South Ramara Drinking Water System

Waterworks # 220010681
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Township of Ramara

Reporting Period of January 1st – December 31st, 2021

Issued: February 25, 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

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Report Availability

This system does not serve more than 10,000 residence and the annual reports will be available to residents at the Township Of Ramara Administration Office and on the Township's website at www.ramara.ca. Notification that reports are available free of charge will be made on the Township of Ramara website. The Township of Ramara Administration Office is located at 2297 Highway 12, Brechin, ON L0K 1B0.

Compliance Report Card

Drinking Water System Number: 220010681
Drinking Water System Name: South Ramara DWS
Drinking Water System Owner: Township of Ramara
Drinking Water System Category: Large Municipal Residential
Period Being Reported: January 1, 2021 - December 31, 2021

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	1	February 09, 2022	Unannounced - Focused Drinking Water Inspection – not complete at time of issuance.
AWQI's	1	October 20, 2021	Received results of 1 Total Coliform for 1 of 2 distribution water samples
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The South Ramara DWS is supplied with surface water from Lake Simcoe.

Treatment

The treatment system consists of the following:

- Raw water is sourced from Lake Simcoe through an intake crib with an inlet screen further the low lift pumping station consisting of two (2) low lift pumps
- Inlet line connected to sodium hypochlorite feed line diffuser
- Raw water flow meter

- Carbon Dioxide injection system for adjusting pH to optimize coagulation process with a metering panel equipped with actuated control valve and bypass piping, gas feed flowmeter, filter, carbon dioxide gas pressure regulator and isolating manual ball valves
- Sodium hypochlorite is added for pre-chlorination
- Coagulant is added to the raw water header before a static mixer
- Two (2) package treatment units each consisting of a flocculation tanks with variable speed flocculators, settling tanks and dual media filter with rotary surface wash and backwash pumps
- Backwash waste storage/decant tank system. Supernatant to be pumped to Lake Simcoe
- Continuously monitoring turbidity analyzers on each filter line
- Chlorine injection system
- Two (2) above ground clearwells with two highlift pumps
- Chlorine residual and pH analyzers prior to distribution connection
- SCADA computer control system
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
Poly-Aluminum Chloride	Flocculation	Brenntag
Carbon Dioxide	pH Optimization	Praxair

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
October 20, 2021	156094	Distribution Water	Total Coliform results for 1 of 2 distribution water samples	Result of 1 Total Coliform in 1 of 2 distribution samples	O. Reg 170	Operator flushed and collected samples at the same location, upstream and downstream from the adverse location.

Non-Compliance

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance issues reported during the reporting period.				

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
. There were no non-compliance issues reported during the reporting period.				

Flows

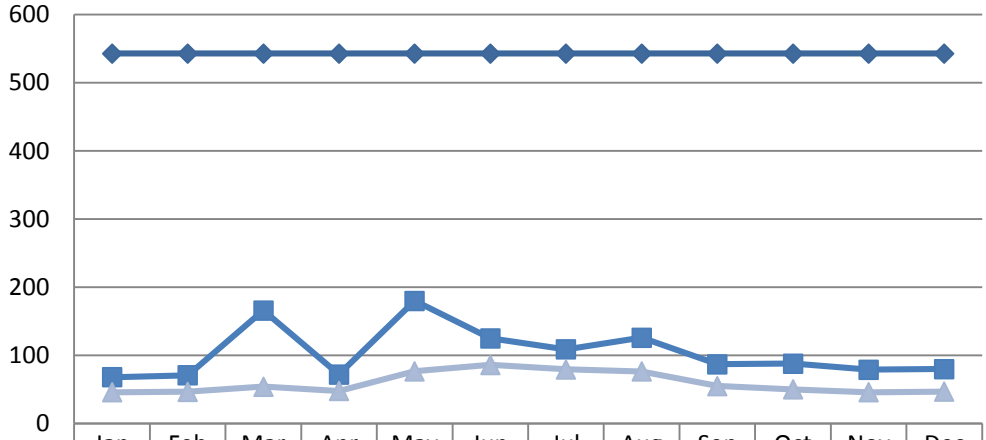
The South Ramara Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2020 Raw Flow Data was submitted to the Ministry electronically under permit #4371-9UYKYB. The confirmation and a copy of the data that was submitted are attached in Appendix A.

