Cobden Drinking Water System

Waterworks # 220001218
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The Township of Whitewater Region

Reporting Period of January 1st – December 31st 2022

Issued: February 22nd, 2023

Revised: March 29th, 2023

Revision: 1

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

The annual report will be available to residents at the Township of Whitewater Region's Municipal Office and copies provided free of charge if requested. The Township of Whitewater Region's Municipal Office is located at, 44 Main Street, Cobden, 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	0
Ministry of Labour Inspections	0
QEMS External Audit	1 Audit completed on February 16th 2022 by SAI Global. No major or minor non-conformances were identified.
AWQI's/BWA	3/0
Non-Compliance	0
Community Complaints	2
Spills	0
Watermain Breaks	2

System Process Description

Raw Source

The Cobden water treatment plant receives raw water from Muskrat Lake. The intake for the water treatment plant consists of a 300 mm diameter pipe located approximately 12.2 m below the water surface, and is equipped with polyethylene lines for seasonal potassium permanganate dosing for zebra mussel and manganese control and for raw water sampling. Water flows by gravity from the intake structure and enters two interconnected intake wet wells with a total volume of 70 m^3. Two vertical turbine low lift pumps 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 Cobden water treatment plant uses chemically assisted filtration to treat the raw water before disinfection occurs. Similar to the intake crib, potassium permanganate is added seasonally at the raw water discharge header for additional manganese control. Raw water leaving the wet wells is injected with the coagulant, PAS-8 and the coagulant aid, Superfloc polymer and is then mixed via an inline static mixer. The Cobden water treatment plant consists of an Ecodyne Package Unit and Corix Treatment Unit. Flow is directed to one treatment unit at a time. The unit's both feature a tank for coagulation and flocculation. This tank has a mixer to facilitate the process. The next stage is sedimentation. This tank utilizes tube settlers to allow the floc to settle. Clarified water off the top of the tank is collected in troughs and distributed to the two-cell dual media (sand/anthracite) gravity filters. A common underdrain collects filter effluent from both cells, and a continuous online turbidimeter monitors each of the filters effluent turbidity.

Sodium hypochlorite is injected into the filtered water prior to entering a dual-celled baffled clearwell with total volume of 187 m^3. The cleawell provides sufficient contact time to meet primary disinfection. Water flows from the clearwell by two high lift pumps into the distribution system. Sodium hypochlorite is injected into the water again before travelling to the distribution system.

Process wastewater is directed to a wastewater tank and discharged to the sanitary sewer. The supernatant chamber which discharges to the lake is no longer in use.

Distribution

The Cobden Distribution System is a Class 1 Distribution System that serves a population of approximately 1000. The distribution system includes 9.2 km of watermain, 61 fire hydrants, and a 900 m^3 elevated water storage tank located at 44 Gould Street. Four sample stations are available on Simmons Drive, Ross Street, Main Street and Morrison Drive to facilitate distribution sampling and provide adequate chlorine residuals in the distributed water.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
PAS-8	Coagulation & Flocculation	Kemira
Superfloc 492PWG	Coagulant Aid (Polymer)	Kemira
Sodium Hypochlorite (12%)	Disinfection	Brenntag
Potassium Permanganate (granular 97.5%)	Zebra Mussel and Manganese Control	Cariox via Brenntag

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
04/04/22	158108	Cobden Distribution System	THM Running Annual Average (RAA) Exceedance	RAA: 102.8 ug/L RAA Limit: 100 ug/L	O. Reg 170/03	Flush system to remove THMs and re-sample
04/08/22	159420	Cobden Distribution System	THM Running Annual Average (RAA) Exceedance	RAA: 104.7 ug/L RAA Limit: 100 ug/L	O. Reg 170/03	Flush system and re-sample. Study by OCWA POTS Team to optimize removal of THM's began May 26th 2022.
06/10/22	160270	Cobden Distribution System	THM Running Annual Average (RAA) Exceedance	RAA: 101.6 ug/L RAA Limit: 100 ug/L	O. Reg 170/03	Flush system and re-sample. OCWA POTS Team study continued until November 22nd 2022.

