

TOWN OF SMITHS FALLS



SMITHS FALLS

RISE AT THE FALLS



SMITHS FALLS DRINKING WATER SYSTEM

2020 ANNUAL REPORT

Smiths Falls Drinking Water System 2020 Annual Report

Drinking-Water System Number:	220001307
Drinking-Water System Name:	Smiths Falls Drinking Water System
Drinking-Water System Owner:	Corporation of the Town of Smiths Falls
Drinking-Water System Category:	Large Municipal Drinking Water System
Period being reported:	January 1 st to December 31 st , 2020

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [] No [<input checked="" type="checkbox"/>]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [<input checked="" type="checkbox"/>] No []</p> <p>Location where Annual Report required under O. Reg. 170/03 Schedule 11 will be available to the public.</p> <p>www.smithsfalls.ca</p> <p>Smiths Falls Town Hall Complex 77 Beckwith St. N Smiths Falls, ON K7A 4T6</p>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: N/A</p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? N/A</p> <p>Number of Interested Authorities you report to: N/A</p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? N/A</p>
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List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
Atironto Subdivision – Montague Township	260006828

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [] No []

Indicate how you notified system users that your annual report is available, and is free of charge.

[] Public access/notice via the web

[] Public access/notice via a newspaper

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Describe your Drinking-Water System

The Smiths Falls Drinking Water System is comprised of the Water Treatment Plant (WTP) and Distribution system (WDS) which together provides a supply of potable water to the residents and businesses of the Town of Smiths Falls.

The WTP is a Class IV high rate dissolved air floatation (AquaDAF®) surface water plant having an approved design capacity of 14,000 m³/d with a future expansion to 18,000 m³/d. Raw water for the treatment process is drawn from the Rideau River (surface water). The intake structure is located upstream of the WTP approximately 170m. The intake consists of a concrete structure and a 762-millimeter diameter concrete pipe connecting the intake to the diversion chamber where the raw water is directed into the WTP.

Low lift pumps supply water to the AquaDAF® which is a high rate dissolved air floatation clarifier. A coagulant & polymer are mixed with the Raw Water to aid in particle removal. Dissolved air will float these particles to form a blanket of sludge which is discharged to the wastewater collection system.

Clarified water flows to 3 granular activate carbon (GAC) & sand filters where further particle removal will take place.

Processes involved include: UV disinfection; chlorination with chlorine gas; corrosion control; fluoridation; residue management and de-chlorination.

The WDS is a Class I subsystem, consisting of 62.23 kilometers (km) of mains, 1096 valves, 332 hydrants and 3010 house services. With a 49.2 meter (m) high water tower that contains 945.75 cubic meters (m³) of storage.

List all water treatment chemicals used over this reporting period

CHEMICAL NAME	USE	SUPPLIER
PAX-XL6	Coagulant	Kemira
Magnafloc LT22s	Polymer	Northland Chemical
Chlorine Gas	Disinfection	Brenntag
Sodium Hydroxide	Corrosion Control	CCC Chemicals
Fluorosilicic Acid	Fluoride	ControlChem
Calcium Thiosulfate	De-chlorination	Clartech

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

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Please provide a brief description and a breakdown of monetary expenses incurred

- ◆ Substation/transformer maintenance - \$10,090.90
- ◆ IR scanning - \$2,306.90
- ◆ Pressurization pump rebuild - \$4,620
- ◆ Low lift pump 101 rebuild - \$5,552
- ◆ High lift 181 rebuild - \$17,401
- ◆ High lift 183 rebuild - \$17,172
- ◆ Vacuum priming system - \$20,750
- ◆ AquaDAF® redesign of process piping
 - JL Richards engineer review, design \$13,173
- ◆ Water & Wastewater Rate Study Commissioned (Hemson) - \$31,640
- ◆ Beckwith St Project - Water mains - \$1,237,368.03
 - 378m of 250mm PVC water main / 87m of 200mm PVC water main replaces a combined 640m of dual water main assets of varying sizes reduces the system
 - 4 Hydrant replacements
 - 31 Commercial water services changed out (no lead services from meter to main for any properties taking services from Beckwith (Russell to Chambers).
- ◆ Detailed Design for Beckwith Street Phase 2 water works replacements – Morrison Hershfield \$35,625

Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
AWQI #150052 (May 26, 2020)	Total Coliform E. coli	>200 22	cfu/100mL cfu/100mL	<p>Re-sampled the raw water and finished (treated) water on May 26th, 2020 at as well as a hydrant from James/Park Ave. Finished water free chlorine was 1.28 mg/L at 16:24, James St / Park Ave hydrant free chlorine was 1.58 mg/L at 16:35.</p> <p>Issue resulted from improper sampling of the finished (treated) water in the bottle that was labelled as raw water and the raw water sampled in the bottle labelled and with a green sticker as the finished (treated) water.</p> <p>At the request of the health unit free chlorine (FAC) results were sampled from ten locations in the distribution system to verify the FAC, information was sent to all parties.</p>	<p>May 26, 2020</p> <p>Date resolved May 28, 2020</p> <p>Resolution section 2B completed June 3, 2020</p>

