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 1th – December 31st 2020

Issued: February 19th, 2021

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 Whitewater Region's Municipal Office. Notification will be at the 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.

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1 Inspection on November 3rd, 2020 -Report has no yet been received-
Ministry of Labour Inspections	N/A
QEMS External Audit	Completed on January 21, 2020 by SAI Global. No major or minor non-conformances were identified.
AWQI's/BWA	N/A
Non-Compliance	N/a
Community Complaints	1 – Related to aesthetics
Spills	N/A
Watermain Breaks	5 – Breaks repaired during the reporting period. See details in the *Distribution Maintenance* section of this report.

System Process Description

Raw Source

The Cobden water treatment plant receives raw water from the Muskrat Lake and is therefore a conventional surface water treatment plant. The intake for the water treatment plant consists of a 300mm diameter pipe located approximately 12.2 m below the water surface, which extends from Muskrat Lake to the low lift wells in the treatment plant. The intake structure is rated for 2.7 ML/day, and is equipped with polyethylene lines for zebra mussel control and raw water sampling. Water flows by gravity from the intake structure and enters two interconnected intake wet wells with a total volume of 70 m3. Two vertical turbine low lift pumps, each rated at 16.6 L/s at a total dynamic head (TDH) of 10 m, 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

Raw water is treated with polymer and PAS8, mixed with an inline static mixer located at the raw water header before entering one of two package treatment units. A coagulant is added by two metering pumps (duty and standby) each capable of 11 L/h, complete with auto switchover control. There are also two bulk storage tanks and one day tank with spill containment. Polymer is also added as a coagulant aid. The polymer is added using two metering pumps (duty and standby) each capable if 17.1 L/h, also with auto switchover control.

The Corix treatment unit is rated at 16.6 L/s and provides coagulation, flocculation, sedimentation and filtration. The unit contains a rapid mixer, a dual-chamber flocculator, a clarifier with settling tubes, and a dual media gravity filter (anthracite and silica sand) complete with an underdrain.

The older unit, a Graver/Ecodyne package water treatment plant rated at 16.6 L/s. It provides coagulation, flocculation, sedimentation and filtration, and has been upgraded to enable filter-to-waste operation. This unit is primarily used as a backup system.

Potassium permanganate is added seasonally to the intake for zebra mussel and manganese control. The potassium permanganate is injected at the raw water intake crib and at the raw water discharge header. It consists of two metering pumps (one feeding at raw water crib and one feeding at raw water discharge header) each capable of 11 L/h. There is one solution mixing tank and two day tanks complete with transfer pump and spill containment.

Disinfection is with Sodium hypochlorite solution that is injected into the effluent piping that conveys filtered water into a dual-celled baffled clearwell with total volume of 187 m3. The former 36.8 m3 un-baffled clearwell is no longer in use. The disinfection system includes four metering pumps (1 duty and 1 standby for post-trim each capable of 2.1 L/h, 1 duty and 1 standby for post-chlorination each capable of 4.1 L/h) and all pumps complete with auto switchover control.

Water flows from the clearwell to two interconnected high lift pump wells. Each of the two pumps wells is equipped with a vertical turbine high lift pump rated at 16.6 L/s (at TDH of 14.7 m). Sodium hypochlorite is injected at the high lift header for secondary disinfection. This chlorine feed system has been designed to be used for either pre-chlorination or post-trim chlorination.

Process wastewater is directed to a new 100 m3 wastewater tank with a settling/equalization chamber and a supernatant chamber. The settling chamber is equipped with a sludge pump rated at 2.8 L/s that discharges to the sanitary sewer. The supernatant chamber contains an identically sized pump which discharges to the lake. Waste from floor drains is directed to a sump with a submersible pump rated at 2.8 L/s, discharging to a sanitary manhole.

The facility also has a standby diesel generator with fuel storage tank. The diesel generator will provide power to the entire plant and is sufficient to operate pumps at the design average day capacity.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
PAS8	Coagulant	Kemira Canada, Inc
Superfloc 492PWG	Polymer	Kemira Canada, Inc
Sodium Hypochlorite (12%)	Disinfection	Brenntag Canada Inc.
Potassium Permanganate (granular 97.5%)	Zebra Mussel and Manganese Control	Brenntag Canada Inc.

Distribution

The Town of Cobden Distribution System serves a population of approximately 965 and it is rated as a Class 1 Distribution System. The distribution system in Cobden includes 9.2 km of watermain and 51 fire hydrants. Flushing stations designed by the municipal staff have been installed at dead ends in the system. One is located at Ross Street, and another at Simmons Street. The Cobden elevated water storage facility is located at 44 Gould Street. It is a composite water tower with storage capacity of 900m3.
The Distribution System does not receive water from other sources or water systems and also does not service other water systems or municipalities.