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.				

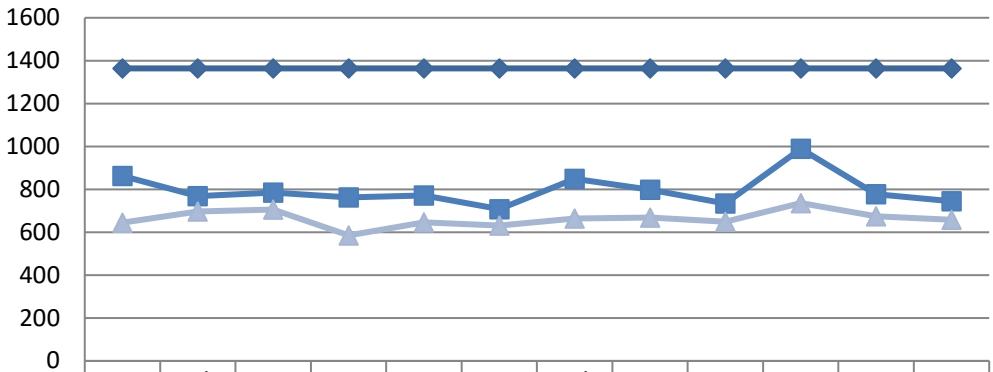
Flows

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 permits #0782-8W3HY8 and #P-300-1175250711. The confirmations that the data was submitted are attached in Appendix A.

Total Monthly Flows

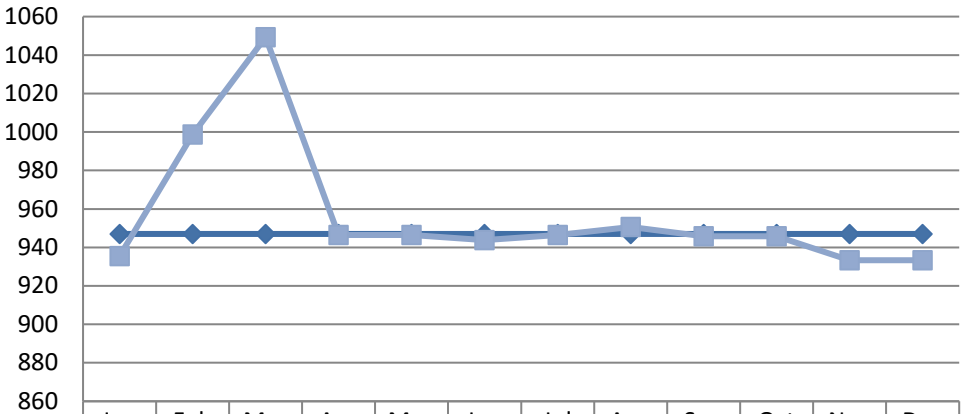
Max Allowable PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364
Max Flow (m3/d)	862	769	785	763	772	708	849	799	734	989	778	744
Avg (m3/d)	645	697	706	585	646	631	664	669	649	736	675	658

Maximum Flow Rates

Max Allowable Rate - PTTW



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/s)	947	947	947	947	947	947	947	947	947	947	947	947
Max Flow (L/min)	935	999	1049	947	947	944	947	951	946	946	933	933