Total Monthly Flows (m³/d)

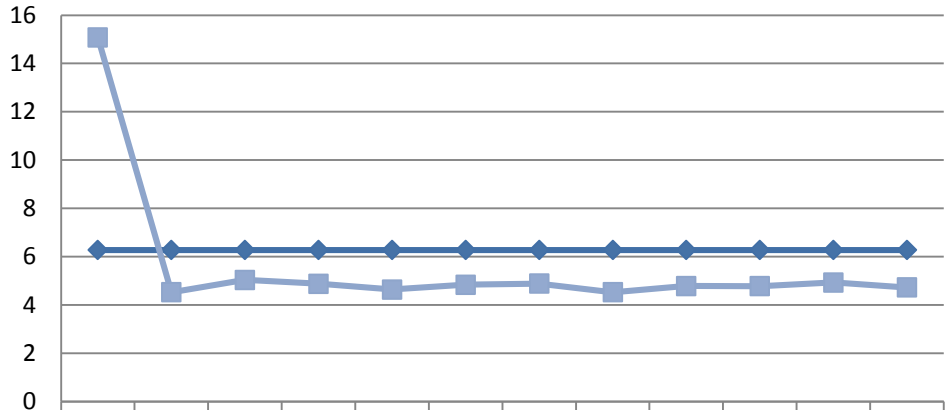
Max Allowable PTTW –Raw



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m³/d)	542.8	542.8	542.8	542.8	542.8	542.8	542.8	542.8	542.8	542.8	542.8	542.8
Max Daily Flow (m³/d)	68	71	166	72	180	125	109	126	87	88	79	80
Avg (m³/d)	46	47	54	48	77	86	80	77	55	50	46	47

Monthly Rated Flows (L/s)

Max allowable rate – PTTW −Raw



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/s)	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28	6.28
Max Rate (L/s)	15.08	4.53	5.04	4.88	4.64	4.84	4.89	4.53	4.79	4.78	4.93	4.73

Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s). The spike in January was due to scheduled Flow Meter calibration. All spikes are reviewed for compliance.

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence. The average water consumption for the South Ramara Drinking Water System during 2021 was: 53 m³/day.

South Ramara Drinking Water System Historical Demands

Year	Number of Connections	Average Daily Demand (m³)	Maximum Daily Demand (m³/day)	Rated Capacity	Per Capita Consumption* (L/p/day)	
					Average	Maximum
2012	99	50	136	387	193	528
2013	100	52	98	387	199	377
2014	100	59	181	387	227	696
2015	102	51	124	387	193	468
2016	104	54	148	387	200	547
2017	104	40.5	104	387	150	385
2018	106	41.7	111	387	151	402
2019	114	46.9	135	387	158	689
2020	115	58.2	175	387	195	585
2021	115	53	128	387	177	428
3 Year Average/Max		52.7	175	387	177	689

*Based on 2.6 people per dwelling

Note: Excluding pipe leaks/breaks & system flushing

Note: This calculation was completed based on current connections in the system, growth within the drinking water system has not been considered.

System Reserve Capacity

In accordance with the MECP Procedure D-5-1, the reserve capacity is calculated by the following formula:

Reserve Capacity= Design Flow- Committed Flow

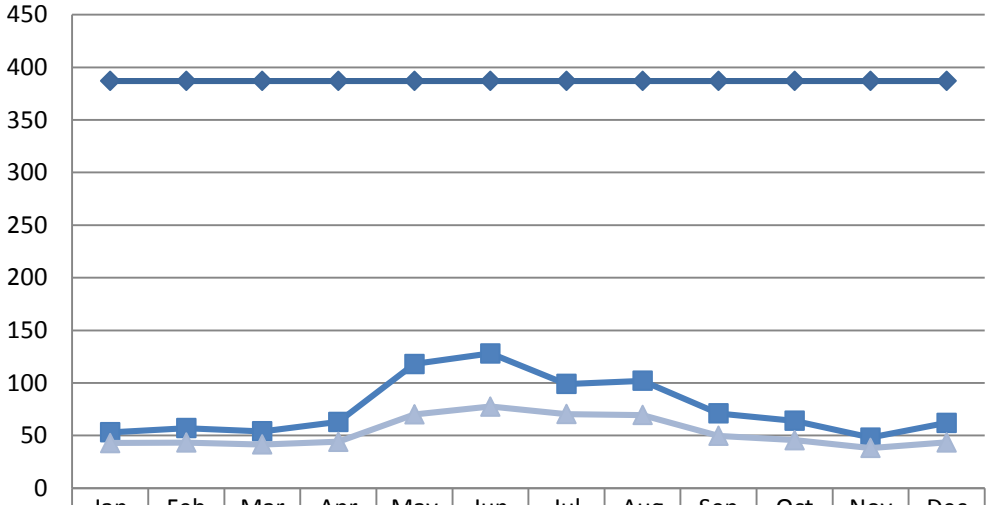
Design flow is the maximum permissible flow approved by the MDWL and/or PTTW. South Ramara Water Works maximum daily rated capacity is 387 m³/day.

