

South Dundas Regional Drinking Water System

Waterworks # 220001012
System Category – Large Municipal Residential

Annual Report

Reporting Period of January 1st – December 31st 2018

Issued: February 25, 2019

Revision: 0

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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	1/0
Non-Compliance	0
Spills	0
Watermain Breaks	15

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 water mains 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
03/12/2018	138906	Morrisburg WWTP	1 Total Coliform	Distribution Sample	O. Reg. 170/03	Resamples collected. Issue resolved.

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

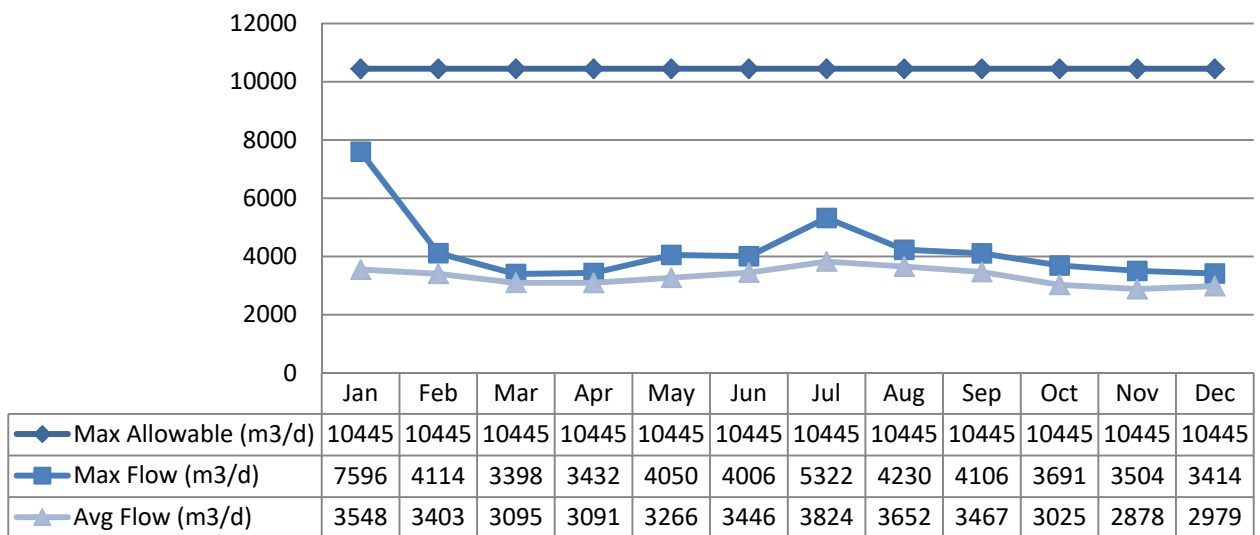
South Dundas’ Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

Raw water flows are regulated under the Permit to Take Water (PTTW). Raw flow data for 2018 was submitted to the Ministry electronically under Permit #4362-AAKQNY. The submission confirmation can be found attached in Appendix A.