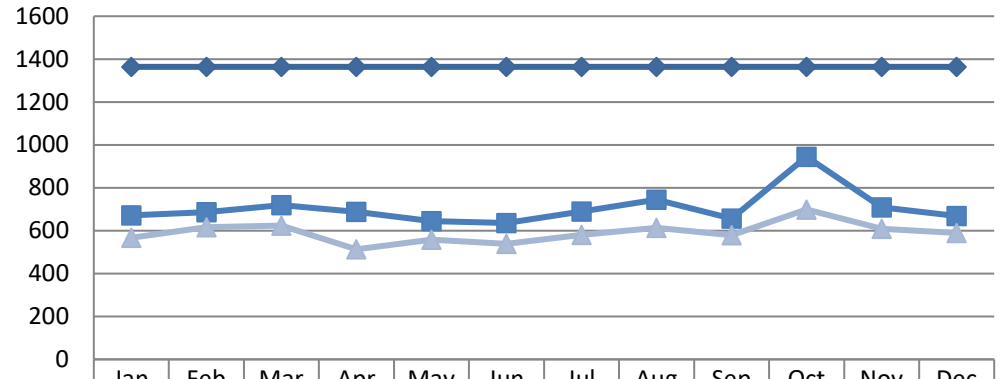
*Note spikes in flow rate that are above max allowable rate were on low lift pump start up and lasted less than a minute, events under a minute are not reportable as a PTTW exceedance

Treated Water Flows

The Treated Water flows are regulated under the Municipal Drinking Water Licence.

Monthly Rated Flows

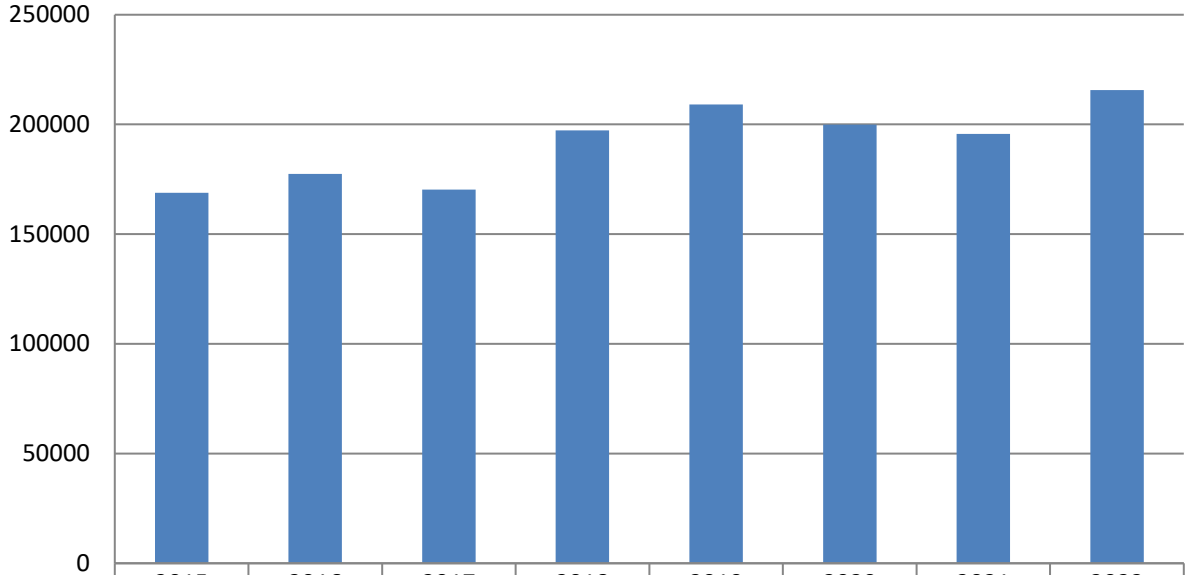
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m3/d)	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364
Max Daily Flow (m3/d)	672	687	719	688	644	636	690	744	656	945	709	668
Avg (m3/d)	567	617	624	513	558	538	581	613	580	699	609	589

Annual Total Flow Comparison

Total Annual m3



	2015	2016	2017	2018	2019	2020	2021	2022
WTP (m3)	168859	177503	170269	197238	209131	199899	195632	215628

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	47*	0	22	0	480	N/A	N/A
Treated Water	52	0	0	0	0	0	2
Distribution Water	114	0	0	0	0	0	105

