Collingwood Drinking Water System

2018 Annual Compliance Report

Town of Collingwood

2018 Water Compliance Report

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1. Notification and Availability of Reports

This report has been prepared in accordance with the reporting requirements of the Safe Drinking Water Act 2002 O. Reg. 170/03, s 11 (1), (3), (6 – 10) and Schedule 22

This report is presented to Council on or before February 28th 2019.

A notice is placed in local newspapers notifying the public and any interested authority that the Collingwood Drinking Water System's 2018 Water Compliance Report (the Report) is complete and lists the locations where the report is available.

A hard copy of the Report can be viewed in the Public Information binders at the Collingwood Public Library, 55 Ste. Marie Street. A copy will be provided free of charge when requested.

The Town of Collingwood website has a copy of the Report that can be viewed or downloaded in PDF format at: http://www.collingwood.ca/water/docs

2. Drinking Water System Description

Drinking Water System Number	220001165
Drinking Water System Permit Number	100-201 Issued May 16th 2016
Drinking Water System License Number	100-101 Issued May 13th 2016
Permit to Take Water Number	3451-8CZMJC issued Jan 28th 2011
Drinking Water System Name	Collingwood Drinking Water System
Drinking Water System Owner	Town of Collingwood
Drinking Water System Category	Large Municipal Residential
Water Treatment Subsystem Class	Class 2 Certificate No. 277 issued November 15, 2005
Water Distribution Subsystem Class	Class 2 Certificate No. 3009 issued November 15, 2005
Rated Capacity	31,140 m^3/d
Period being Reported	January 1, 2018 to December 31, 2018

Other Drinking Water Systems that receive drinking water from Raymond A. Barker

Ultrafiltration Plant:

Drinking Water System Owner	Drinking Water System Number
Town of New Tecumseth	220001174
Town of The Blue Mountains	220001762
Baxter Distribution System (Township of Essa)	260086866
Angus Well Supply System (Township of Essa)	260001026
Clearview Township (Distribution and Supply Subsystem)	220003706

Collingwood Drinking Water System (CDWS) consists of the Raymond A Barker Ultrafiltration Plant (RAB) and the Collingwood Distribution System. The raw water source is surface water from Georgian Bay, Lake Huron.

The Raymond A Barker Ultrafiltration Plant (RAB) is a direct filtration membrane surface water treatment plant.

Surface water is taken from Nottawasaga Bay through a submerged inlet structure, approximately 765m off shore. Raw water flows by gravity through a 1067mm diameter intake pipe and surge chamber into the raw water well. Chlorine is applied to the raw water at the surge chamber, to assist in the disinfection process. Within the raw water well a submersible mixer is utilised to increase the hydraulic grade line of the raw water. Pre-chlorinated raw water then flows by gravity to the membrane distribution channel in the main building.

Pre-chlorinated raw water is then distributed to six (6) membrane tanks or treatment trains. Five (5) trains are fed by gravity. These house the 500 series ZeeWeed ultra-filtration membrane modules. One (1) train is fed with a low lift vertical turbine pump and a 5 micron strainer with automatic cleaner. This tank houses the 1000 series ZeeWeed ultra-filtration membrane (Mobile Package Plant).

Each treatment train of the membrane filtration system, both 500 and 1000 series, in general consists of membrane modules, one (1) permeate/backpulse pump, one (1) backpulse tank and one (1) air blower. The permeate pump creates a slight vacuum which sucks clean (permeate) water through the membrane leaving any particulate matter greater than 0.035 micron in the process tank.

The permeate water is then disinfected with the addition of chlorine. The chlorinated

permeate water then flows into the two (2) 413 m^3 chlorine contact chambers (total volume 826 m^3) prior to flowing by gravity into the clearwell. The finished water is then pumped into two (2) separate systems, the Collingwood Distribution System and the Regional Pipeline, each with its own dedicated set of high lift pumps.

The membranes undergo a regular cleaning cycle that consists of reversing the flow of clean water stored in the backpulse tank back through the membranes under positive pressure. This process cleans the particles from the outer surface of the membranes and removes them to waste. This waste water can be discharged to the sewer or returned to the lake. Air is also used to keep the membranes clear. Air is injected at the bottom of the tank and scours the membranes with air bubbles as they rise to the surface. This air scouring process also assists in keeping the concentrated solids in suspension, prior to reject.