The committed flow is the total expected water demand from the existing and proposed connections based on the previous three years of data. The committed number of service connections is: 146.The three-year (2019-2021) maximum per capita water consumption is:689 L/p/day. At this water consumption rate, the committed flow is: 206 m³/day.

As a result, the calculated reserve capacity is: 181 m³/day.

Monthly Rated Flows

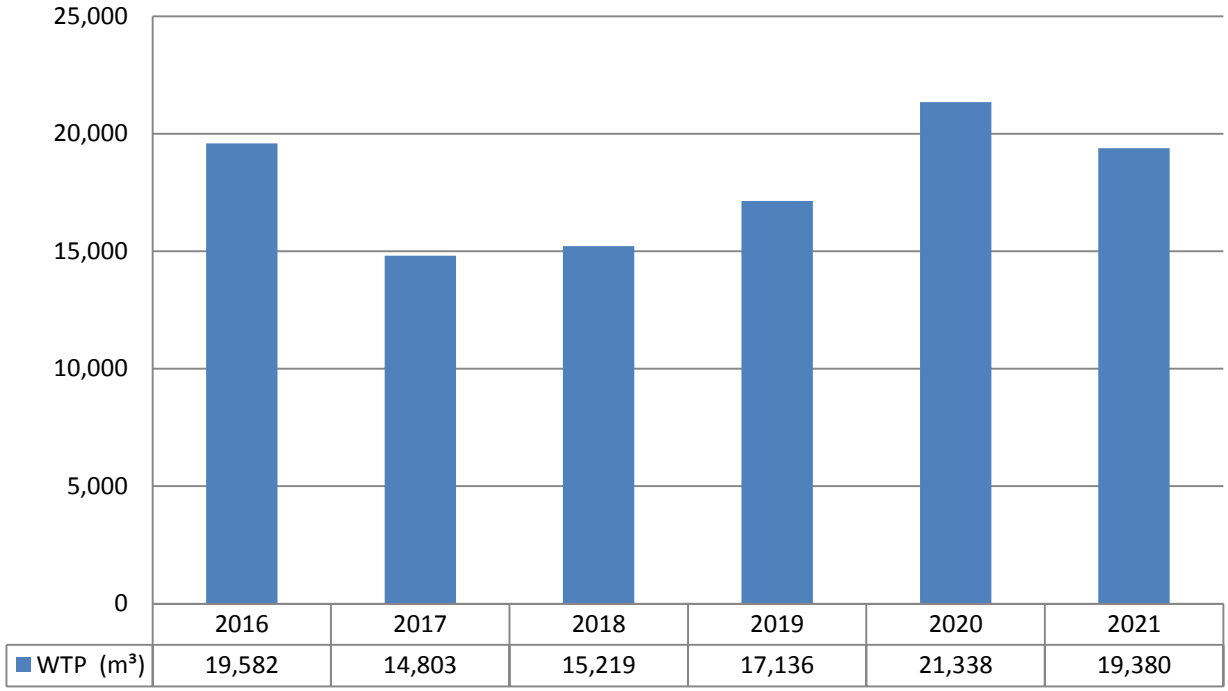
Rated Capacity – MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m³/d)	387	387	387	387	387	387	387	387	387	387	387	387
Max Daily Flow (m³/d)	53	57	54	63	118	128	99	102	71	64	48	62
Avg (m³/d)	42.87	43.36	41.45	44.03	70.06	77.63	70.35	69.52	49.67	45.58	38.17	43.42

Annual Total Flow Comparison

Total Annual m³



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	52	0	80	0	5300		
Treated	52	0	0	0	0	0	1
Distribution	107	0	0	0	1	0	17

