

Lindsay Drinking Water System

Waterworks # 220000175

System Category – Large Municipal Residential

Annual Water Report

Reporting Period of January 1st – December 31st 2022

Issued: February 17, 2023

Operating Authority:



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

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Report Availability

This system serves more than 10,000 residents. The annual reports are available to residents at the City of Kawartha Lakes Public Works Administration Office by appointment and on [City 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 W., in Lindsay, Ontario.

Compliance Report Card

Drinking Water System Number: 220000175

Drinking Water System Name: Lindsay DWS

Drinking Water System Owner: City of Kawartha Lakes

Drinking Water System Category: Large Municipal Residential

Reporting Period: January 1, 2022 - December 31, 2022

	# of Events	Date	Details
Drinking Water			
MECP Inspections	1	2023 01 10	2022/2023 Unannounced, Focused Drinking Water Inspection – No non-compliances
AWQI's	4	2022 01 04 2022 01 04 2022 04 29 2022 04 29	HAA Running Annual Average of 85.46 µg/L THM Running Annual Average of 106.25 µg/L HAA Running Annual Average of 83.73 µg/L THM Running Annual Average of 107.50 µg/L
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The Lindsay Water Treatment Plant receives raw water from the Scugog River, which is a surface water source.

Treatment

The treatment system consists of the following:

- Two screened intake pipes
- Three low lift pumps
- CO₂ pH correction
- Coagulant and polymer addition
- Two ballasted floc/clarification units each with coagulation, flocculation, up-flow settling tank with inclined tube settlers and “micro-sand” recirculation pumps
- Five GAC/sand filters
- Chlorination
- Two clearwells, East & West Cells
- Four high lift pumps
- On-site wastewater equalization and sludge thickening
- Standby power
- SCADA system
- Thornhill Reservoir and pumping station
- Verulam elevated storage tank
- Oakwood Reservoir and pumping station

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Lavo
Sodium Hydroxide	pH Correction	UBA
Aluminum Sulphate (Alum)	Coagulation	Chemtrade
Carbon Dioxide	pH Correction	Linde
Polyaluminumchloride (PAC)	Coagulation	Kemira
Magna Floc Polymer	Coagulation	Northland Chemical

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
2022 01 04	N/A	Lindsay Distribution	HAA Running Annual	85.46	O. Reg. 170/03	N/A

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
			Average			
2022 01 04	N/A	Lindsay Distribution	THM Running Annual Average	106.25	O. Reg. 170/03	N/A
2022 04 29	N/A	Lindsay Distribution	HAA Running Annual Average	83.73	O. Reg. 170/03	N/A
2022 04 29	N/A	Lindsay Distribution	THM Running Annual Average	107.5	O. Reg. 170/03	N/A

Non-Compliance(s)

Legislation requirement(s) system failed to meet during the reporting period and the Corrective Action taken to resolve the issue.

- None to Report

Non-Compliance Identified in a Ministry Inspection

- There were no non-compliances identified during this period 2022/2023

Flows

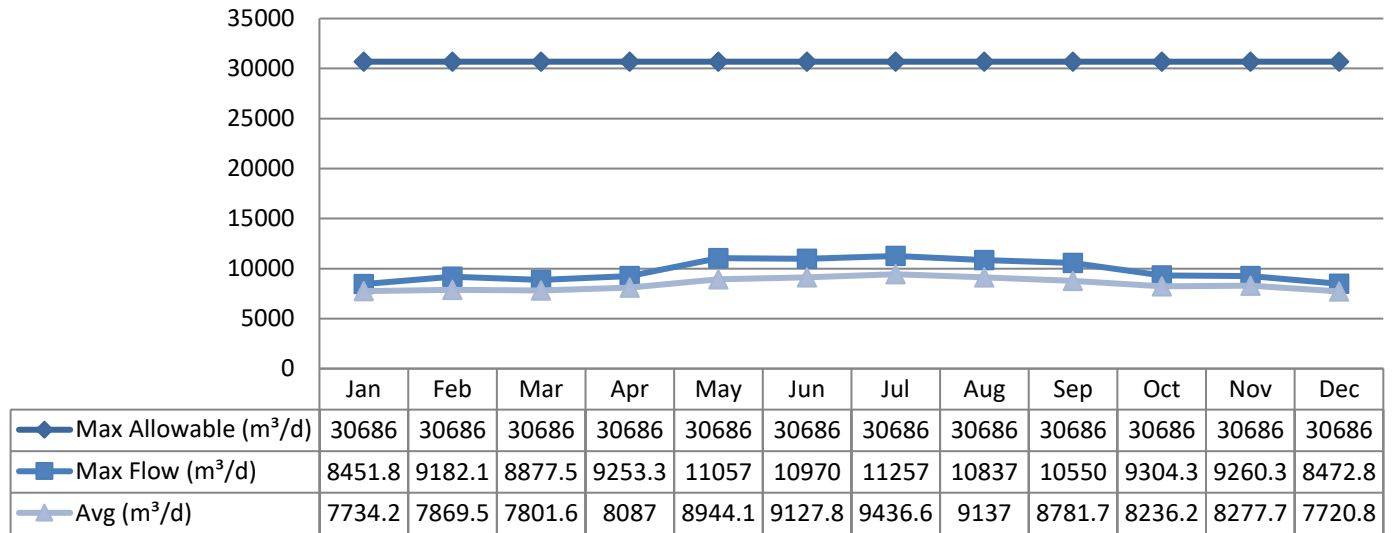
The Lindsay Drinking Water System maximum allowable water taking is 30,685.5 m³/day, and on average the plant is operating at under half this capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2022 Raw Flow Data was submitted to the Ministry electronically under permit #8160-B3MP6L. The confirmation and a copy of the data that was submitted are attached in Appendix A.