RAB is continually monitored 24 hours a day 365 days a year through the SCADA (Supervisory Control And Data Acquisition) system. The SCADA will send an alarm to an on-call operator if any part of the process requires attention.

The Collingwood Distribution System is comprised of approximately 157.75 km of ductile and cast iron watermains, ranging in size from 100 mm to 600 mm in diameter, 1198 fire hydrants and 1652 isolation valves in two pressure zones. There are also 24.1 km of private watermains.

The Tower is an elevated storage tank with a capacity of 2250 m^3 supplying pressure zone 1. The Tower has chlorine boosting capability, on-line monitoring and standby generator back up.

The Carmichael Reservoir is an in-ground reservoir and booster pumping station with a capacity of 6800 m^3 supplying pressure zone 1. The Carmichael reservoir has chlorine boosting capability, on-line monitoring and standby generator back up.

The Davey Reservoir is an in-ground reservoir and booster pumping station with a capacity of 2500 m^3 supplying pressure zone 2. The Davey reservoir has chlorine boosting capability, on-line monitoring and standby generator back up.

The Osler Bluff Road booster station helps to regulate the pressure in zone 1. This station has standby generator back up.

The Georgian Meadows booster station is owned by the developer but operated and maintained by the Town of Collingwood. This station is temporary and will be decommissioned when a planned reservoir and booster station is built on Stewart Road. This station helps to regulate the pressure in the Georgian Meadows subdivision.

3. Water treatment chemicals used in this reporting period:

Chlorine Gas
Sodium Hypochlorite (12%)

4. Significant expenses were incurred to:

a. [ ] Install required equipment
b. [ ] Repair required equipment
c. [x] Replace required equipment
d. [ ] Studies / Engineering

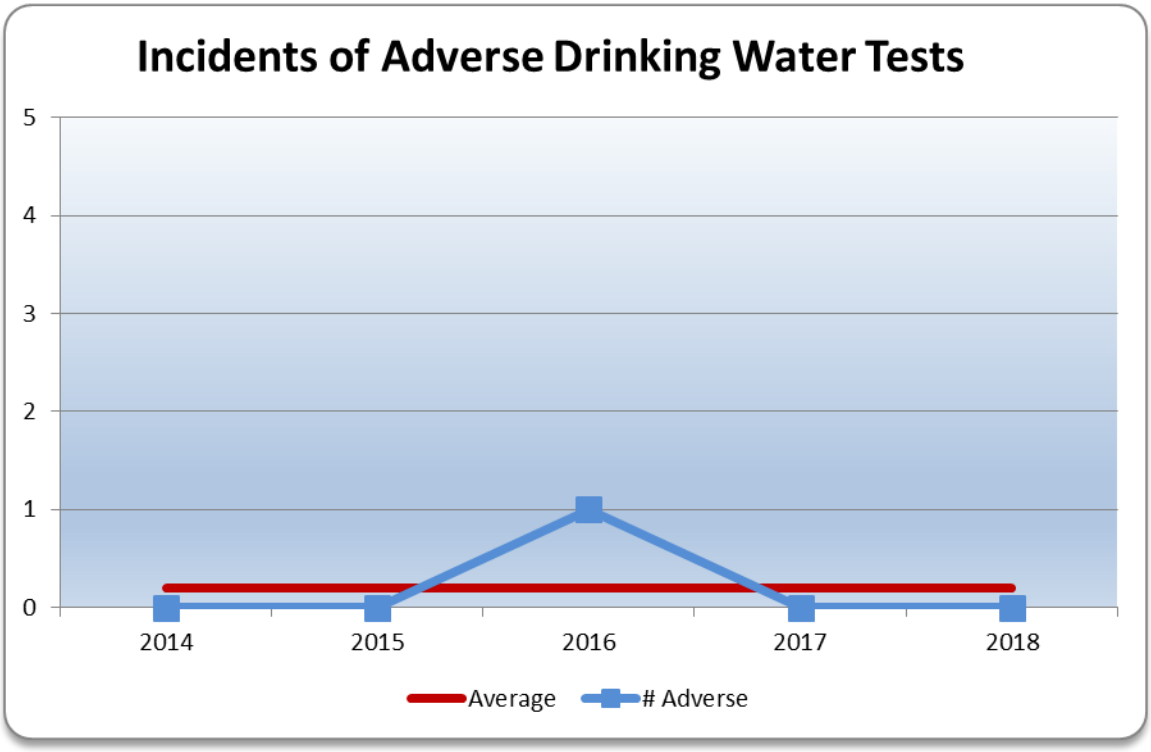
5. Description and breakdown of monetary expenses incurred:

Description – Water Treatment	Amount
Membranes – Train B	$1,050,000.00
Vacuum Pump	$3540.00
Filter D concentrate pump rebuild	$4680.00
Chlorinator	$4505.00
Vehicle Replacement	$37,500.00
Total:	$1,100,225.00

Description – Water Distribution	Amount
Water meter handheld devices	$4,000.00
Pump – Osler booster station	$8870.00
Watermain Replacement	$408,775.00
Vehicle Replacement	$34,000.00
Total:	$455,645.00

6. 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 (Adverse Reports):

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
None	***n/a***	***n/a***	***n/a***	***n/a***	***n/a***



7. Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period:

Type	Number of Samples	Range of E. Coli Results Min	Max	Range of Total Coliform Results Min	Max	Number of HPC Samples	Range of HPC Results Min	Max
Raw	52	0	10	0	172	0	n/a	n/a
Treated	52	0	0	0	0	52	0	3
Distribution	475	0	0	0	0	475	0	18

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

Parameter	Units	Number of Samples	Range of Results Min	Max	Ave
Turbidity - Raw	NTU	Continuous Monitoring	0.09	74.15	1.7
Turbidity - Treated	NTU	Continuous Monitoring	0.03	0.91	0.04
Free Chlorine - Treated	mg/L	Continuous Monitoring	1.21	2.34	1.68
Free Chlorine – Distribution Davey Reservoir	mg/L	Continuous Monitoring	0.77	3.33	1.59
Free Chlorine – Distribution The Tower	mg/L	Continuous Monitoring	0.57	3.34	1.52
Free Chlorine – Distribution Carmichael Reservoir	mg/L	Continuous Monitoring	0.63	2.00	1.34
Free Chlorine – Distribution Grab Samples	mg/L	475	0.10	1.78	0.99

9. 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	Unit of Measure
Municipal Drinking Water License June 12, 2016 Schedule C Residue Management Table 3	**Total Suspended Solids**	Jan	1.3	mg/L
		Feb	1.6	mg/L
		Mar	1.3	mg/L
		April	2.4	mg/L
		May	1.2	mg/L
		June	0.8	mg/L
		July	0.8	mg/L
		Aug	0.3	mg/L
		Sept	0.6	mg/L
		Oct	0.9	mg/L
		Nov	36.9	mg/L
		Dec	8.5	mg/L
Max annual avg limit = 25 mg/L		**Annual Average:**	**4.7**	**mg/L**

10. Summary of inorganic parameters tested during this reporting period or the most recent sample results:

Note: ND = not detected

	Date of Samples					
	Feb.	**May**	**Aug.**	**Nov.**	**Units**	**Limits**
Antimony	ND	ND	ND	n/a	µg/L	**6**
Arsenic	ND	ND	ND	n/a	µg/L	**10**
Barium	12.7	12.8	11.6	n/a	µg/L	**1000**
Boron	13	20	14	n/a	µg/L	**5000**
Cadmium	ND	ND	ND	n/a	µg/L	**5**
Chromium	ND	ND	1.06	n/a	µg/L	**50**
Mercury	ND	ND	ND	n/a	µg/L	**1**
Selenium	ND	ND	ND	n/a	µg/L	**50**
Uranium	ND	ND	ND	n/a	µg/L	**20**
Nitrite	ND	ND	ND	ND	mg/L	**1.0**
Nitrate	0.28	0.28	0.21	0.29	mg/L	**10.0**
Flouride	ND	ND	ND	n/a	mg/L	**1.5**
Sodium	4.32	4.38	5.80	n/a	mg/L	**20**
***Lead**	0.06 – 0.16	0.02 – 0.24	0.03 – 0.43	n/a	µg/L	**10**
***Alkalinity**	71 – 78	73 – 77	73	n/a	mg/L	**30 - 500**
***pH**	7.91 – 7.97	8.06 – 8.14	8.05 - 8.22	n/a	n/a	**6.5 – 8.5**
Note: All samples are well within allowable limits, no exceedences to report						