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity – Filter Line 1 (NTU)	8760	0.00	10.01
Turbidity – Filter Line 2 (NTU)	8760	0.00	10.32
Turbidity-Treated (NTU)	8760	0.00	10.00
Treated Water Chlorine (mg/L)	8760	0.00	3.63
Distribution Water Chlorine (mg/L)	365	0.26	2.23
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	Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2021/08/04	<MDL 0.9	6.0	No	No
Arsenic: As (ug/L) - TW	2021/08/04	0.3	10.0	No	No
Barium: Ba (ug/L) - TW	2021/08/04	27.0	1000.0	No	No
Boron: B (ug/L) - TW	2021/08/04	22.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2021/08/04	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	2021/08/04	0.28	50.0	No	No
Mercury: Hg (ug/L) - TW	2021/08/04	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2021/08/04	0.08	50.0	No	No
Uranium: U (ug/L) - TW	2021/08/04	0.092	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2017/08/15	0.06	1.5	No	No
Nitrite (mg/L) - TW	2021/02/09	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/05/12	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/08/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2021/11/02	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2021/02/09	0.156	10.0	No	No
Nitrate (mg/L) - TW	2021/05/12	0.066	10.0	No	No
Nitrate (mg/L) - TW	2021/08/04	0.025	10.0	No	No
Nitrate (mg/L) - TW	2021/11/02	0.038	10.0	No	No
Sodium: Na (mg/L) - TW	2021/08/12	32.0	20*	Yes	Yes
Sodium: Na (mg/L) - TW	2021/08/24	33.1	20*	Yes	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 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 Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	2	118	119	N/A	N/A
pH	2	7.51	7.70	N/A	N/A
Lead (ug/l)					

Note: Lead samples were last collected in the distribution system in 2019 as they are only required to be sampled every 36 months. Samples shown above are reflective of the 2021 lead sampling period.

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 (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2021/08/04	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2021/08/04	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2021/08/04	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2021/08/04	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2021/08/04	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2021/08/04	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2021/08/04	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2021/08/04	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2021/08/04	<MDL 0.17	2.00	No	No
Chlorpyrifos (ug/L) - TW	2021/08/04	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2021/08/04	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2021/08/04	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2021/08/04	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2021/08/04	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2021/08/04	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2021/08/04	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride)	2021/08/04	<MDL 0.35	50.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
(ug/L) - TW					
2,4-Dichlorophenol (ug/L) - TW	2021/08/04	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2021/08/04	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2021/08/04	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2021/08/04	<MDL 0.06	20.00	No	No
Diquat (ug/L) - TW	2021/08/04	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2021/08/04	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2021/08/04	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2021/08/04	<MDL 0.02	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA) (ug/L)	2021/08/04	<MDL 0.00012	0.10	No	No
Metolachlor (ug/L) - TW	2021/08/04	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2021/08/04	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2021/08/04	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2021/08/04	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2021/08/04	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2021/08/04	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2021/08/04	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2021/08/04	<MDL 1.0	190.00	No	No
Prometryne (ug/L) - TW	2021/08/04	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2021/08/04	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2021/08/04	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2021/08/04	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/08/04	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2021/08/04	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2021/08/04	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/08/04	<MDL 0.25	5.00	No	No
Trifluralin (ug/L) - TW	2021/08/04	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) - TW	2021/08/04	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2021	70.5	100	No	Yes
HAA Total (ug/L) Annual Average - DW	2021	54.8	80	No	Yes

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

Additional Legislated Samples

Municipal Drinking Water License	Parameter	Date Sampled	Result	Unit of Measure
Settling Tank Discharge Point	Filter Backwash (FBW): Suspended Solids (Composite)	January 2021	8	mg/L
		February 2021	13	mg/L
		March 2021	11	mg/L
		April 2021	5	mg/L
		May 2021	3	mg/L
		June 2021	5	mg/L
		July 2021	116	mg/L
		August 2021	4	mg/L
		September 2021	4	mg/L
		October 2021	7	mg/L
		November 2021	3	mg/L
		December 2021	2	mg/L
Annual Average	Filter Backwash (FBW): Suspended Solids	2021 Annual Average	15.1	mg/L

Note: The Suspended Solids annual average limit is 25 mg/L.

Inorganic or Organic Parameter Exceedances

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
Trihalomethane: Total (ug/L) Annual Average - DW	70.5	(ug/L)	2021 Annual Average
HAA Total (ug/L) Annual Average - DW	54.8	(ug/L)	2021 Annual Average

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

Item #	Description
1	Replace filter 1 main disconnect. Install spare backwash pump filter 1 and send spare for repair. Purchase new chemical tank level sensor. 1 duty 1 spare. Install new solenoid air relief valve for filter syphon.
2	Curb Stop repair, replace backwash tank pump and wiring, computer and network switch.
3	Replace raw pump 2 wet end, replace Co2 analyser, replace UPS
4	Replace transfer switch charger, emergency repair of leaking filter control valves, install filter control valve, repair floculator bushing. Replace filter effluent control valve.

Appendix A

WTRS Data Submission Confirmation