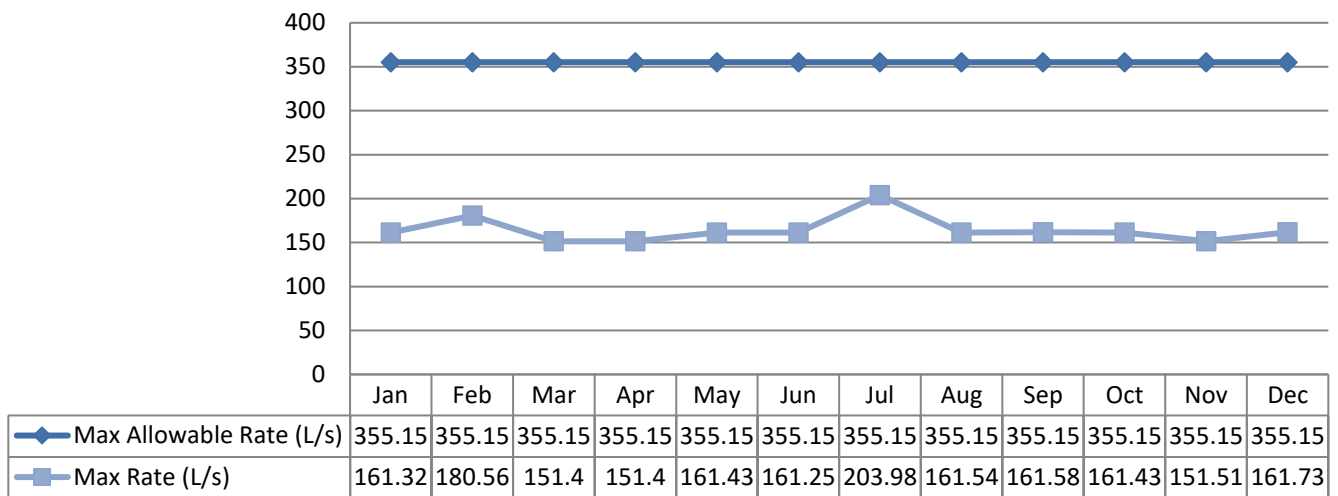
Total Monthly Flows (m³/d)

Max Allowable PTTW- Scugog River



Monthly Rated Flows (L/s)