**Distribution sample*

11. Summary of organic parameters tested during this reporting period or the most recent sample results:

Note: ND = not detected

	Date of Samples					
	Feb	**May**	**Aug**	**Nov**	**Units**	**Max Limits**
Alachlor	ND	ND	ND	n/a	µg/L	**5**
Atrazine + N-dealkylated metabodies	ND	ND	ND	n/a	µg/L	**5**
Azinphos-methyl	ND	ND	ND	n/a	µg/L	**20**
Benzene	ND	ND	ND	n/a	µg/L	**1**
Benzo(a)pyrene	ND	ND	ND	n/a	µg/L	**0.01**
Bromoxynil	ND	ND	ND	n/a	µg/L	**5**
Carbaryl	ND	ND	ND	n/a	µg/L	**90**
Carbofuran	ND	ND	ND	n/a	µg/L	**90**
Carbon Tetrachloride	ND	ND	ND	n/a	µg/L	**2**
Chlorpyrifos	ND	ND	ND	n/a	µg/L	**90**
Diazinon	ND	ND	ND	n/a	µg/L	**20**
Dicamba	ND	ND	ND	n/a	µg/L	**120**
1,2-Dichlorobenzene	ND	ND	ND	n/a	µg/L	**200**
1,4-Dichlorobenzene	ND	ND	ND	n/a	µg/L	**5**
1,2-Dichloroethane	ND	ND	ND	n/a	µg/L	**5**
1,1-Dichloroethylene	ND	ND	ND	n/a	µg/L	**14**
Dichloromethane	ND	ND	ND	n/a	µg/L	**50**
2,4-Dichlorophenol	ND	ND	ND	n/a	µg/L	**900**
2,4-D	ND	ND	ND	n/a	µg/L	**100**
Diclofop-methyl	ND	ND	ND	n/a	µg/L	**9**
Dimethoate	ND	ND	ND	n/a	µg/L	**20**
Diquat	ND	ND	ND	n/a	µg/L	**70**
Diuron	ND	ND	ND	n/a	µg/L	**150**
Glyphosate	ND	ND	ND	n/a	µg/L	**280**
Malathion	ND	ND	ND	n/a	µg/L	**190**
2-Methyl-4-chlorophenoxyacetic acid	ND	ND	ND	n/a	µg/L	**100**

Organics (cont'd)	Feb	May	Aug	Nov	Units	Max Limits
Metolachlor	ND	ND	ND	n/a	µg/L	**50**
Metribuzin	ND	ND	ND	n/a	µg/L	**80**
Monochlorobenzene	ND	ND	ND	n/a	µg/L	**80**
Paraquat	ND	ND	ND	n/a	µg/L	**10**
Pentachlorophenol	ND	ND	ND	n/a	µg/L	**60**
Phorate	ND	ND	ND	n/a	µg/L	**2**
Picloram	ND	ND	ND	n/a	µg/L	**190**
PCB	ND	ND	ND	n/a	µg/L	**3**
Prometryne	ND	ND	ND	n/a	µg/L	**1**
Simazine	ND	ND	ND	n/a	µg/L	**10**
Terbufos	ND	ND	ND	n/a	µg/L	**1**
Tetrachloroethylene (perchloroethylene)	ND	ND	ND	n/a	µg/L	**10**
2,3,4,6-Tetrachlorophenol	ND	ND	ND	n/a	µg/L	**100**
Triallate	ND	ND	ND	n/a	µg/L	**230**
Trichloroethylene	ND	ND	ND	n/a	µg/L	**5**
2,4,6,-Trichlorphenol	ND	ND	ND	n/a	µg/L	**5**
Trifluralin	ND	ND	ND	n/a	µg/L	**45**
Vinyl Chloride	ND	ND	ND	n/a	µg/L	**1**
Note: All samples are well within allowable limits, no exceedences to report						

