Fenelon Falls Drinking Water System

Waterworks # 210000327
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1st – December 31st 2018

Issued: February 8, 2019

Revision: 0

Operating Authorities:

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 City of Kawartha Lakes Public Works Administration Office and on the City's website at www.kawarthalakes.ca. Notification that reports are available free of charge will be made on the City of Kawartha Lakes website. The City of Kawartha Lakes Public Works Administration Office is located at 12 Peel Street in Lindsay, Ontario.

Compliance Report Card

Drinking Water System Number: 210000327
Drinking Water System Name: Fenelon Falls DWS
Drinking Water System Owner: City of Kawartha Lakes
Drinking Water System Category: Large Municipal Residential
Period Being Reported: January 1, 2018 - December 31, 2018

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	1	December 13, 2018	Announced-Detailed Drinking Water Inspection - Final Inspection Rating of 100%
AWQI's	4		THM Running Average exceeded last quarter of 2017 and first, second and third quarters of 2018.
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The Fenelon Falls Water Treatment Plant is supplied with surface water from Cameron Lake.

Treatment

The treatment system is a dual train conventional filtration package plant consisting of the following:

Raw water is sourced from Cameron Lake through a wooden intake crib and then directed to the intake chamber and further to the low lift pumping station consisting of two low lift pumps

- Inlet line connected to sodium hypochlorite diffuser for seasonal zebra mussel control, if required
- Raw water flow meter and turbidity analyzer
- Coagulant injection system with inline static mixer
- Two inground flocculation tanks each equipped with three mechanical flocculators
- Dual train microfiltration system (Zeeweed) consisting of two compartments each containing two sets of eight membrane modules.
- Continuously monitoring particle counters and turbidity analyzers on each filter line
- Waste backwash holding tank with discharge to sanitary sewer
- Chlorine injection system
- Single in-ground clearwell consisting of two interconnected baffled cells
- In-ground dual celled high lift wet well consisting of four highlift pumps
- Chlorine residual and pH analyzers prior to distribution connection
- Water tower
- SCADA computer control system
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
Polyalumunium Chloride	Flocculation	FloChem

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
31/12/17	138499	Treated Water	Trihalomethane	RAA of 120ug/L	O. Reg. 170/03	THM Study underway
04/04/18	139029	Treated Water	Trihalomethane	RAA of 133ug/L	O. Reg. 170/03	THM Study underway
05/07/18	140272	Treated Water	Trihalomethane	RAA of 135ug/L	O. Reg. 170/03	THM Study underway
09/10/18	143451	Treated Water	Trihalomethane	RAA of 132ug/L	O. Reg. 170/03	THM Study underway

RAA is the Running Annual Average of four consecutive quarterly sampling results.
The RAA limit is 100ug/L.

Non-Compliance

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances 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-compliances identified in a Ministry Inspection during this period.				

Flows

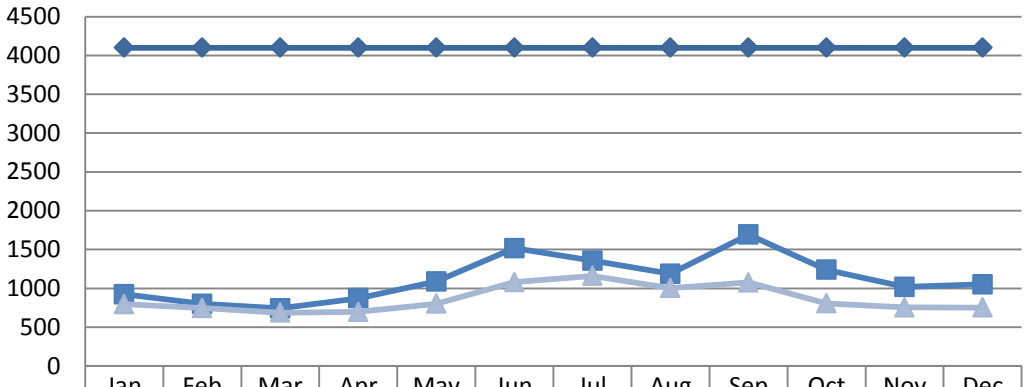
The Fenelon Falls Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water takings are regulated by the Permit to Take Water (PTTW). 2018 Raw Flow Data was submitted to the Ministry electronically under permit #5830-AQFGZR. The confirmation for the data that was submitted is attached in Appendix A.