Max Allowable Rate – PTTW- Scugog River

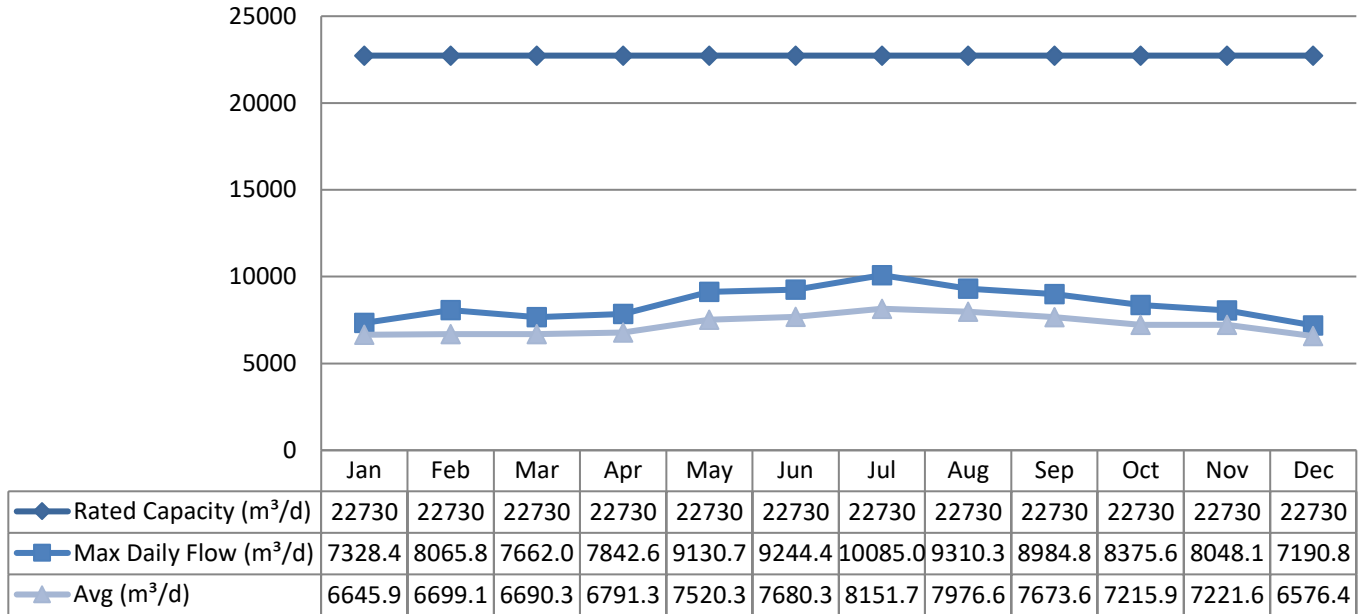


Treated Water Flows

The Treated Water flow is regulated under the Municipal Drinking Water Licence.

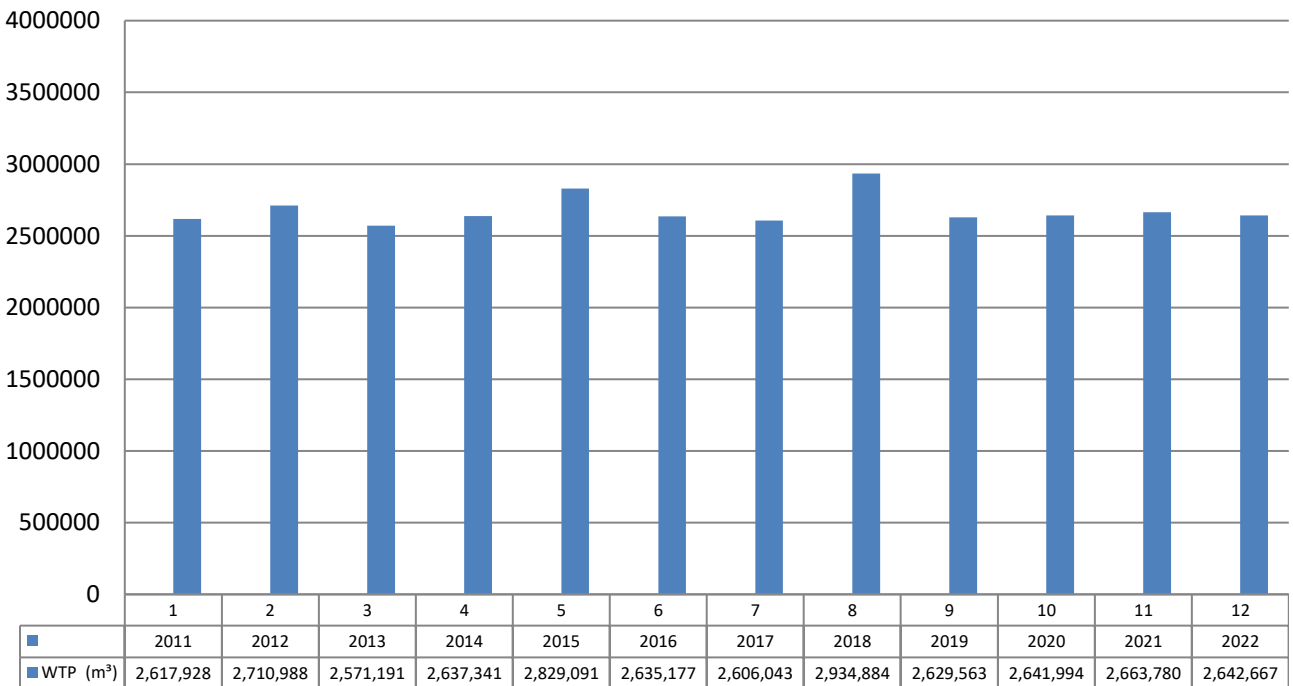
Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