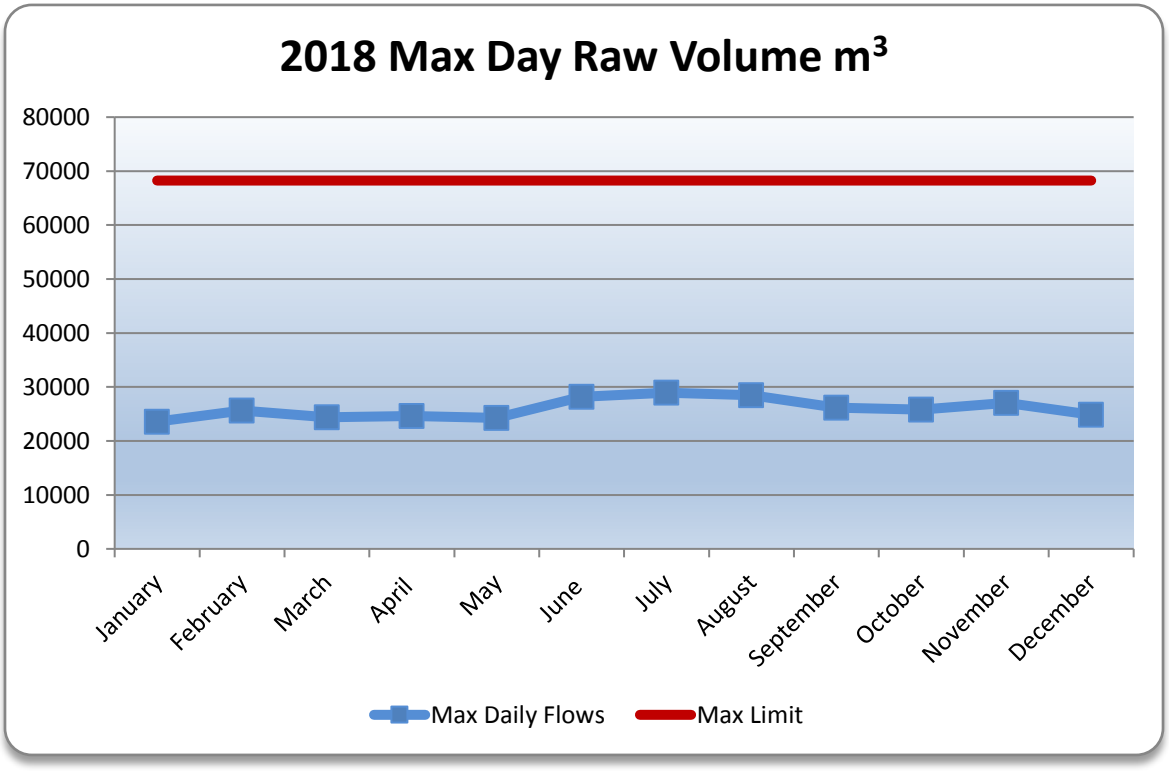
	Date of Samples				
	1st Quarter	**2nd Quarter**	**3rd Quarter**	**4th Quarter**	**Max Limit**
Haloacetic Acids	ND	16.5	18.7	26.1	**n/a**
Haloacetic Acids Average	n/a	15.3	13.2	15.33	**80**
Trihalomethanes	15	32	52	38	**n/a**
Trihalomethanes Average	36.3	35	33.3	34.3	**100**
Note: All samples are well within allowable limits, no exceedences to report					

12. The following inorganic or organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards:

Parameter	Result Value	Unit of Measure	Date of Sample
None	***n/a***	***n/a***	***n/a***