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
There was no adverse water quality incidents reported during the reporting period.						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There was 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 identified during Ministry inspections				

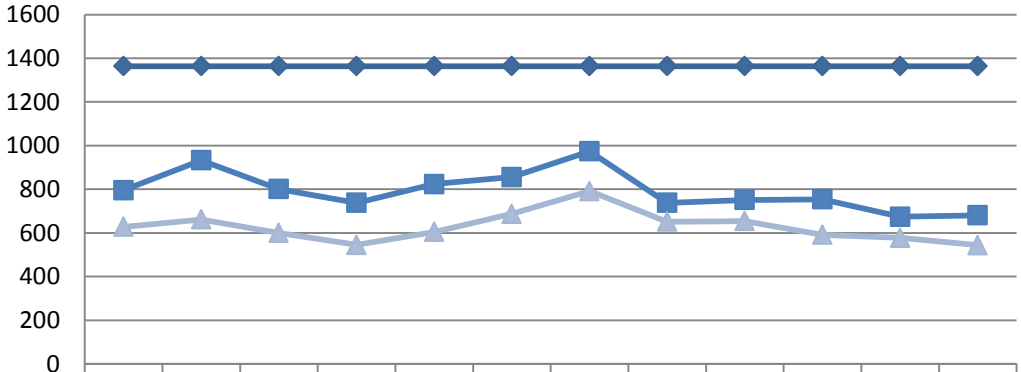
Flows

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 # 0782-8W3HY8. The confirmation and a copy of the data that was submitted are attached in Appendix A.

Total Monthly Flows (m3/d)

Max Allowable PTTW



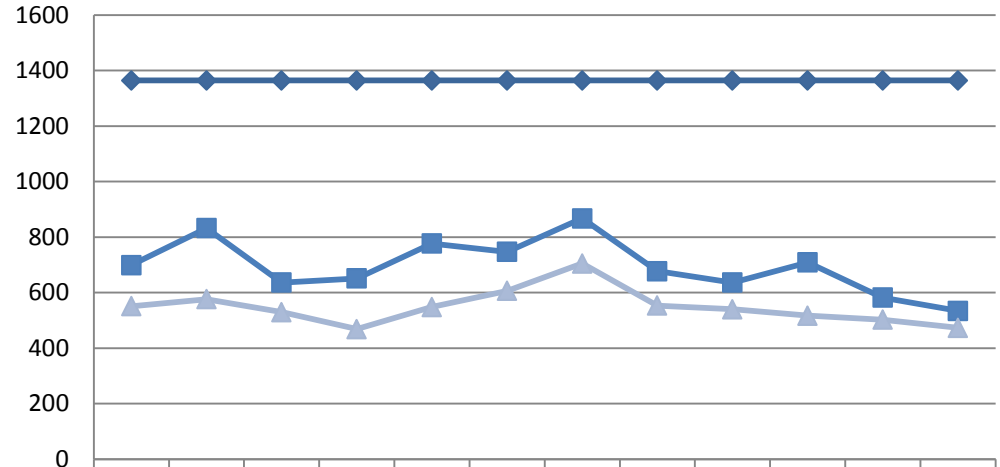
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m3/d)	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364	1364
Max Flow (m3/d)	796	933	801	738	824	856	974	738	751	754	674	681
Avg (m3/d)	628	662	600	545	605	688	791	652	655	591	577	544