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				<p>As well hydrant flushing records showing FAC from May 25th, and May 26th, 2020 were also provided to all parties.</p> <p>The finished (treated) water and hydrant James St. / Park Ave. (distribution System) were also sampled again on May 27th, 2020.</p> <p>Verbal notification was received on both sets of samples May 28th, 2020 to indicate the finished (treated) and hydrant (distribution) samples were zero for total coliforms and E. coli.</p>
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Microbiological testing completed under Schedule 10, 11 or 12 of Regulation 170/03 during this reporting period.

	Number of Samples	Range of E. coli Results (min #) - (max #) (CFU/100mL)	Range of Total Coliform Results (min #) - (max #) (CFU/100mL)	Number of HPC Samples	Range of HPC Results (min #) - (max #) (CFU/100mL)
Raw	53	0 - 73	0 - >2000	0	No tested
Treated	53	0 - 22*	0 - >200*	53	<10 - 400
Distribution - Routine	279	0 - 0	0 - 0	276	10 - 390
Distribution Water main Repairs/new installations/service repairs	34	0 - 0	0 - 0	34	10 - 300

*EC/TC max results on treated (finished) were improper sampling (see above AWQI)

Operational testing completed under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

Parameter Tested - (Online Analyzers)	Number of Grab Samples	Range of Results		
		Minimum	Average	Maximum
Turbidity - Raw Water (NTU) AIT 102	Continuous Monitoring ¹	0.000	1.003	50.00
Turbidity - Raw Water (NTU)	366 (bench test)	0.320	0.971	8.15
Turbidity - Filter #1 (NTU) AIT 111	Continuous Monitoring ²	0.000	0.036	5.00
Turbidity - Filter #1 (NTU)	53 (bench test)	0.063	0.117	0.219
Turbidity - Filter #2 (NTU) AIT 121	Continuous Monitoring ²	0.000	0.035	0.670
Turbidity - Filter #2 (NTU)	53 (bench test)	0.045	0.114	0.269
Turbidity - Filter #3 (NTU) AIT 131	Continuous Monitoring ²	0.000	0.039	0.951 ¹⁰
Turbidity - Filter #3 (NTU)	53 (bench test)	0.041	0.071	0.660
Turbidity - Finished Water (NTU) AIT 184	Continuous Monitoring ³	0.000	0.057	3.374
Turbidity - Finished Water (NTU)	256 (bench test)	0.043	0.094	0.187
Chlorine Total - Zebra Mussel (operation May to October mg/L) AIT 103	Continuous Monitoring ⁷ Total Chlorine	0.00	0.02	3.20
Chlorine Total - Zebra Mussel (operation May to October mg/L)	136 (bench test) ⁸	0.02	0.09	0.20
Chlorine Free - Pre Reservoir (mg/L) AIT 165	Continuous Monitoring ⁵ Free Chlorine	0.00	1.97	4.98

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Chlorine Free – Pre Reservoir (mg/L)	53 (bench test)	0.63	1.53	2.44
Chlorine Free – Post Reservoir (mg/L) AIT 180	Continuous Monitoring ⁵ Free Chlorine	0.00	1.20	5.00
Chlorine Free – Post Reservoir (mg/L)	53 (bench test)	0.66	1.19	1.73
Chlorine Free – Finished Water (mg/L) AIT 185	Continuous Monitoring ⁵ Free Chlorine	0.00	1.62	2.64
Chlorine Free – Finished Water (mg/L)	256 (bench test)	0.73	1.54	2.07
Chlorine Total – Finished Water (mg/L) AIT 186	Continuous Monitoring ⁶ Total Chlorine	0.00	1.91	3.83
Chlorine Total – Finished Water (mg/L)	256 (bench test)	1.03	1.81	2.37
Fluoride – Finished Water (mg/L) AIT 187	Continuous Monitoring ⁴	0.00	0.66	2.00
Fluoride – Finished Water (mg/L)	292 (bench test)	0.24	0.55	0.98
UV Transmittance (%) AIT 160	Continuous Monitoring ⁹	70.0	91.9	100.0
UV Transmittance (%)	256 (bench test)	78.9	87.1	91.2

Notes for above table operational testing completed under Schedule 7, 8 or 9:

1. High raw water turbidity spikes occur when the low lift pumps (LLP) starts and stop, maintenance, calibration and flushing of lines.
2. High filter turbidity results of filter backwash, process upset or calibration.
3. High finished water turbidity results of high lift pumps (HLP) starting or calibration.
4. High fluoride readings occur on HLP starts, maintenance or calibration while chemical system was off.
5. Low free chlorine residual (pre-reservoir, post reservoir and finished water) result of generator backup power testing, maintenance or calibration.
6. Low total chlorine residual (finished water) result of generator backup power testing, maintenance or calibration.
7. High total chlorine residuals (for zebra mussel control) can be due the sampling alternates between intake and LLP header.
8. Bench tests for total chlorine (zebra mussel) are sampled from the raw water stainless steel sample tap located in pump gallery or raw water sample tap in lab
9. Low UV transmittance result of generator backup power testing, maintenance, calibration or OptiView failure.
10. Filter #3 high NTU recorded during filter backwash, no water being directed to next process

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled (DD-MM-YYYY)	Result (µg/L)	Quarterly Average (µg/L)	Rolling Annual Average Quarter (µg/L)		
Municipal Drinking Water License #164-101 issue #5 December 12, 2017	TTHM	6-Jan-2020	51.0	45.3	60.7		
		3-Feb-2020	37.0				
		2-Mar-2020	48.0				
		6-Apr-2020	74.0	79.0	66.2		
						4-May-2020	69.0
						1-Jun-2020	94.0
		6-Jul-2020	129.0	97.3	68.8		
						7-Aug-2020	85.0
						8-Sep-2020	78.0
		6-Oct-2020	66.0	68.3	72.5		
						4-Nov-2020	74.0
						7-Dec-2020	65.0

Notes: Maximum Allowable Concentration (MAC) for THM is based on a four-quarter rolling annual average of 0.100 mg/L or 100.0 µg/L

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Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result –Monthly Average (mg/L)	Result –Monthly Grab Average Total Chlorine (mg/L)
Municipal Drinking Water License #164-101 issue #5 (section 4.2 table 7)	TSS (grab sample)	January 14, 2020	6.4	0.02
		February 12, 2020	5.6	0.01
		March 11, 2020	5.6	0.007
		April 15, 2020	11.17	0.027
		May 6, 2020	5.4	0.03
		June 10, 2020	4.69	0.023
		July 15, 2020	4.64	0.033
		August 12, 2020	3.19	0.023
		September 9, 2020	3.60	0.016
		October 9, 2020	2.60	0.02
		November 10, 2020	4.63	0.03
		December 15, 2020	6.4	0.00
	Annual average	5.33	0.020	

Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	March 23, 2020	0.09	µg/L	No
Arsenic	March 23, 2020	<0.2	µg/L	No
Barium	March 23, 2020	37.0	µg/L	No
Boron	March 23, 2020	10.0	µg/L	No
Cadmium	March 23, 2020	0.010	µg/L	No
Chromium	March 23, 2020	0.13	µg/L	No
Mercury	March 23, 2020	<0.01	µg/L	No
Selenium	March 23, 2020	0.05	µg/L	No
Uranium	March 23, 2020	0.009	µg/L	No
1 st Quarter Nitrite 2 nd Quarter Nitrite 3 rd Quarter Nitrite 4 th Quarter Nitrite	February 3, 2020 May 4, 2020 August 4, 2020 November 2, 2020	<0.1 <0.1 <0.1 <0.1	mg/L mg/L mg/L mg/L	No No No No
1 st Quarter Nitrate 2 nd Quarter Nitrate 3 rd Quarter Nitrate 4 th Quarter Nitrate	February 3, 2020 May 4, 2020 August 4, 2020 November 2, 2020	<0.1 <0.1 <0.1 <0.1	mg/L mg/L mg/L mg/L	No No No No
Sodium	March 23, 2020	13.2	mg/L	No

Parameter	Sample Date	Result Value (ug/L)	Rolling Annual Average Quarter (ug/L)	Exceedance
HAA5 1 st Quarter	February 3, 2020	26.0	33.1	No
HAA5 2 nd Quarter	May 4, 2020	49.9	38.0	No
HAA5 3 rd Quarter	August 4, 2020	56.5	41.7	No
HAA5 4 th Quarter	November 2, 2020	47.7	45.0	No

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Notes: Maximum Allowable Concentration (MAC) for HAA is based on a four-quarter rolling annual average of 0.080 mg/L or 80.0 ug/L

Summary of lead testing under Schedule 15.1 during this reporting period & MDWL #164-101 Issue #5 Schedule C, Section 5.0

Location Type	Number of Total Samples	Range of Lead Results 1 st One Litre Sample min# - max # (mg/L)	Number of Exceedances 1 st Sample	Range of Lead Results 2 nd One Litre Sample min# - max # (mg/L)	Number of Exceedances 2 nd Sample
Plumbing – residential	23	0.000210 - 0.021500	2	0.000140 – 0.033200	4
Plumbing – non residential	1	0.000100	0	0.000140	0
Distribution	4	0.000030 – 0.000400	0	N/A	N/A
Finished Water	4	0.000020 – 0.000300	0	N/A	N/A

