

South Dundas Regional Drinking Water System

Waterworks # 220001012
System Category – Large Municipal Residential

Annual Report

Reporting Period of January 1st – December 31st 2020

Issued: February 26, 2021

Revision: 1

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

As the South Dundas Regional Drinking Water System is considered a large municipal residential system under O. Reg. 170/03, this report must be made available to the public. It can be found at the municipal office, located at 34 Ottawa Street, Morrisburg, Ontario and on the municipal website (www.southdundas.com).

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	1
Ministry of Labour Inspections	0
QEMS External Audit	1
AWQI's/BWA	0/0
Non-Compliance	1
Spills	0
Watermain Breaks	12

System Process Description

Raw Source

Water is drawn from the St. Lawrence River through a 450 mm diameter steel intake pipe equipped with a sodium hypochlorite feed system for zebra mussel control. The raw water intake crib is located off shore, south of the low lift building located at the base of Augusta Street in Morrisburg. Three vertical turbine pumps convey water from the low lift building to the water treatment plant located at 99 Augusta Street, Morrisburg.

Treatment

Inside the water treatment facility, water undergoes ultra-filtration through membrane cassettes (ZeeWeed membranes, manufactured by Zenon) which are housed in large concrete tanks. There are three concrete filter tanks, each of which contains two ultra-filtration cassettes. Each filter has a chemical clean and backwash system. They are each equipped with a turbidity analyzer and particle count meter. Three granular activated carbon (GAC) contactors provide taste and odour control. Sodium hypochlorite is used for disinfection. A multi-cell baffled clearwell provides chlorine contact time.

Distribution

Water is transported through an 11.5 km transmission main from Morrisburg to Iroquois. The water is rechlorinated at a booster station in Iroquois. A steel elevated storage tank is located in each town. Each has a capacity of 945 m³. There are approximately 15 kilometers of water main in Morrisburg and approximately 12 kilometers in Iroquois. The watermains are composed of PVC, cast iron and ductile iron. The combination of clear wells, the reservoir and the elevated tanks provide for peak hour demands and fire flows.

Treatment Chemicals used during the reporting year

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
None reported						

Non-Compliance

Legislation	requirement(s) system failed to meet	Date	Details	Corrective Action	Status
None reported					

Non-Compliance Identified in a Ministry Inspection

Legislation	requirement(s) system failed to meet	Date(s)	Corrective Action	Status
SDWA 31(1)(b) & Ontario's Watermain Disinfection Procedure	Did not have proper recordkeeping or documentation of initial dose and duration of disinfection during watermain installation and had samples collected by someone other than a Certified Operator	April 28, 2020, April 30, 2020 and July 17 2020	Created two SOP's for watermain Repairs & Disinfection as well as forms for watermain repairs & commissioning to ensure the Ministry's Watermain Disinfection Procedure will be met	Complete

Flows

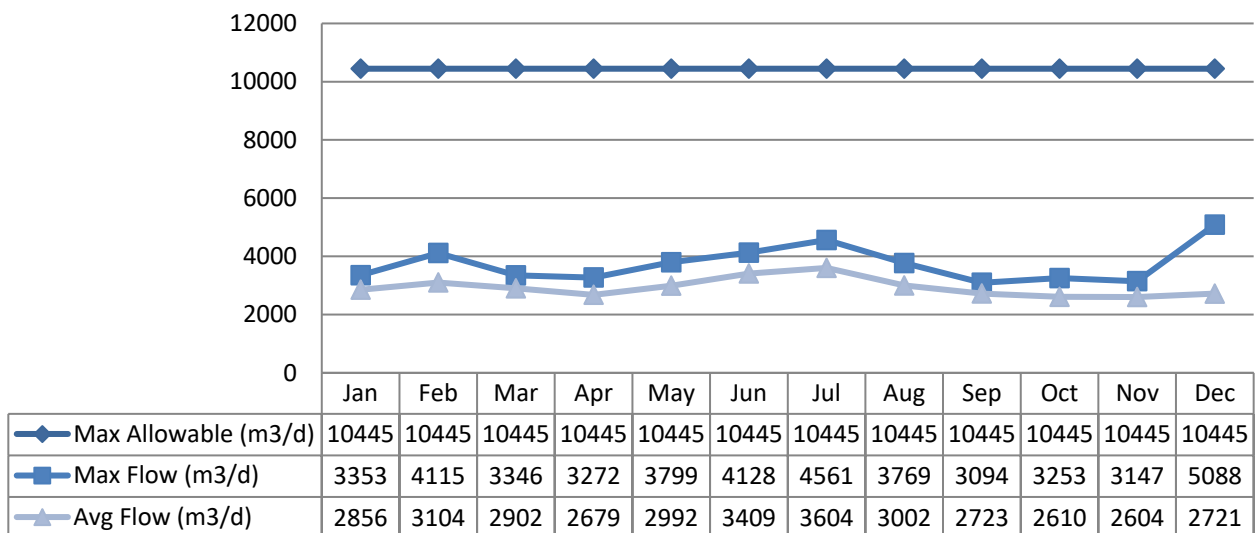
South Dundas' Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