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

Monthly Rated Flows

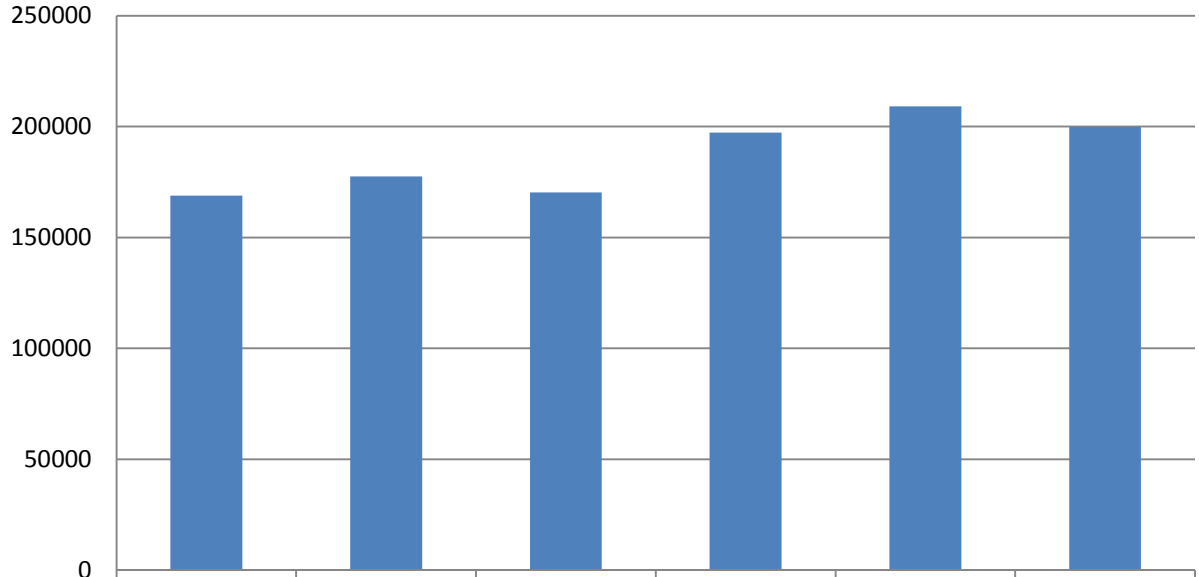
Rated Capacity - MDWL



	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)	699	832	636	651	777	747	867	677	636	709	582	534
Avg (m3/d)	551	576	529	468	548	606	705	553	540	517	502	473

Annual Total Flow Comparison

Total Annual m3



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

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	52	0	4	0	65		
Treated Water	53	0	0	0	0	0	1
Distribution Water	120	0	0	0	0	0	680

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	141	0.06	2.7
Turbidity, In-House (NTU) - TW	161	0.08	0.6
Turbidity, On-Line (NTU) – Filter 2	continuous	0.00	0.51
Post Disinfection / Cl Residual: Free - mg/L	240	1.23	3.6
Raw Water / Colour - TCU	70	6	154
Raw Water / Temperature - °C	70	3.5	22.7
Raw Water / Turbidity - NTU	71	0.75	6.1
Raw Water / pH - ---	70	6.6	7.8
Treated Water / Colour - TCU	72	0	16
Treated Water / pH - ---	72	6.3	7.7
Free Chlorine Residual, In-House (mg/L) - TW	248	0.9	2.15
Free Chlorine Residual, In House (mg/L) - DW	381	0.14	2.12

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 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
- BDL = Below the laboratory detection level

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2020/01/08	<MDL 0.5	6.0	No	No
Arsenic: As (ug/L) - TW	2020/01/08	<MDL 1.0	10.0	No	No
Barium: Ba (ug/L) - TW	2020/01/08	30.0	1000.0	No	No
Boron: B (ug/L) - TW	2020/01/08	10.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/01/08	<MDL 0.1	5.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Chromium: Cr (ug/L) - TW	2020/01/08	<MDL 1.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/01/08	<MDL 0.1	1.0	No	No
Selenium: Se (ug/L) - TW	2020/01/08	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2020/01/08	<MDL 1.0	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2019/01/03	0.13	1.5	No	No
Nitrite (mg/L) - TW	2020/01/08	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/04/15	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/07/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2020/10/21	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2020/01/08	0.29	10.0	No	No
Nitrate (mg/L) - TW	2020/04/15	0.381	10.0	No	No
Nitrate (mg/L) - TW	2020/07/06	0.141	10.0	No	No
Nitrate (mg/L) - TW	2020/10/21	0.143	10.0	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	92	124	n/a	n/a
pH	2	4	7.6	7.7	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 (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2020/01/08	<MDL 0.5	5.0	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2020/01/08	<MDL 1.0	5.0	No	No
Azinphos-methyl (ug/L) - TW	2020/01/08	<MDL 2.0	20.0	No	No
Benzene (ug/L) - TW	2020/01/08	<MDL 0.5	1.0	No	No
Benzo(a)pyrene (ug/L) - TW	2020/01/08	<MDL 0.01	0.01	No	Yes
Bromoxynil (ug/L) - TW	2020/01/08	<MDL 0.5	5.0	No	No
Carbaryl (ug/L) - TW	2020/01/08	<MDL 5.0	90.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Carbofuran (ug/L) - TW	2020/01/08	<MDL 5.0	90.0	No	No
Carbon Tetrachloride (ug/L) - TW	2020/01/08	<MDL 0.2	2.0	No	No
Chlorpyrifos (ug/L) - TW	2020/01/08	<MDL 1.0	90.0	No	No
Diazinon (ug/L) - TW	2020/01/08	<MDL 1.0	20.0	No	No
Dicamba (ug/L) - TW	2020/01/08	<MDL 1.0	120.0	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/01/08	<MDL 0.4	200.0	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/01/08	<MDL 0.4	5.0	No	No
1,2-Dichloroethane (ug/L) - TW	2020/01/08	<MDL 0.2	5.0	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/01/08	<MDL 0.5	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/01/08	<MDL 4.0	50.0	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/01/08	<MDL 0.2	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2020/01/08	<MDL 1.0	100.0	No	No
Diclofop-methyl (ug/L) - TW	2020/01/08	<MDL 0.9	9.0	No	No
Dimethoate (ug/L) - TW	2020/01/08	<MDL 2.5	20.0	No	No
Diquat (ug/L) - TW	2020/01/08	<MDL 5.0	70.0	No	No
Diuron (ug/L) - TW	2020/01/08	<MDL 10.0	150.0	No	No
Glyphosate (ug/L) - TW	2020/01/08	<MDL 10.0	280.0	No	No
Malathion (ug/L) - TW	2020/01/08	<MDL 0.5	190.0	No	No
Metolachlor (ug/L) - TW	2020/01/08	<MDL 1.0	50.0	No	No
Metribuzin (ug/L) - TW	2020/01/08	<MDL 5.0	80.0	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2020/01/08	<MDL 0.5	80.0	No	No
Paraquat (ug/L) - TW	2020/01/08	<MDL 1.0	10.0	No	No
PCB (ug/L) - TW	2020/01/08	<MDL 0.1	3.0	No	No
Pentachlorophenol (ug/L) - TW	2020/01/08	<MDL 1.0	60.0	No	No
Phorate (ug/L) - TW	2020/01/08	<MDL 0.5	2.0	No	No
Picloram (ug/L) - TW	2020/01/08	<MDL 5.0	190.0	No	No
Prometryne (ug/L) - TW	2020/01/08	<MDL 0.25	1.0	No	No
Simazine (ug/L) - TW	2020/01/08	<MDL 1.0	10.0	No	No
Terbufos (ug/L) - TW	2020/01/08	<MDL 0.4	1.0	No	No
Tetrachloroethylene (ug/L) - TW	2020/01/08	<MDL 0.3	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/01/08	<MDL 1.0	100.0	No	No
Triallate (ug/L) - TW	2020/01/08	<MDL 1.0	230.0	No	No
Trichloroethylene (ug/L) - TW	2020/01/08	<MDL 0.3	5.0	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/01/08	<MDL 1.0	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2020/01/08	<MDL 10.0	100.0	No	No
Trifluralin (ug/L) - TW	2020/01/08	<MDL 1.0	45.0	No	No
Vinyl Chloride (ug/L) - TW	2020/01/08	<MDL 0.2	1.0	No	No
Distribution Water					

