance Summary	10
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 and on the City's website at www.kawarthalakes.ca. 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, 2023 - December 31, 2023

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	2	November 24, 2022 February 14, 2024	Announced detailed inspection. Inspection not complete at issuance of 2022 annual report – Final Inspection Rating of 100% 2023/2024 Inspection not complete at time of issuance of report.
AWQI's	1	May 23, 2023	Low Cl ₂ residual. Disinfection restored, flushed and resampled as per regulation.
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

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
Polyalumunium Chloride	Flocculation	Kemira
Ammonia Sulphate	Secondary Disinfection	FloChem

Summary of Non-Compliance

Adverse Water Quality Incidents

There were no adverse water quality incidents reported during the reporting period.

Non-Compliance

There were no non-compliances reported during the reporting period.

Non-Compliance Identified in a Ministry Inspection:

There were no non-compliances identified in a Ministry Inspection for 2022-23. The Ministry Inspection report wasn't received for the 2023/2024 inspection cycle before the report deadline.

Flows

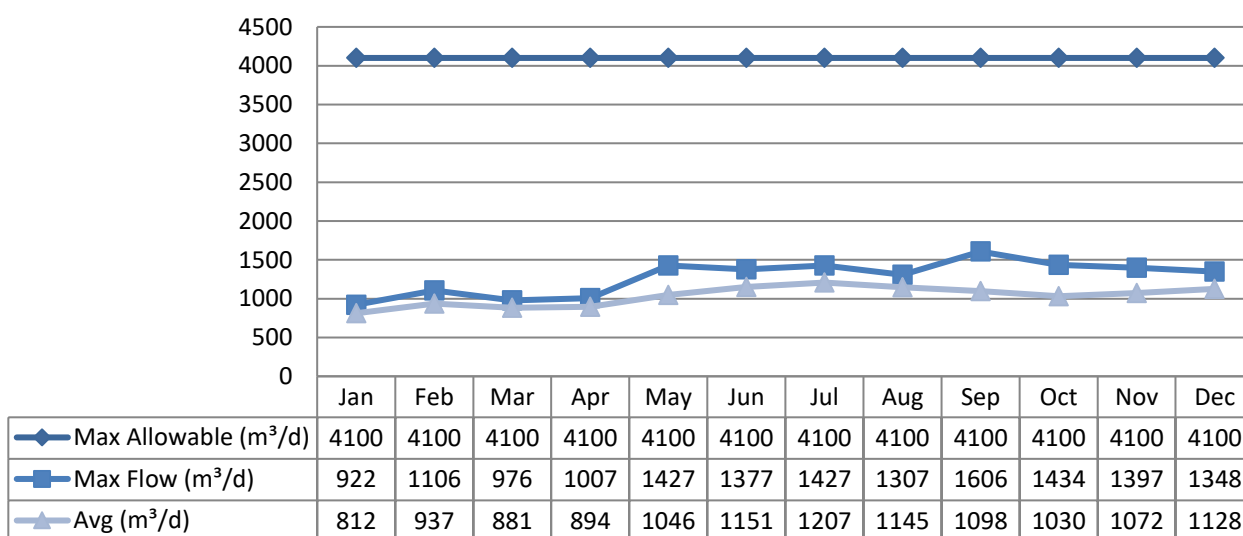
The Fenelon Falls Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water takings are regulated by the Permit to Take Water (PTTW). 2023 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.