Raw water flows are regulated under the Permit to Take Water (PTTW). Raw flow data for 2020 was submitted to the Ministry electronically under Permit #4362-AAKQNY. The submission confirmation can be found attached in Appendix A.

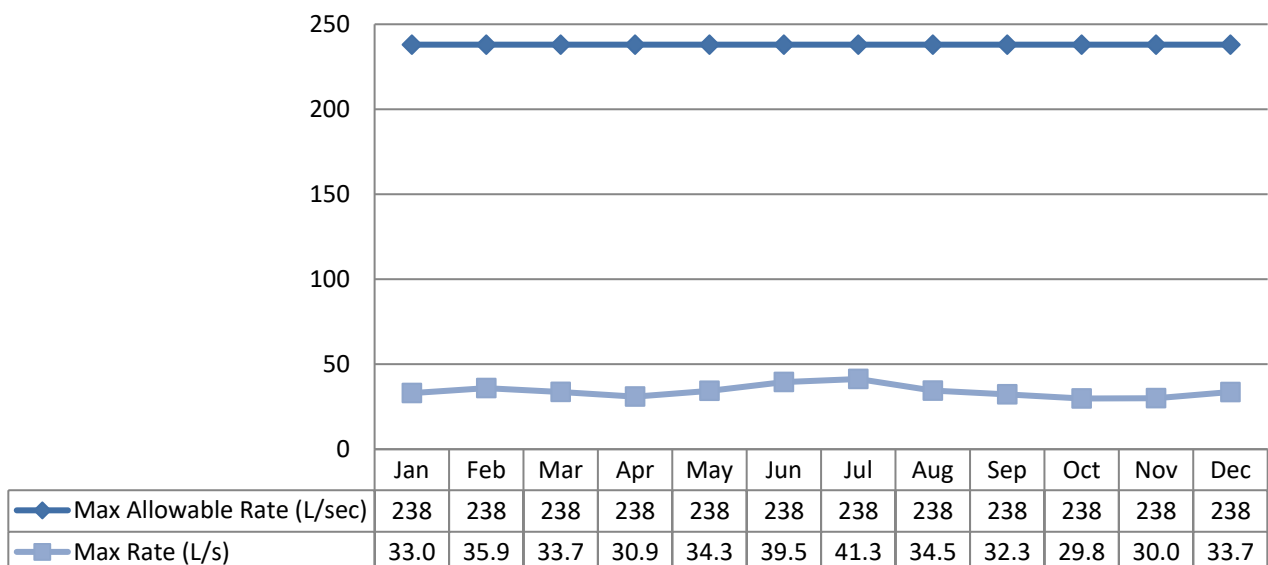