Location Type	Number of Total samples	pH (min # - max #)	Number of Total samples	Temperature °C (min # - max #)
Plumbing – residential	23	7.45 – 7.97	23	5.6 – 20.8
Plumbing – non residential	1	7.89	1	10.7
Distribution	4	7.52 – 7.96	4	6.2 - 23.9
Finished Water	4	7.19 – 7.57	4	13.8 – 25.8

Location Type	Number of Total samples	Alkalinity mg/L (min # - max #)
Plumbing – residential	23	69 - 90
Plumbing – non residential	1	70
Distribution	4	78 - 86
Finished Water	4	71 - 86

Notes:

1. Maximum Allowable Concentration (MAC) for lead is 0.010 mg/L or 10.0 ug/L.
2. Only Distribution lead samples above 0.010 mg/L or 10.0 ug/L are reportable.
3. Plumbing samples from residential or non-residential, the occupant receives a letter to indicate if a sample is above the MAC, the results and an information sheet on lead.

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Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	March 23, 2020	<0.02	µg/L	No
Atrazine	March 23, 2020	<0.01	µg/L	No
Atrazine + N-dealkylated metabolites	March 23, 2020	<0.01	µg/L	No
Azinphos-methyl	March 23, 2020	<0.05	µg/L	No
Benzene	March 23, 2020	<0.32	µg/L	No
Benzo(a)pyrene	March 23, 2020	<0.004	µg/L	No
Bromoxynil	March 23, 2020	<0.33	µg/L	No
Carbaryl	March 23, 2020	<0.05	µg/L	No
Carbofuran	March 23, 2020	<0.01	µg/L	No
Carbon Tetrachloride	March 23, 2020	<0.17	µg/L	No
Chlorpyrifos	March 23, 2020	<0.02	µg/L	No
Desethyl atrazine	March 23, 2020	<0.01	µg/L	No
Diazinon	March 23, 2020	<0.02	µg/L	No
Dicamba	March 23, 2020	<0.20	µg/L	No
1,2-Dichlorobenzene	March 23, 2020	<0.41	µg/L	No
1,4-Dichlorobenzene	March 23, 2020	<0.36	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	March 23, 2020	<0.33	µg/L	No
1,2-Dichloroethane	March 23, 2020	<0.35	µg/L	No
Dichloromethane	March 23, 2020	<0.35	µg/L	No
2,4-Dichlorophenol	March 23, 2020	<0.15	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	March 23, 2020	<0.19	µg/L	No
Diclofop-methyl	March 23, 2020	<0.40	µg/L	No
Dimethoate	March 23, 2020	<0.06	µg/L	No
Diquat	March 23, 2020	<1	µg/L	No
Diuron	March 23, 2020	<0.03	µg/L	No
Glyphosate	March 23, 2020	<1	µg/L	No
Malathion	March 23, 2020	<0.02	µg/L	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	March 23, 2020	<0.00012	µg/L	No
Metolachlor	March 23, 2020	<0.01	µg/L	No
Metribuzin	March 23, 2020	<0.02	µg/L	No
Monochlorobenzene	March 23, 2020	<0.30	µg/L	No
Paraquat	March 23, 2020	<1	µg/L	No
Pentachlorophenol	March 23, 2020	<0.15	µg/L	No
Phorate	March 23, 2020	<0.01	µg/L	No
Picloram	March 23, 2020	<1	µg/L	No
Polychlorinated Biphenyls (PCB)	March 23, 2020	<0.04	µg/L	No
Prometryne	March 23, 2020	<0.03	µg/L	No
Simazine	March 23, 2020	<0.01	µg/L	No
Terbufos	March 23, 2020	<0.01	µg/L	No
Tetrachloroethylene (perchloroethylene)	March 23, 2020	<0.35	µg/L	No
2,3,4,6-Tetrachlorophenol	March 23, 2020	<0.20	µg/L	No
Triallate	March 23, 2020	<0.01	µg/L	No
Trichloroethylene	March 23, 2020	<0.44	µg/L	No
2,4,6-Trichlorophenol	March 23, 2020	<0.25	µg/L	No
Trifluralin	March 23, 2020	<0.02	µg/L	No
Vinyl Chloride	March 23, 2020	<0.17	µg/L	No

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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

Glossary

AWQI = adverse water quality indicator
CFU = colony forming units
DWS = drinking water system
DS = distribution system
EA = Environmental Assessment
HAA5 = total haloacetic acid
mg/L = milligrams per liter
MDWL = Municipal Drinking Water License
TTHM = trihalomethane
ug/L = micrograms per liter
WTP = water treatment plant

Contact for more information:

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