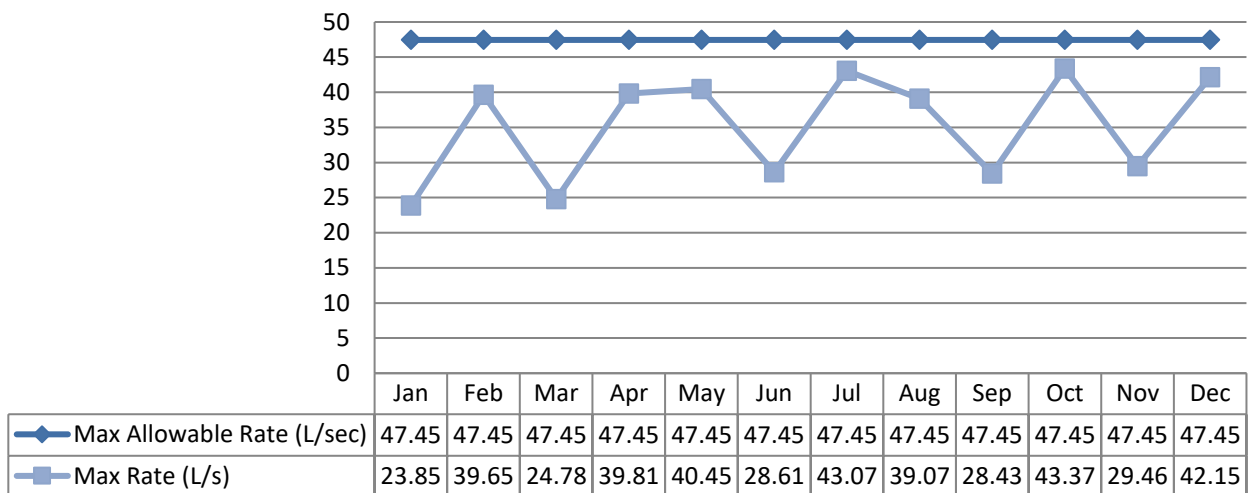
Total Monthly Flows (m³/d)

Max Allowable PTTW- Raw



Monthly Rated Flows (L/s)

Max allowable rate – PTTW- Raw

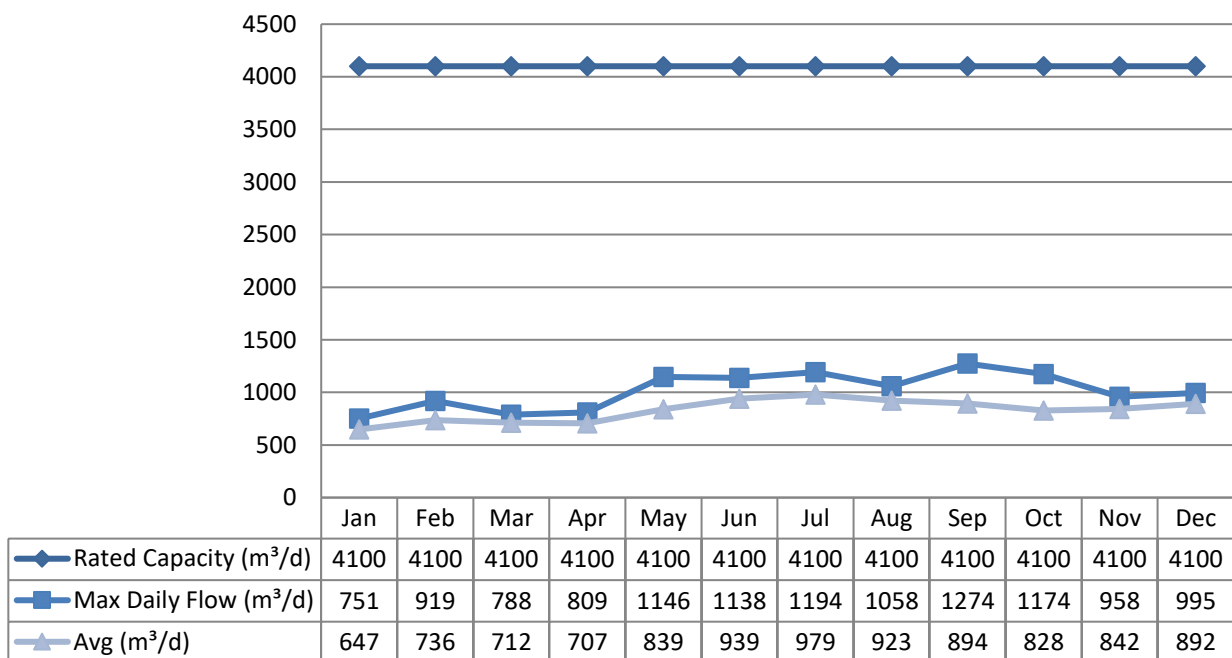


Treated Water Flows

The Treated Water flows are regulated under the Municipal Drinking Water Licence (MDWL) 141-104.