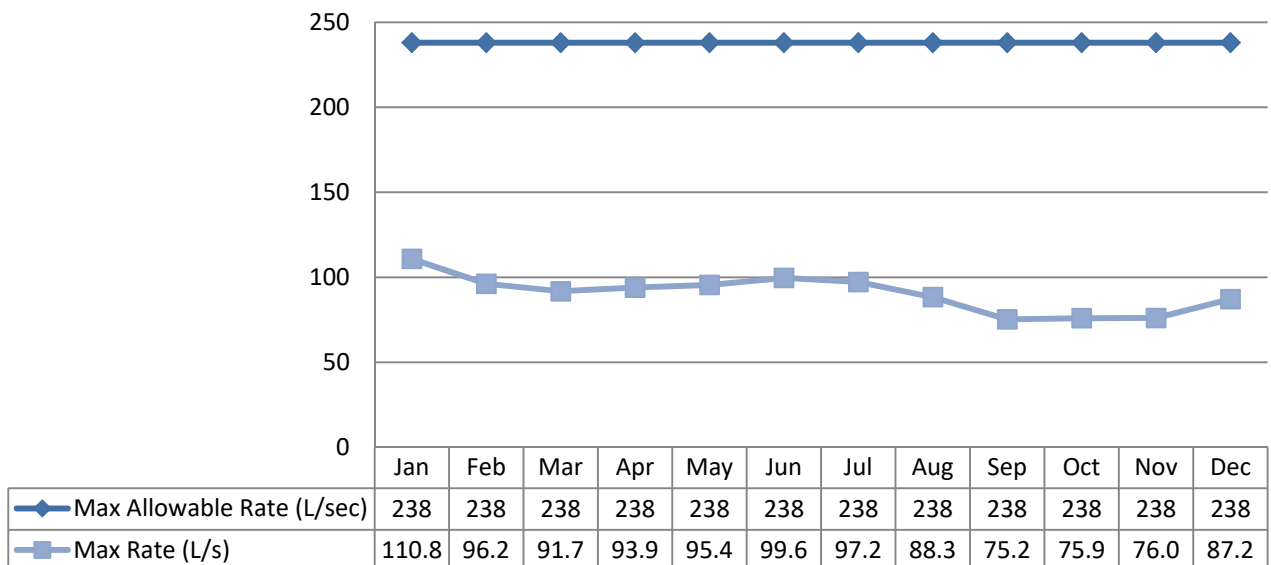
Raw Flows

Max. Allowable Flow - PTTW



Maximum Flow Rates

Max. Allowable Rate - PTTW

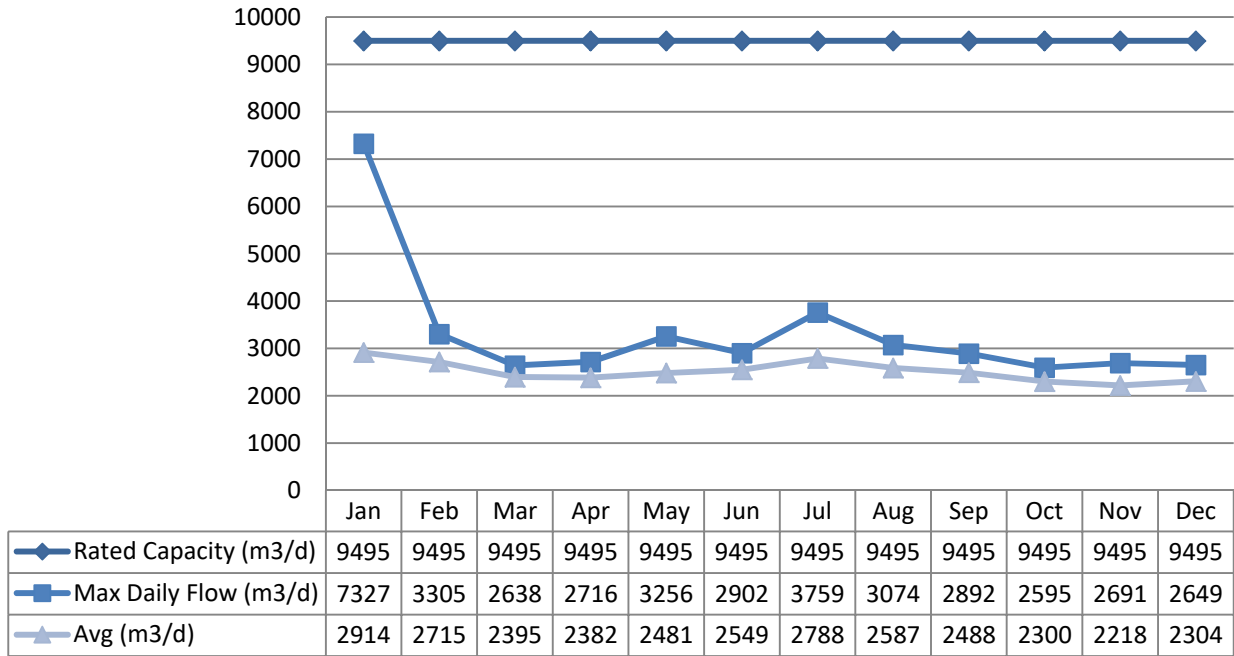


Treated Water Flows

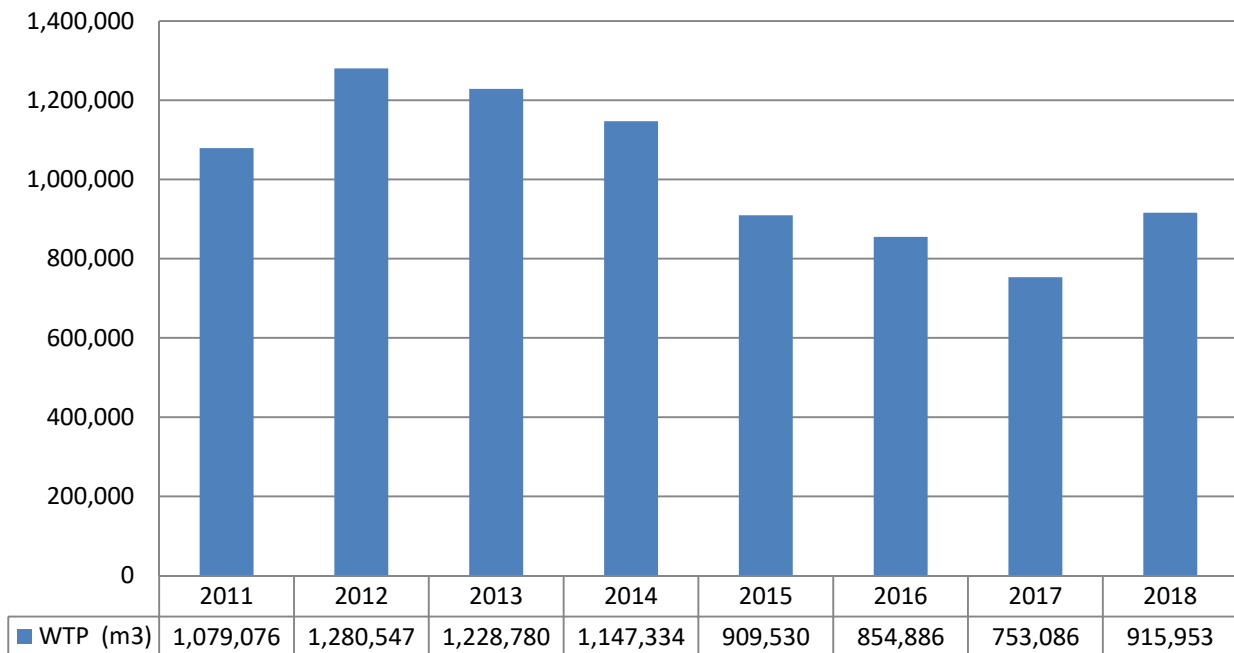
Treated water flows are regulated under the Municipal Drinking Water Licence (MDWL).

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	3	0	64	n/a	n/a
Treated Water	52	0	0	0	0	<2	10
Distribution Water	156	0	0	0	1	<2	24

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, On-Line (NTU) - RW	8760	0.00	10.00
Turbidity, On-Line (NTU) - TW	8760	0.03	1.97
Turbidity, On-Line (NTU) - Filt1	8760	0.02	0.18
Turbidity, On-Line (NTU) - Filt2	8760	0.02	0.20
Turbidity, On-Line (NTU) - Filt3	8760	0.02	0.12
Free Chlorine Residual, On-Line (mg/L) - TW	8760	1.03	2.48
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.17	2.06
Free Chlorine Residual, DW Field (mg/L) Lab Upload - DW	156	0.62	1.66

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	2018/03/05	0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2018/03/05	1.2	10.0	No	No
Barium: Ba (ug/L) - TW	2018/03/05	15.0	1000.0	No	No
Boron: B (ug/L) - TW	2018/03/05	31.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2018/03/05	<MDL 0.01	5.0	No	No
Chromium: Cr (ug/L) - TW	2018/03/05	<MDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2018/03/05	<MDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2018/03/05	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2018/03/05	0.32	20.0	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Additional Inorganics					
Fluoride (mg/L) - TW	2016/03/07	0.3	1.5	No	No
Nitrite (mg/L) - TW	2018/03/05	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2018/04/09	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2018/07/09	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2018/10/01	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2018/03/05	0.4	10.0	No	No
Nitrate (mg/L) - TW	2018/04/09	0.4	10.0	No	No
Nitrate (mg/L) - TW	2018/07/09	0.2	10.0	No	No
Nitrate (mg/L) - TW	2018/10/01	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.