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Trihalomethane: Total (ug/L) Annual Average - DW	2020/01/01	91.925	100.0	No	Yes
HAA Total (ug/L) Annual Average - DW	2020/01/01	57.45	80.0	No	Yes

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

Additional Legislated Samples

Muskrat Lake in Cobden has a known history of Blue-Green Algae blooms. To ensure the drinking water remains unaffected the Raw and Treated water is sampled weekly for Microsystin in the summer months (June to October). There were no Raw or Treated water results that detected microsystin.

Appendix C has monthly summary data for the Additional Legislated Samples.

Legal Document	Date of Issuance	Parameter	Date Sampled	Result	Unit of measure
Municipal License #203-202	24-Sept-2020	Backwash Effluent Suspended Solids	Annual Avg.	6.42	mg/L

Major Maintenance Summary

WO #	Description
1710330	Metcon CL2 parts for Cobden WTF 1274 Quote #8010510
1749166	Crawl const. Cleaning Main Valve boxes Cobden 1274
1874697	ProMinent CLE 3.1 mA 5 PPM Free CL2 Sensor Invoice # 2601402 Cobden WTF 1274lights
1874915	Cobden WTP New Water Heater 1274
1960144	Cobden WTP Intake inspection
2001163	Cobden 1274 Valve replace John St House #9
2038993	1274- Cobden DWS- Valve Repacement- John St
2039663	ProMinent CLE 3.1 mA 5 PPM Free CL2 Sensor Invoice # 2601402 Cobden WTF 1274

Distribution Maintenance

Date	Location Reference	Category	Details	Corrective Repair
February 25,2020	28 Gould St.	1	Watermain break	Service saddle and main stop was replaced
February 27, 2020	Intersection of John St. and Jason St.	1	Watermain Repair	Repair band was installed.

April 1st, 2020	11 Jason St.	1	Watermain Repair	Repair band was installed.
Spring 2020	All valves	N/A	Watermain valves exercised	N/A
Spring and Fall 2020	All Hydrants	N/A	Annual hydrant maintenance and flushing program	N/A
May 21st, 2020	Wren Subdivision	1	New service install	New main stop and service installed.
November 26, 2020	52 Astrolab Rd	1	Valve replacement.	N/A

Appendix A

WTRS Data and Submission Confirmation

Ontario

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:Jan 13, 2021 9:59 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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