Raw Flows

Max. Allowable Flow - PTTW



Maximum Flow Rates

Max. Allowable Rate - PTTW

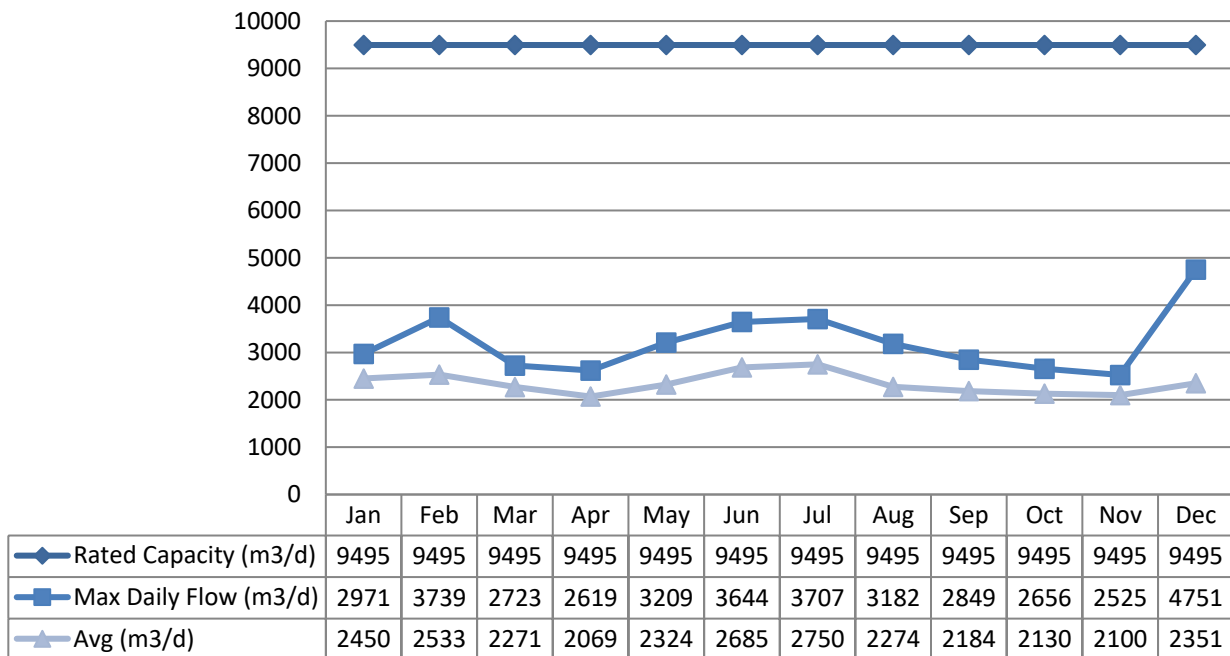


Treated Water Flows

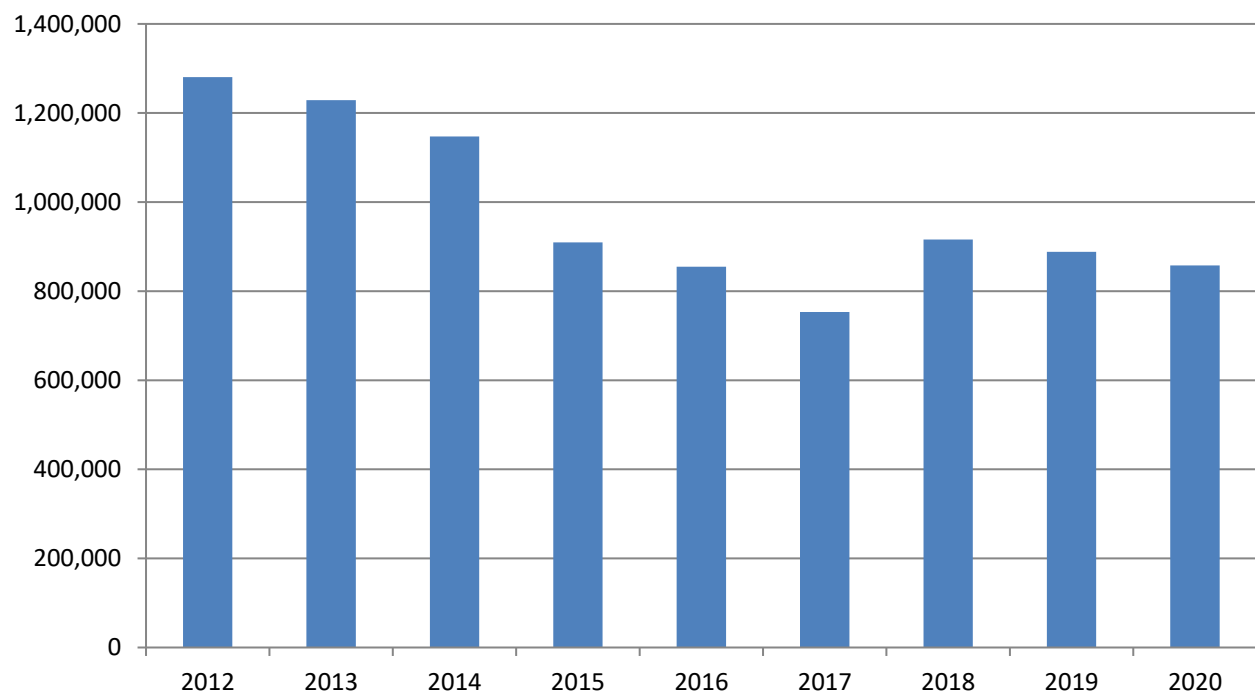
Treated water flows are regulated under the Municipal Drinking Water Licence (MDWL).