*NOTE: 52 raw water samples were collected in 2022 though the samples collected June 15th, July 5th, August 16th, September 13th and October 4th were NDOGT - No Data: Overgrown with Target Bacteria for both total coliform and E.Coli results

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	148	0.16	5.5
Turbidity, In-House (NTU) - TW	183	0.04	0.69
Turbidity, On-Line (NTU) - Filter 1	8760	0.00	4.12*
Turbidity, On-Line (NTU) - Filter 2	8760	0.00	1.18*
Highlift Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.62	5.00*
Post Trim Free Chlorine Residual, In-House (mg/L) - DW	8760	0.28	4.15
Free Chlorine Residual, In House (mg/L) - DW	366	0.06	2.20

*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 O. Reg. 170/03. Sodium and Fluoride are required to be tested every 60 months. Nitrate and Nitrite are tested quarterly and metals are tested annually as required under O. Reg. 170/03. In the event any parameter exceeds half 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	2022/01/11	<MDL 0.6	6.0	No	No
Arsenic: As (ug/L) - TW	2022/01/11	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2022/01/11	27.8	1000.0	No	No
Boron: B (ug/L) - TW	2022/01/11	14.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2022/01/11	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L) - TW	2022/01/11	0.17	50.0	No	No
Mercury: Hg (ug/L) - TW	2022/01/11	<MDL 0.01	1.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Selenium: Se (ug/L) - TW	2022/01/11	0.05	50.0	No	No
Uranium: U (ug/L) - TW	2022/01/11	0.277	20.0	No	No
Additional Inorganics					
Nitrite (mg/L) - TW	2022/01/11	<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	2022/07/12	<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	2022/01/11	0.293	10.0	No	No
Nitrate (mg/L) - TW	2022/04/05	0.321	10.0	No	No
Nitrate (mg/L) - TW	2022/07/12	0.318	10.0	No	No
Nitrate (mg/L) - TW	2022/10/04	0.088	10.0	No	No
Fluoride (mg/L) - TW	2019/01/03	0.13	1.5	No	No
Sodium: Na (mg/L) - TW	2019/01/03	16.0	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	114	117	N/A	N/A
pH	2	4	7.4	8.0	N/A	N/A
Lead (ug/L)	N/A	N/A	N/A	N/A	10	0

Organic Parameters

These parameters are tested annually as a requirement under O. Reg. 170/03. In the event any parameter exceeds half 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	2022/01/11	<MDL 0.02	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2022/01/11	0.01	5.0	No	No
Azinphos-methyl (ug/L) - TW	2022/01/11	<MDL 0.05	20.0	No	No
Benzene (ug/L) - TW	2022/01/11	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2022/01/11	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2022/01/11	<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	2022/01/11	<MDL 0.05	90.0	No	No
Carbofuran (ug/L) - TW	2022/01/11	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2022/01/11	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L) - TW	2022/01/11	<MDL 0.02	90.0	No	No
Diazinon (ug/L) - TW	2022/01/11	<MDL 0.02	20.0	No	No
Dicamba (ug/L) - TW	2022/01/11	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/11	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/11	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2022/01/11	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/11	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022/01/11	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2022/01/11	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/01/11	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L) - TW	2022/01/11	<MDL 0.4	9.0	No	No
Dimethoate (ug/L) - TW	2022/01/11	<MDL 0.06	20.0	No	No
Diquat (ug/L) - TW	2022/01/11	<MDL 1.0	70.0	No	No
Diuron (ug/L) - TW	2022/01/11	<MDL 0.03	150.0	No	No
Glyphosate (ug/L) - TW	2022/01/11	<MDL 1.0	280.0	No	No
Malathion (ug/L) - TW	2022/01/11	<MDL 0.02	190.0	No	No
Metolachlor (ug/L) - TW	2022/01/11	<MDL 0.01	50.0	No	No
Metribuzin (ug/L) - TW	2022/01/11	<MDL 0.02	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/01/11	<MDL 0.3	80.0	No	No
Paraquat (ug/L) - TW	2022/01/11	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2022/01/11	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L) - TW	2022/01/11	<MDL 0.15	60.0	No	No
Phorate (ug/L) - TW	2022/01/11	<MDL 0.01	2.0	No	No
Picloram (ug/L) - TW	2022/01/11	<MDL 1.0	190.0	No	No
Prometryne (ug/L) - TW	2022/01/11	<MDL 0.03	1.0	No	No
Simazine (ug/L) - TW	2022/01/11	<MDL 0.01	10.0	No	No
Terbufos (ug/L) - TW	2022/01/11	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2022/01/11	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/11	<MDL 0.2	100.0	No	No
Triallate (ug/L) - TW	2022/01/11	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L) - TW	2022/01/11	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/11	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2022/01/11	<MDL 0.12	100.0	No	No
Trifluralin (ug/L) - TW	2022/01/11	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L) - TW	2022/01/11	<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 Running Average - DW	2022	92.2	100.0	No	Yes
Haloacetic Acid (HAA): Total (ug/L) Annual Running Average - DW	2022	72.8	80.0	No	Yes