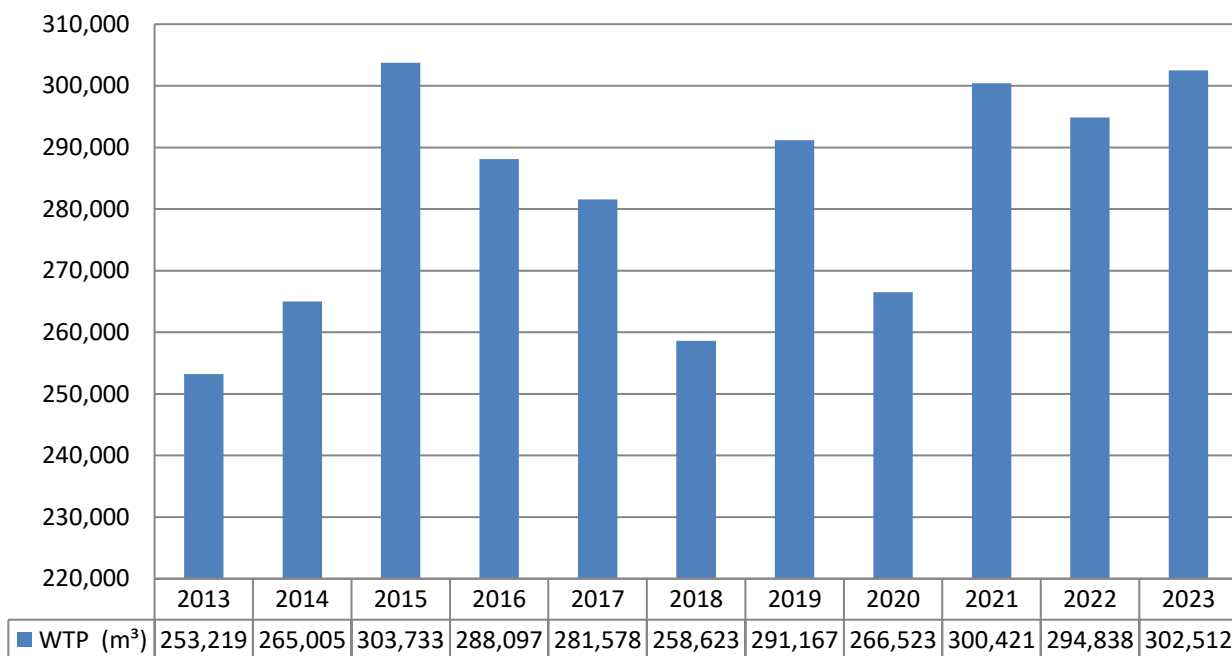
Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	Range of E.Coli Results	Range of E. Coli Results	Range of Total Coliform Results	Range of Total Coliform Results	Range of HPC Results	Range of HPC Results
		Min	Max	Min	Max	Min	Max
Raw	52	0	19*	2	117*		
Treated	52	0	0	0	0	0	12
Distribution	156	0	0	0	0	0	6

*One raw water sample had NDOGT – No Data: Overgrown with Target Bacteria

Operational Testing

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
Turbidity Filter 1 (NTU)	8760	0.00	2.00
Turbidity Filter 2 (NTU)	8760	0.00	2.00
Chlorine	8760	0.32	2.62
Fluoride (If the DWS provides)	N/A	N/A	N/A

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
fluoridation)			

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 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 Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Antimony: Sb (ug/L) - TW	2023/01/04	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2023/01/04	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2023/01/04	20.6	1000.0	No	No
Boron: B (ug/L) - TW	2023/01/04	7.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2023/01/04	0.008	5.0	No	No
Chromium: Cr (ug/L) - TW	2023/01/04	0.17	50.0	No	No
Mercury: Hg (ug/L) - TW	2023/01/04	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2023/01/04	0.08	50.0	No	No
Uranium: U (ug/L) - TW	2023/01/04	0.041	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2023/01/04	<MDL 0.06	1.5	No	No
Nitrite (mg/L) - TW	2023/01/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/04/03	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/07/05	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2023/10/04	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2023/01/04	0.046	10.0	No	No
Nitrate (mg/L) - TW	2023/04/03	0.169	10.0	No	No
Nitrate (mg/L) - TW	2023/07/05	0.025	10.0	No	No