Treated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison



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	38	0	48	n/a	n/a
Treated Water	52	0	0	0	0	2	4
Distribution Water	156	0	0	0	0	2	4

Operational Testing

	No. of Samples Collected	Range of Results		
		Minimum	Average	Maximum
Turbidity (NTU) - RW	8760	N/A	0.78	10.00
Turbidity (NTU) - TW	8760	N/A	0.03	1.56
Turbidity (NTU) - Filt1	8760	N/A	0.02	0.08
Turbidity (NTU) - Filt2	8760	N/A	0.02	0.16
Turbidity (NTU) - Filt3	8760	N/A	0.02	0.13
Free Chlorine Residual (mg/L) - TW	8760	1.14	1.57	1.96
Free Chlorine Residual (mg/L) – Iroquois Booster	8760	0.44	1.44	3.73
Free Chlorine Residual, On-Line (mg/L) – DW	8760	0.48	1.17	2.09
Free Chlorine Residual, In-House (mg/L) - DW	156	0.56	N/A	2.08

NOTE: Spikes recorded by on-line instrumentation may result from 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 = 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	2020/03/02	0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2020/03/02	0.7	10.0	No	No
Barium: Ba (ug/L) - TW	2020/03/02	16.0	1000.0	No	No
Boron: B (ug/L) - TW	2020/03/02	19.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/03/02	<MDL 0.02	5.0	No	No
Chromium: Cr (ug/L) - TW	2020/03/02	<MDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/03/02	<MDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2020/03/02	<MDL 1.0	50.0	No	No

	Sample Date/ (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Uranium: U (ug/L) - TW	2020/03/02	0.34	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2019/01/14	<MDL 0.1	1.5	No	No
Nitrite (mg/L) - TW	2020/01/13	0.2	1.0	No	No
Nitrite (mg/L) - TW	2020/04/02	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/07/14	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/10/13	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2020/01/13	0.3	10.0	No	No
Nitrate (mg/L) - TW	2020/04/02	0.3	10.0	No	No
Nitrate (mg/L) - TW	2020/07/14	0.2	10.0	No	No
Nitrate (mg/L) - TW	2020/10/13	0.2	10.0	No	No
Sodium: Na (mg/L) - TW	2016/03/07	15.5	20.0*	n/a	n/a

*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.

**Sample collected and submitted but not analyzed by lab.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under a reduced sampling schedule. 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)	6	6	83	92	n/a	n/a
pH	6	6	7.08	7.88	n/a	n/a
Lead (ug/l)	3	3	0.04	0.16	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 = Below the laboratory detection level