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	86	95	n/a	n/a
pH	6	6	7.7	7.95	n/a	n/a
Lead (ug/l)	-	-	-	-	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	2018/03/05	<MDL 0.3	5.00	No	No
Azinphos-methyl (ug/L) - TW	2018/03/05	<MDL 1.0	20.00	No	No
Benzene (ug/L) - TW	2018/03/05	<MDL 0.5	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2018/03/05	<MDL 0.005	0.01	No	No
Bromoxynil (ug/L) - TW	2018/03/05	<MDL 0.3	5.00	No	No
Carbaryl (ug/L) - TW	2018/03/05	<MDL 3.0	90.00	No	No
Carbofuran (ug/L) - TW	2018/03/05	<MDL 1.0	90.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Carbon Tetrachloride (ug/L) - TW	2018/03/05	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2018/03/05	<MDL 0.5	90.00	No	No
Diazinon (ug/L) - TW	2018/03/05	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2018/03/05	<MDL 5.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2018/03/05	<MDL 0.1	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2018/03/05	<MDL 0.2	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2018/03/05	<MDL 0.1	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2018/03/05	<MDL 0.1	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2018/03/05	<MDL 0.3	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2018/03/05	<MDL 0.1	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2018/03/05	<MDL 5.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2018/03/05	<MDL 0.5	9.00	No	No
Dimethoate (ug/L) - TW	2018/03/05	<MDL 1.0	20.00	No	No
Diquat (ug/L) - TW	2018/03/05	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2018/03/05	<MDL 5.0	150.00	No	No
Glyphosate (ug/L) - TW	2018/03/05	<MDL 25.0	280.00	No	No
Malathion (ug/L) - TW	2018/03/05	<MDL 5.0	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA) (ug/L) - TW	2018/03/05	<MDL 10.0	100.00	No	No
Metolachlor (ug/L) - TW	2018/03/05	<MDL 3.0	50.00	No	No
Metribuzin (ug/L) - TW	2018/03/05	<MDL 3.0	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2018/03/05	<MDL 0.2	80.00	No	No
Paraquat (ug/L) - TW	2018/03/05	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2018/03/05	<MDL 0.05	3.00	No	No
Pentachlorophenol (ug/L) - TW	2018/03/05	<MDL 0.1	60.00	No	No
Phorate (ug/L) - TW	2018/03/05	<MDL 0.3	2.00	No	No
Picloram (ug/L) - TW	2018/03/05	<MDL 5.0	190.00	No	No
Prometryne (ug/L) - TW	2018/03/05	<MDL 0.1	1.00	No	No
Simazine (ug/L) - TW	2018/03/05	<MDL 0.5	10.00	No	No
Terbufos (ug/L) - TW	2018/03/05	<MDL 0.3	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2018/03/05	<MDL 0.2	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2018/03/05	<MDL 0.1	100.00	No	No
Triallate (ug/L) - TW	2018/03/05	<MDL 10.0	230.00	No	No
Trichloroethylene (ug/L) - TW	2018/03/05	<MDL 0.1	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2018/03/05	<MDL 0.1	5.00	No	No
Trifluralin (ug/L) - TW	2018/03/05	<MDL 0.5	45.00	No	No
Vinyl Chloride (ug/L) - TW	2018/03/05	<MDL 0.2	1.00	No	No

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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Distribution Water					
Trihalomethane (THM): Total (ug/L) Annual Average - DW	2018/01/01	33.25	100.00	No	No
Haloacetic Acid (HAA): Total (ug/L) Annual Average - DW	2018/01/01	23.45	n/a	n/a	n/a

Additional Legislated Samples

Document	Parameter	Limit (mg/L)	Result (mg/L)
MDWL # 165-101	Filter Backwash Supernatant Suspended Solids	Annual Average < 25	7.8

Major Maintenance Summary

Description
<ul style="list-style-type: none"> - Installed new distribution system chlorine analyzer - Replaced sodium hypochlorite day tanks - Exercised all valves in Morrisburg - Inspected raw water intake crib, wells and screen - Replaced sodium hypochlorite bulk tank - Replaced chlorine probe and pH probe on post-filtration analyzer - Repaired leak on treated water line - Serviced pressure sustaining valve at WTP - Installed upgrades to SCADA system - Installed ice guards on roof at WTP - Repaired watermain breaks throughout distribution system - Repaired/replaced curb stops and main valves - Serviced fire hydrants throughout distribution system

Appendix A

WTRS Submission Confirmation



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: 4362-AAKQNY
Permit Holder: THE CORPORATION OF THE TOWNSHIP OF SOUTH DUNDAS.
Received on: Jan 22, 2019 4:13 PM

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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