Additional Legislated Samples

Schedule C: System-Specific Conditions of Municipal Drinking Water License #203-202 requires the Cobden Drinking Water System to have a Harmful Algal Bloom (HAB) plan. The HAB plan is to be implemented when a potential harmful algal bloom is suspected or present in the source water. Muskrat Lake, the raw water source for the Cobden DWS, has a known history of Blue-Green Algae blooms. To ensure the drinking water remains unaffected the Raw and Treated water is sampled on a weekly basis for Microsystin during the Harmful Algal Bloom season, which occurs from June 1st to October 31st of each year.

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Microcystin (ug/L) - RW	23	<MDL 0.1	<MDL 0.1
Microcystin (ug/L) - TW	23	<MDL 0.1	<MDL 0.1

<MDL = Less than Method Detection Limit

Schedule C: System-Specific Conditions of Municipal Drinking Water License #203-202 requires the Cobden Drinking Water System to monitor the effluent discharged to the natural environment. It should be noted that the backwash effluent directly discharges to the sanitary sewer to be processed at the Cobden Wastewater Treatment Plant, and as such the effluent was not sampled on a quarterly basis in 2022. An amendment to Schedule C of the MDWL is being processed to remove this condition.

Legal Document	Date of Issuance	Parameter	Limit (mg/L)	Result (mg/L)
MDWL #203-202	24-Sept-2020	Backwash Effluent Suspended Solids	Annual Average < 25 mg/L	11.5
MDWL #203-202	24-Sept-2020	Backwash Effluent Total Chlorine Residual	Annual Average < 0.02 mg/L	0.16

Major Maintenance Summary

WO #	Description
2635770	Installed new online Turbidity Analyzers for Filter #1, Filter #2 and Treated Water
2776330	Fire Code deficiencies found in treatment plant repaired as per Township of Whitewater Region Fire Department

WO #	Description
2821064	Replaced process wastewater sludge pump
2822734	Automatic backup power supply generator processer fault repaired
2823829	Filter #2 rinse to waste valve repaired
2870632	Filter #2 rinse to waste valve repair failed, valve replaced
2872142	Hydrant at corner of Crawford Street & Main Street repaired
2917089	Hydrant at 100 Main Street replaced
2962640	Process wastewater tank cleaned and inspected
2964191	Polymer dosing pump replaced
3065586	Filter #2 de-sludge valve replaced
3106937	Spill Pallet/Spill Kit purchased as per Ministry of Environment, Conservation and Parks
3107158	Sodium Hypochlorite bulk tank filling line repaired
3147266	Backflow Preventers tested, repairs to occur in 2023