Total Monthly Flows (m^3/d)

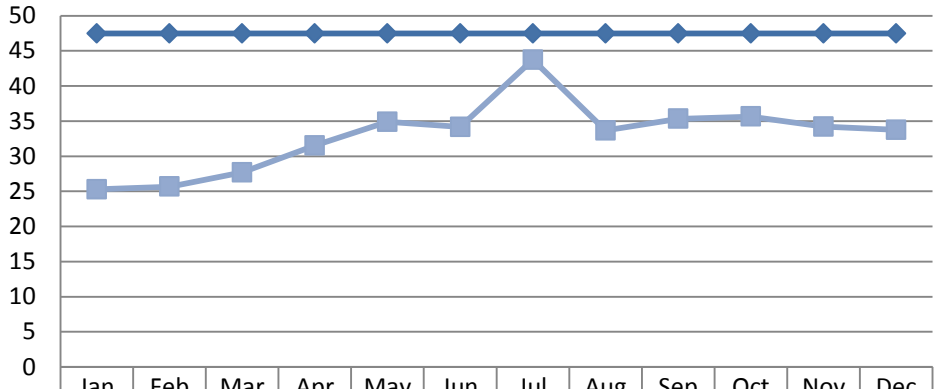
Max Allowable PTTW- Raw



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m^3/d)	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100
Max Flow (m^3/d)	924	800	743	873	1089	1518	1356	1188	1692	1240	1018	1051
Avg (m^3/d)	796	748	687	698	803	1080	1161	1004	1076	806	755	753

Monthly Rated Flows (L/s)

Max allowable rate – PTTW- Raw



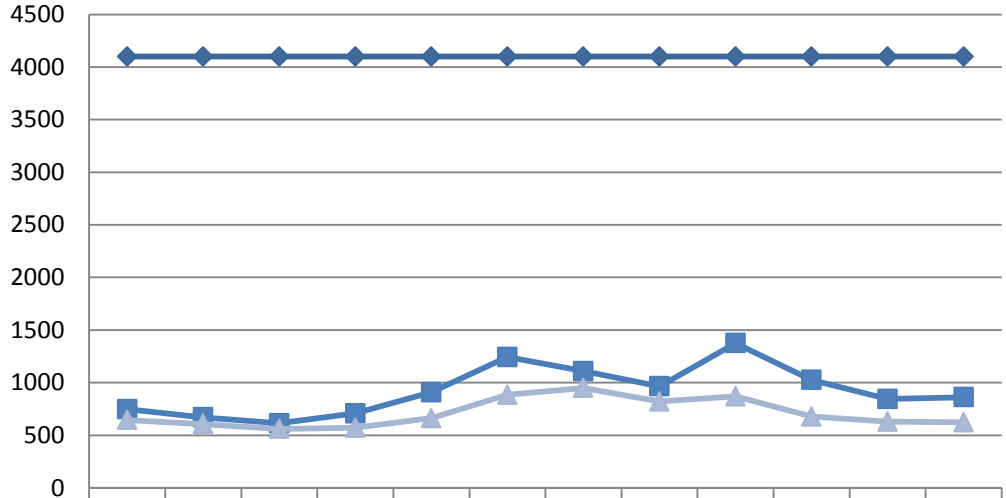
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	47.45	47.45	47.45	47.45	47.45	47.45	47.45	47.45	47.45	47.45	47.45	47.45
Max Rate (L/s)	25.3	25.7	27.7	31.5	34.9	34.2	43.7	33.7	35.3	35.6	34.2	33.8

Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

Monthly Rated Flows

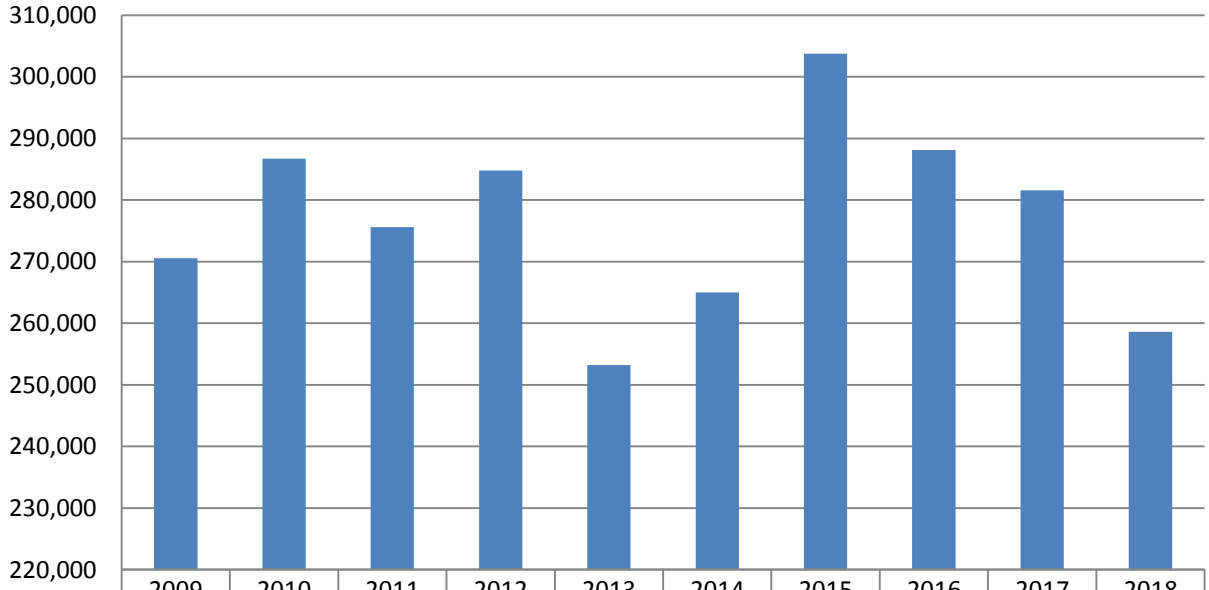
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m^3/d)	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100	4100
Max Daily Flow (m^3/d)	747	669	613	708	909	1,243	1,109	965	1,376	1,026	844	862
Avg (m^3/d)	645	606	560	571	662	885	949	820	868	678	629	623

Annual Total Flow Comparison

Total Annual m^3



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
WTP (m^3)	270,538	286,728	275,601	284,785	253,219	265,005	303,733	288,097	281,578	258,623

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	52	0	9	2	125		
Treated	52	0	0	0	0	0	4
Distribution	156	0	0	0	0	0	3

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity Filter 1 (NTU)	8760	0.00	1.61
Turbidity Filter 2 (NTU)	8760	0.00	2.47
Chlorine	8760	0.00	5.00
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measure if it is **not** milligrams per litre.
Note: For continuous monitors 8760 is used as the number of samples**.** 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 five years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required 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.

- MAC = Maximum Allowable Concentration as per O. Reg. 169/03
- MDL = Method Detection Limit

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Antimony: Sb (ug/L) - TW	2018/01/15	0.02	6.0	No	No
Arsenic: As (ug/L) - TW	2018/01/15	< 0.2	10.0	No	No
Barium: Ba (ug/L) - TW	2018/01/15	17.9	1000.0	No	No
Boron: B (ug/L) - TW	2018/01/15	6.1	5000.0	No	No

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Cadmium: Cd (ug/L) - TW	2018/01/15	0.005	5.0	No	No
Chromium: Cr (ug/L) - TW	2018/01/15	0.1	50.0	No	No
Mercury: Hg (ug/L) - TW	2018/01/24	0.01	1.0	No	No
Selenium: Se (ug/L) - TW	2018/01/15	< 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2018/01/15	< 0.002	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2018/01/15	<MDL 0.06	1.5	No	No
Nitrite (mg/L) - TW	2018/01/15	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/04/06	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/07/04	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2018/10/01	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2018/01/15	0.073	10.0	No	No
Nitrate (mg/L) - TW	2018/04/06	0.125	10.0	No	No
Nitrate (mg/L) - TW	2018/07/04	0.019	10.0	No	No
Nitrate (mg/L) - TW	2018/10/01	0.039	10.0	No	No
Sodium: Na (mg/L) - TW	2018/01/15	7.28	20*	No	No

*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)	Exceedances
			Minimum	Maximum		
Alkalinity (mg/L)	4	4	48	52	N/A	N/A
pH	4	4	7.57	8.89	N/A	N/A
Lead (ug/l)	N/A	N/A				

Organic Parameters

These parameters are tested 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.