The City of Kawartha Lakes adheres to operational and compliance limits however, during certain operational circumstances some results may be temporarily outside of

limits but not limited to pump start-ups, power outages/generator tests, alarm verification, maintenance, etc. These are normal occurrences and are listed within the report; however, it is not indicative of a true exceedance.

Microbiological Testing

Source	No. of Samples Collected	Range of E.coli Results MIN	Range of E.coli Results MAX	Range of Total Coliform Results MIN	Range of Total Coliform Results MAX	Range of HPC Results	Range of HPC Results
Raw	52	7	500	140	46000		
Treated	52	0	0	0	0	0	1
Distribution	624	0	0	0	0	0	10

Operational Testing

	No. of Samples Collected	Range of Results MIN	Range of Results MAX
Raw Turbidity (NTU)	8760	0	25.46
Turbidity Filter 1 (NTU)	8760	0.01	2.04
Turbidity Filter 2 (NTU)	8760	0	0.37
Turbidity Filter 3 (NTU)	8760	0.017	0.70
Turbidity Filter 4 (NTU)	8760	0.006	1.11
Turbidity Filter 5 (NTU)	8760	0.01	0.53
Chlorine (CT Analyzer)	8760	0	5.00
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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Treated Water					

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedance MAC	Exceedance ½ MAC
Antimony: Sb (ug/L) - TW	2022 01 06	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2022 01 06	0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2022 01 06	29.2	1000.0	No	No
Boron: B (ug/L) - TW	2022 01 06	27	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2022 01 06	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	2022 01 06	<MDL 0.08	50.0	No	No
Mercury: Hg (ug/L) - TW	2022 01 06	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2022 01 06	0.04	50.0	No	No
Uranium: U (ug/L) - TW	2022 01 06	0.019	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2018 12 07	0.06	1.5	No	No
Nitrite (mg/L) - TW	2022 01 11	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2022 04 14	<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 06	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2022 01 11	1.61	10.0	No	No
Nitrate (mg/L) - TW	2022 04 14	0.941	10.0	No	No
Nitrate (mg/L) - TW	2022 07 05	0.038	10.0	No	No
Nitrate (mg/L) - TW	2022 10 06	0.049	10.0	No	No
Sodium: Na (mg/L) - TW	2022 07 05	38.2	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 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	No. of Sampling Points	No. of Samples	Range of Results MIN	Range of Results MAX	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	4	8	153	173	N/A	N/A
pH	4	8	7.39	8.16	N/A	N/A
Lead (ug/L)	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.

	Sample Date	Sample Results	MAC	Exceedance MAC	Exceedance ½ MAC
Treated Water					
Alachlor (ug/L) - TW	2022 01 10	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2022 01 10	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2022 01 10	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2022 01 04	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2022 01 10	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2022 01 08	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2022 01 10	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2022 01 10	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2022 01 04	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2022 01 10	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2022 01 10	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2022 01 08	<MDL 0.20	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022 01 04	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022 01 04	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2022 01 04	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2022 01 04	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022 01 04	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2022 01 08	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022 01 08	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2022 01 08	<MDL 0.40	9.00	No	No
Dimethoate (ug/L) - TW	2022 01 10	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2022 01 05	<MDL 1	70.00	No	No
Diuron (ug/L) - TW	2022 01 10	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2022 01 12	<MDL 1	280.00	No	No
Malathion (ug/L) - TW	2022 01 10	<MDL 0.02	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid	2022 01 08	<MDL 0.00012	0.01	No	No