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Nitrate (mg/L) - TW	2023/10/04	0.026	10.0	No	No
Sodium: Na (mg/L) - TW	2023/01/04	7.52	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	Number of Sampling Points	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	4	4	46	49	N/A	N/A
pH	4	4	7.83	8.57	N/A	N/A
Lead (ug/l)	4	4	0.02	0.10	10	No

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 Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Alachlor (ug/L) - TW	2023/01/04	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2023/01/04	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2023/01/04	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2023/01/04	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2023/01/04	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2023/01/04	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2023/01/04	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2023/01/04	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2023/01/04	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2023/01/04	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2023/01/04	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2023/01/04	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) -	2023/01/04	<MDL 0.41	200.00	No	No

Fenelon Falls Drinking Water System – 2023 Annual Water Reports

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
TW					
1,4-Dichlorobenzene (ug/L) - TW	2023/01/04	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2023/01/04	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2023/01/04	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023/01/04	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2023/01/04	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023/01/04	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2023/01/04	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2023/01/04	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2023/01/04	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2023/01/04	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2023/01/04	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2023/01/04	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW	2023/01/04	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2023/01/04	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023/01/04	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2023/01/04	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2023/01/04	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2023/01/04	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2023/01/04	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2023/01/04	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	2023/01/04	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2023/01/04	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2023/01/04	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2023/01/04	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023/01/04	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2023/01/04	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2023/01/04	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2023/01/04	<MDL 0.25	5.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2023/01/04	<MDL 0.12	100.00	No	No
Trifluralin (ug/L) – TW	2023/01/04	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) – TW	2023/01/04	<MDL 0.17	1.00	No	No
Distribution Water					

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Trihalomethanes: Total (ug/L) Annual Average - DW	2023	80.3	100.00	No	Yes
HAA Total (ug/L) Annual Average - DW	2023	44.8	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	22
	February	45
	March	39
	April	44
	May	25
	June	25
	July	31
	August	20
	September	29
	October	23
	November	46
	December	29
	Average	31.5

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. During the reporting period, all effluent was discharged to the sewer system.

Municipal Drinking Water Licence	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Nitrosodimethylamine (NDMA) (ug/L) - DW	2023/01/04	0.0019	0.009	No	No
Nitrosodimethylamine (NDMA) (ug/L) - DW	2023/04/03	<MDL 0.0009	0.009	No	No
Nitrosodimethylamine (NDMA) (ug/L) - DW	2023/07/05	0.0009	0.009	No	No
Nitrosodimethylamine (NDMA) (ug/L) - DW	2023/10/04	<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. Raw and Treated water tested for Total Microcystin.	June	<0.1 – <0.1	<0.1 – <0.1	N
	July	<0.1 - <0.1	<0.1 – <0.1	N
	August	<0.1 - <0.1	<0.1 – <0.1	N
	September	<0.1 - <0.1	<0.1 – <0.1	N
	October	<0.1 – <0.1	<0.1 – <0.1	N

Method Detection Limit is 0.1ug/L

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

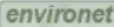
WO #	Description
1102267	Blower Installations
3291933	Driveway Replacement
3481736	SCADA Highlift Programming
3523646	Install Distribution Process Chlorine Analyzer
3526556	Membrane Filter 1 Valve Repair
3571618	Low Lift Submersible Pump Replacement (P2)
3203181	Mixer Motors MX4, MX6 Replacement
3203410	Repair Leaking Gear Box on Flocculator M6
3244853	Purchase Spill Containment for Ammonia Sulphate
3245583	Repair Submersible Reject Pump 02
3246805	Repair Filter 1 Back Pulse Valve
3287773	Repair Hatch 3 Entry Sensor
3340506	Replace Spare Mixer VFD

WO #	Description
3665917	Replace Pressure Tank Piping
3704139	Replace Filter 1 Blower Switch
3706137	Rebuild Permeate Pump PS35
3432952	Pressure Regulator Troubleshooting
3523649	Purchase Spare Total Chlorine Analyzer Probe
3527394	Repair Coolant Leak on Generator

Appendix A

WTRS 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: Feb 6, 2024 7:55 AM

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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