Treated Water	Sample Date yyyy/mm/dd	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Alachlor (ug/L) - TW	2018/01/15	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2018/01/15	<MDL 0.01	5.00	No	No
Azinphos-methyl (ug/L) - TW	2018/01/15	<MDL 0.05	20.00	No	No
Benzene (ug/L) - TW	2018/01/24	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2018/01/15	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L) - TW	2018/01/15	<MDL 0.33	5.00	No	No
Carbaryl (ug/L) - TW	2018/01/15	<MDL 0.05	90.00	No	No
Carbofuran (ug/L) - TW	2018/01/15	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2018/01/24	<MDL 0.16	2.00	No	No
Chlorpyrifos (ug/L) - TW	2018/01/15	<MDL 0.02	90.00	No	No
Diazinon (ug/L) - TW	2018/01/15	<MDL 0.02	20.00	No	No
Dicamba (ug/L) - TW	2018/01/15	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2018/01/24	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2018/01/24	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2018/01/24	<MDL 0.35	5.00	No	No
1,1-Dichloroethylene (ug/L) - TW	2018/01/24	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2018/01/24	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2018/01/15	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2018/01/15	<MDL 0.19	100.00	No	No
Diclofop-methyl (ug/L) - TW	2018/01/15	<MDL 0.4	9.00	No	No
Dimethoate (ug/L) - TW	2018/01/15	<MDL 0.03	20.00	No	No
Diquat (ug/L) - TW	2018/01/24	<MDL 1.0	70.00	No	No
Diuron (ug/L) - TW	2018/01/15	<MDL 0.03	150.00	No	No
Glyphosate (ug/L) - TW	2018/01/24	<MDL 1.0	280.00	No	No
Malathion (ug/L) - TW	2018/01/15	<MDL 0.02	190.00	No	No
Metolachlor (ug/L) - TW	2018/01/15	<MDL 0.01	50.00	No	No
Metribuzin (ug/L) - TW	2018/01/15	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2018/01/24	<MDL 0.3	80.00	No	No
Paraquat (ug/L) - TW	2018/01/24	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2018/01/15	<MDL 0.04	3.00	No	No
Pentachlorophenol (ug/L) - TW	2018/01/15	<MDL 0.15	60.00	No	No
Phorate (ug/L) - TW	2018/01/15	<MDL 0.01	2.00	No	No
Picloram (ug/L) - TW	2018/01/15	<MDL 1.0	190.00	No	No

Treated Water	Sample Date yyyy/mm/dd	Sample Result	MAC	Exceedances	
				MAC	1/2 MAC
Prometryne (ug/L) - TW	2018/01/15	<MDL 0.03	1.00	No	No
Simazine (ug/L) - TW	2018/01/15	<MDL 0.01	10.00	No	No
Terbufos (ug/L) - TW	2018/01/15	<MDL 0.01	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2018/01/24	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2018/01/15	<MDL 0.2	100.00	No	No
Triallate (ug/L) - TW	2018/01/15	<MDL 0.01	230.00	No	No
Trichloroethylene (ug/L) - TW	2018/01/24	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2018/01/15	<MDL 0.25	5.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2018/01/15	<MDL 0.12	100.00	No	No
Trifluralin (ug/L) – TW	2018/01/15	<MDL 0.02	45.00	No	No
Vinyl Chloride (ug/L) – TW	2018/01/24	<MDL 0.17	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2018	138	100.00	Yes	Yes
HAA Total (ug/L) Annual Average - DW	2018	113	N/A	N/A	N/A

MAC = Maximum Allowable Concentration as per O.Reg 169/03
MDL = Method Detection Limit

Additional Legislated Samples

Municipal Drinking Water Licence	Date Collected	Suspended Solids (mg/L)
Settling Tank Discharge Point	January	16
	February	24
	March	16
	April	28
	May	12
	June	19
	July	19
	August	30
	September	26
	October	27
	November	25
	December	17
	Annual Average	21.6

Note: The Suspended Solids annual average limit of 25 mg/L applies to effluent discharged into the natural environment. Effluent was not discharged into the natural environment in 2018 but to the sewer system.

Major Maintenance Summary incurred to install, repair or replace required equipment

WO #	Description
190738	Zenon microfiltration maintenance.
579404	Replacement of microfiltration backpulse chlorination metering pumps.
578890	Replacement of disinfection post chlorination metering pumps.
264778	Replacement of sludge transfer pump.
983449	Replacement of transducer for Train 1 backpulse tank.
508475	Replacement of spare reject pump.
700794	Purchase of spare filter valves.
701680	Repair of permeate pump motor.
783186	Replacement of VFD for permeate pump.
981806	Replacement of dewatering pump.

Appendix A

WTRS Data Submission Confirmation