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	Sample Date	Sample Results	MAC	Exceedance MAC	Exceedance ½ MAC
(MCPA)					
Metolachlor (ug/L) - TW	2022 01 10	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2022 01 10	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022 01 04	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2022 01 05	<MDL 1	10.00	No	No
PCB (ug/L) - TW	2022 01 05	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2022 01 08	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2022 01 10	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2022 01 08	<MDL 1	190.00	No	No
Prometryne (ug/L) - TW	2022 01 10	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2022 01 10	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2022 01 10	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2022 01 04	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022 01 08	<MDL 0.20	100.00	No	No
Triallate (ug/L) - TW	2022 01 10	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2022 01 04	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022 01 08	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2022 01 10	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2022 01 04	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average Q1 - DW	2022/01/04	106.25	100.0	Yes	Yes
Trihalomethane: Total (ug/L) Annual Average Q2 - DW	2022/04/11	107.5	100.0	Yes	Yes
Trihalomethane: Total (ug/L) Annual Average Q3 - DW	2022/07/04	96.5	100.0	Yes	Yes
Trihalomethane: Total (ug/L) Annual Average Q4 - DW	2022/10/03	80.25	100.0	Yes	Yes
HAA Total (ug/L) Annual Average Q1 - DW	2022/01/04	85.46	80.0	Yes	Yes
HAA Total (ug/L) Annual Average Q2 - DW	2022/04/11	83.73	80.0	Yes	Yes
HAA Total (ug/L) Annual Average Q3 - DW	2022/07/04	73.59	80.0	No	Yes
HAA Total (ug/L) Annual Average Q4 - DW	2022/10/03	71.20	80.0	No	Yes

MAC = Maximum Allowable Concentration as per O. Reg. 169/03
 BDL = Below the laboratory detection level

Additional Legislated Sampling

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	Date Sampled	Result	Unit of Measure
Nov 10, 2021	TSS	2022 01 04	4	mg/L
Nov 10, 2021	TSS	2022 02 07	5	mg/L
Nov 10, 2021	TSS	2022 03 14	3	mg/L
Nov 10, 2021	TSS	2022 04 04	4	mg/L
Nov 10, 2021	TSS	2022 05 02	2	mg/L
Nov 10, 2021	TSS	2022 06 06	7	mg/L
Nov 10, 2021	TSS	2022 07 04	5	mg/L
Nov 10, 2021	TSS	2022 08 02	3	mg/L
Nov 10, 2021	TSS	2022 09 07	2	mg/L
Nov 10, 2021	TSS	2022 10 03	<2	mg/L
Nov 10, 2021	TSS	2022 11 07	3	mg/L
Nov 10, 2021	TSS	2022 12 05	3	mg/L
Summary	TSS	2022	Min: <2 Max: 7 AVG: 4 based on 12 numerical results	mg/L

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. Treated and Raw Water Samples collected weekly.	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
	November	<0.1 - <0.1	<0.1 - <0.1	N

Method Detection Limit is 0.1 ug/L

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

WO #	Description
	Lindsay WTP
46319/46320	Replaced Primary Chlorine Analyzers
47844	Repaired Caustic Transfer Pump
48141	Annual Chlorine Pump Rebuilds
48196	Replaced Lower Blades in Actiflo
48205	Rebuild Actiflo Hydrocyclones
48504	Replaced Motor #3 on Polymer Pump
48559	Chemical Pump Rebuilds
54200	Replaced Chlorine Dosing Pump Controller
No WO assigned	Removed Flash Mixer in Actiflo
49575	Replaced Raw Water Turbidimeter
50591	Replaced CT Chlorine Analyzer
52046	Relocate Primary Chlorine Board
53812	Rebuild Cl ₂ Injection Header
53813	Replace Chlorine Carry Water Pump
54200	Replaced Siemens Controller
54268	Repair Cl ₂ Bulk Transfer Line
55206/55207	VFD Maintenance
55211	Install CO ₂ Valves
55821	Install/Calibrate CO ₂ Sensor
PO 909905	Rebuilt Highlift Pump #4
	Oakwood Reservoir
49760	Replaced Chlorine Dosing Pump Oakwood Reservoir
53415	Rebuilt Highlift Pump #2 Oakwood
54508	Rebuilt Highlift Pump #3 Oakwood
	Thornhill Reservoir

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WO #	Description
54902	Replaced Chlorine Dosing Pumps Thornhill Reservoir
	Verulam Tower
52579	Replaced Chlorine Dosing Pump Verulam Tower

Appendix A

WTRS Data and Submission Confirmation



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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: 8160-B3MP6L

Permit Holder: THE CORPORATION OF THE CITY OF KAWARTHA LAKES.

Received on: Jan 20, 2023 11:10 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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