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2020/03/02	< 0.3	5.00	No	No
Atrazine + Metabolites (ug/L) - TW	2020/03/02	< 0.5	5.00	No	No
Azinphos-methyl (ug/L) - TW	2020/03/02	<1	20.00	No	No
Benzene (ug/L) - TW	2020/03/02	< 0.5	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2020/03/02	< 0.005	0.01	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Bromoxynil (ug/L) - TW	2020/03/02	< 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2020/03/02	< 3	90.00	No	No
Carbofuran (ug/L) - TW	2020/03/02	< 1	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2020/03/02	< 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2020/03/02	< 0.5	90.00	No	No
Diazinon (ug/L) - TW	2020/03/02	< 1	20.00	No	No
Dicamba (ug/L) - TW	2020/03/02	<10	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/03/02	< 10	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/03/02	< 0.5	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2020/03/02	< 0.5	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2020/03/02	< 0.5	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/03/02	< 0.1	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/03/02	< 0.1	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2020/03/02	< 10	100.00	No	No
Diclofop-methyl (ug/L) - TW	2020/03/02	< 0.9	9.00	No	No
Dimethoate (ug/L) - TW	2020/03/02	< 1	20.00	No	No
Diquat (ug/L) - TW	2020/03/02	< 5	70.00	No	No
Diuron (ug/L) - TW	2020/03/02	< 5	150.00	No	No
Glyphosate (ug/L) - TW	2020/03/02	< 25	280.00	No	No
Malathion (ug/L) - TW	2020/03/02	< 5	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA) (ug/L) - TW	2020/03/02	< 10	100.00	No	No
Metolachlor (ug/L) - TW	2020/03/02	< 3	50.00	No	No
Metribuzin (ug/L) - TW	2020/03/02	< 3	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2020/03/02	< 0.5	80.00	No	No
Paraquat (ug/L) - TW	2020/03/02	< 1	10.00	No	No
PCB (ug/L) - TW	2020/03/02	< 0.05	3.00	No	No
Pentachlorophenol (ug/L) - TW	2020/03/02	< 0.1	60.00	No	No
Phorate (ug/L) - TW	2020/03/02	< 0.3	2.00	No	No
Picloram (ug/L) - TW	2020/03/02	< 15	190.00	No	No
Prometryne (ug/L) - TW	2020/03/02	< 0.1	1.00	No	No
Simazine (ug/L) - TW	2020/03/02	< 0.5	10.00	No	No
Terbufos (ug/L) - TW	2020/03/02	< 0.1	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2020/03/02	< 0.5	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/03/02	< 0.1	100.00	No	No
Triallate (ug/L) - TW	2020/03/02	< 10	230.00	No	No
Trichloroethylene (ug/L) - TW	2020/03/02	< 0.5	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/03/02	< 0.1	5.00	No	No
Trifluralin (ug/L) - TW	2020/03/02	< 0.5	45.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Vinyl Chloride (ug/L) - TW	2020/03/02	< 0.2	1.00	No	No

Distribution samples are tested quarterly for THM's and HAA's in accordance with O. Reg. 170/03.

	Year	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Distribution Water					
Trihalomethane (THM): Total (ug/L) Annual Average - DW	2020	39	100	No	No
Haloacetic Acid (HAA): Total (ug/L) Annual Average - DW	2020	13.9	80	No	No

Additional Legislated Samples

Document	Parameter	Limit (mg/L)	Result (mg/L)
MDWL # 165-101	Filter Backwash Supernatant Suspended Solids	Annual Average < 25	4.5

Major Maintenance Summary

Description
<ul style="list-style-type: none"> - Heater installed in chlorine room at Morrisburg WTP - New chlorine panel and two chlorine pumps installed at Iroquois Booster Station - Installed VFD on High Lift #4 at Morrisburg WTP - New watermain installed on Ontario Street in Morrisburg - Annual generator maintenance at all facilities - Replaced 6" valve on Victoria Crescent in Morrisburg - Repaired two hydrants in Morrisburg - Replaced 10 curb stop valve casings and keys in Morrisburg and Iroquois - Replaced neutralization analyzer at the Morrisburg WTP - Replaced actuator on FV-8860-1 at Morrisburg WTP - Replaced actuator on FV-8860-2 at Morrisburg WTP - Replaced actuator for FV8176B-3 at Morrisburg WTP - Replaced level transmitter for Morrisburg Tower - Replaced packing on three Low Lift Pumps at Morrisburg WTP

Appendix A

WTRS Submission Confirmation

List Sources - Permit# : 4362-AAKQNY

Enter the water taking data for each of the source(s) in the reporting year.

Permit Information:

Issue Date: 2016/06/08 Expiry Date: 2026/05/31

Permit Holder Information: THE CORPORATION OF THE TOWNSHIP OF SOUTH DUNDAS

collapse 

Name: THE CORPORATION OF THE TOWNSHIP OF SOUTH DUNDAS Address: P.O. Box 160
City: Williamsburg Province: ONTARIO
Postal code: K0C 2H0 Country: CANADA

Select reporting year: 

Water Taking Information by Source

	Source Name	Source / Type	Taking Specific Purpose	Zone / Easting / Northing	Date Last Saved	2019 (Liters) Water Taken	2020 (Liters) Water Taken
View Data	St. Lawrence River	River/	Municipal	18/485429/4970874	2021/02/03	1,146,047,805.1757	1,073,724,806.4449
					Total	1,146,047,805.1757	1,073,724,806.4449