Distribution Maintenance

Date	Location Reference	Category	Details	Corrective Repair
January 12, 2022	Corner of John and Jason Street	1	Emergency repair of a watermain break	Repair completed under full pressure using 4” Repair Band
May 3, 2022	Entire System	N/A	Spring flushing program	N/A
October 4, 2022	Entire System	N/A	Fall flushing program	N/A
November 29, 2022	42 Gould Street	1	Emergency repair of a watermain break	Replace six feet of 6” blue brute pipe and install two new 6” Hi-max couplers

Appendix A

WTRS and RSRS Data and Submission Confirmation

Ontario

environet WTRS

Ministry of the Environment, Conservation and Parks

| WT DATA | 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: 0782-8W3HY8
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF WHITEWATER REGION.
Received on:Feb 16, 2023 10:56 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.

Print Confirmation | Return to Main Page

KAYLEE SAAR | 2023/02/16
version: v4.5.0.21 (build#: 22)
Last modified: 2018/09/18

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

Client Name: THE CORPORATION OF THE TOWNSHIP OF WHITEWATER REGION **Reporting Year:** 2022 **Service:** PTTW **Permit Number:** P-300-1175250711 **Permit Version:** 1.0 **New or Updated Submission:** NEW
Site Name: Cobden Water Treatment Plant
Source ID: 500000637197 **Source Name:** Muskrat Lake **Source Type:** Lake
UTM(Zone/Easting/Northing): 18/353658.0/5055621.0 **Method of Determination:** Metered **Unit of Measure:** Litre

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1								670000.0	575000.0	671000.0	509000.0	518000.0
2								616000.0	611000.0	671000.0	651000.0	660000.0
3								645000.0	611000.0	770000.0	714000.0	660000.0
4								539000.0	685000.0	800000.0	677000.0	660000.0
5								650000.0	685000.0	826000.0	677000.0	585000.0
6								650000.0	580000.0	969000.0	677000.0	683000.0
7								650000.0	650000.0	733000.0	693000.0	623000.0
8								653000.0	653000.0	733000.0	669000.0	625000.0
9								506000.0	699000.0	634000.0	832000.0	685000.0
10								731000.0	699000.0	634000.0	728000.0	685000.0
11								572000.0	699000.0	747000.0	728000.0	685000.0
12								649000.0	617000.0	799000.0	601000.0	716000.0
13								649000.0	687000.0	676000.0	601000.0	780000.0
14								649000.0	623000.0	684000.0	574000.0	616000.0
15								559000.0	874000.0	684000.0	603000.0	646000.0
16							677000.0	1034000.0	582000.0	684000.0	676000.0	692000.0
17							692000.0	614000.0	582000.0	671000.0	624000.0	692000.0
18							581000.0	717000.0	582000.0	774000.0	708000.0	692000.0
19							767000.0	697000.0	793000.0	646000.0	708000.0	802000.0
20							634000.0	697000.0	595000.0	892000.0	708000.0	539000.0
21							591000.0	697000.0	582000.0	761000.0	691000.0	696000.0
22							718000.0	746000.0	876000.0	761000.0	671000.0	736000.0
23							718000.0	676000.0	613000.0	761000.0	584000.0	709000.0
24							718000.0	491000.0	613000.0	783000.0	746000.0	709000.0
25							550000.0	756000.0	613000.0	907000.0	667000.0	635000.0
26							671000.0	629000.0	611000.0	940000.0	667000.0	635000.0
27							905000.0	629000.0	607000.0	833000.0	667000.0	635000.0
28							538000.0	629000.0	657000.0	678000.0	700000.0	698000.0
29							757000.0	653000.0	624000.0	678000.0	670000.0	628000.0
30							757000.0	973000.0	671000.0	678000.0	752000.0	665000.0

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
31							670000.0	775000.0		449000.0		665000.0

Name of Attester
First Name: Kaylee
Last Name: Saar
Company: Ontario Clean Water Agency
Date Certified/Submitted(yyyy/mm/dd): 2023/02/21