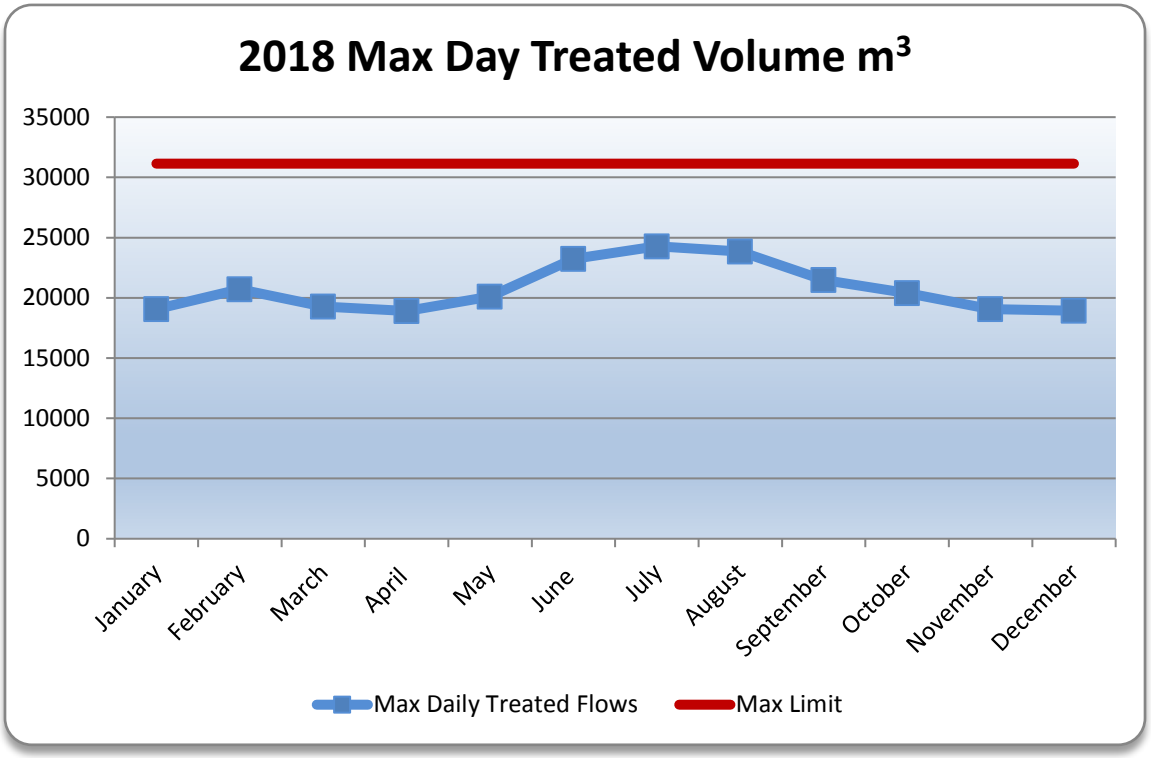
13. Raw water taking vs capacity per Permit to Take Water:

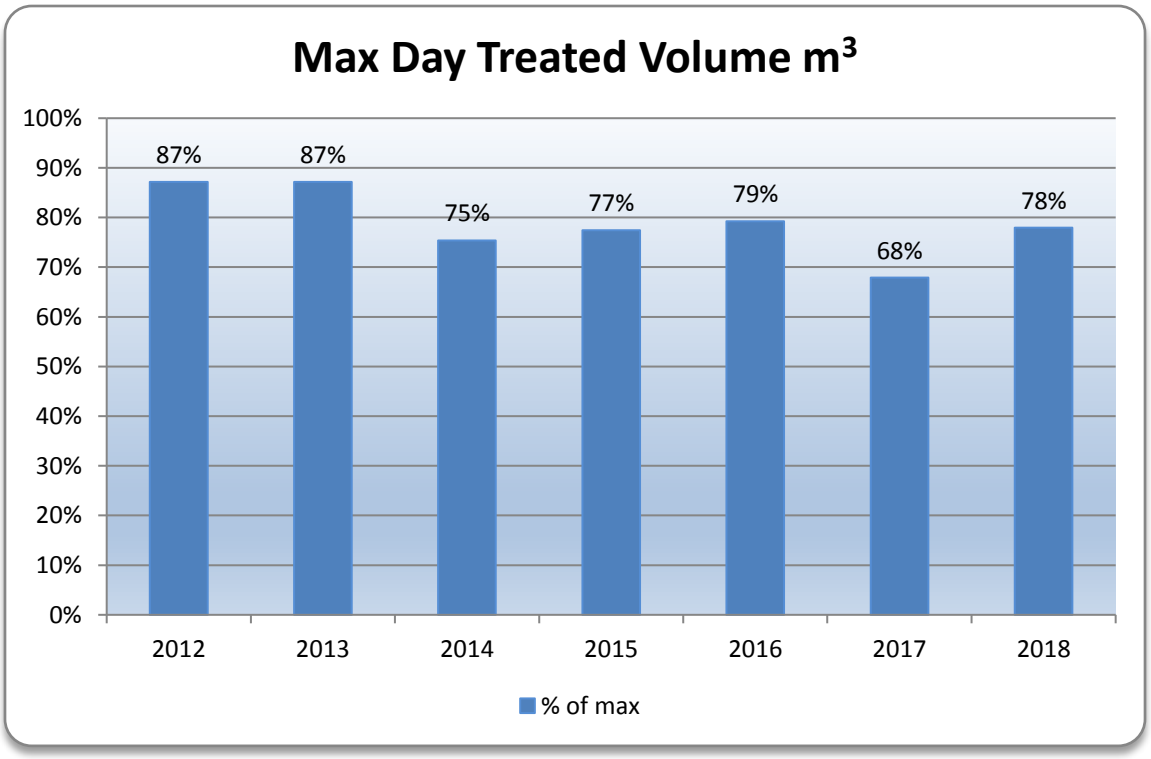
Raw Water Taking					
Month	**Monthly Total m^3**	**Daily Ave m^3**	**Min Day m^3**	**Max Day m^3**	Max Day **Capacity**
January	686,110	22,133	19,236	23,579	35%
February	637,858	22,781	20,228	25,631	38%
March	704,587	22,729	19,335	24,381	36%
April	665,951	22,198	19,944	24,651	36%
May	681,449	21,982	15,946	24,260	36%
June	753,636	25,121	21,037	28,152	41%
July	822,162	26,521	21,931	28,935	42%
August	748,141	24,134	18,062	28,481	42%
September	735,118	24,504	21,632	26,161	38%
October	727,218	23,459	19,988	25,831	38%
November	696,060	23,202	19,574	27,054	40%
December	698,272	22,525	19,777	24,860	36%
Total	**8,554,289**				
Max	**822,162**	**26,521**		**28,935**	**42%**
Note: Maximum allowable taking is 68,250 m^3 per day					


2018 Max Day Raw Volume m3
80000
70000
60000
50000
40000
30000
20000
10000
0
January
February
March
April
May
June
July
August
September
October
November
December
Max Daily Flows
Max Limit

14. Treated water taking vs capacity per Municipal Drinking Water License:

Treated Water Flows					
Month	Monthly **Total m^3**	Daily Ave **m^3**	Min Day **m^3**	Max Day **m^3**	Max Day **Capacity**
January	553,919	17,868	15,929	19,073	61%
February	512,872	18,317	16,188	20,713	67%
March	562,605	18,149	15,248	19,269	62%
April	519,070	17,302	15,824	18,908	61%
May	560,067	18,067	12,649	20,099	65%
June	629,897	20,997	17,728	23,231	75%
July	682,982	22,032	18,082	24,277	78%
August	619,545	19,985	14,873	23,839	77%
September	621,882	20,061	17,852	21,491	69%
October	576,609	18,600	15,691	20,401	66%
November	529,805	17,660	14,642	19,061	61%
December	522,374	16,851	13,446	18,927	61%
Total:	**6,869,293**				
Max:	**682,982**	**22,032**		**24,277**	**78%**
Note: Maximum allowable taking is 31,140 m^3 per day					


2018 Max Day Treated Volume m³
35000
30000
25000
20000
15000
10000
5000
0
January
February
March
April
May
June
July
August
September
October
November
December
Max Daily Treated Flows
Max Limit


Max Day Treated Volume m³
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
87%
87%
75%
77%
79%
68%
78%
2012
2013
2014
2015
2016
2017
2018
% of max

15. Quality Management System (QMS) – Management Review:

A QMS Management Review was conducted on January 9, 2019. Data from 2018 was considered and action items were identified as appropriate to improve the operation and efficiency of the system. A summary of some key items can be found below.

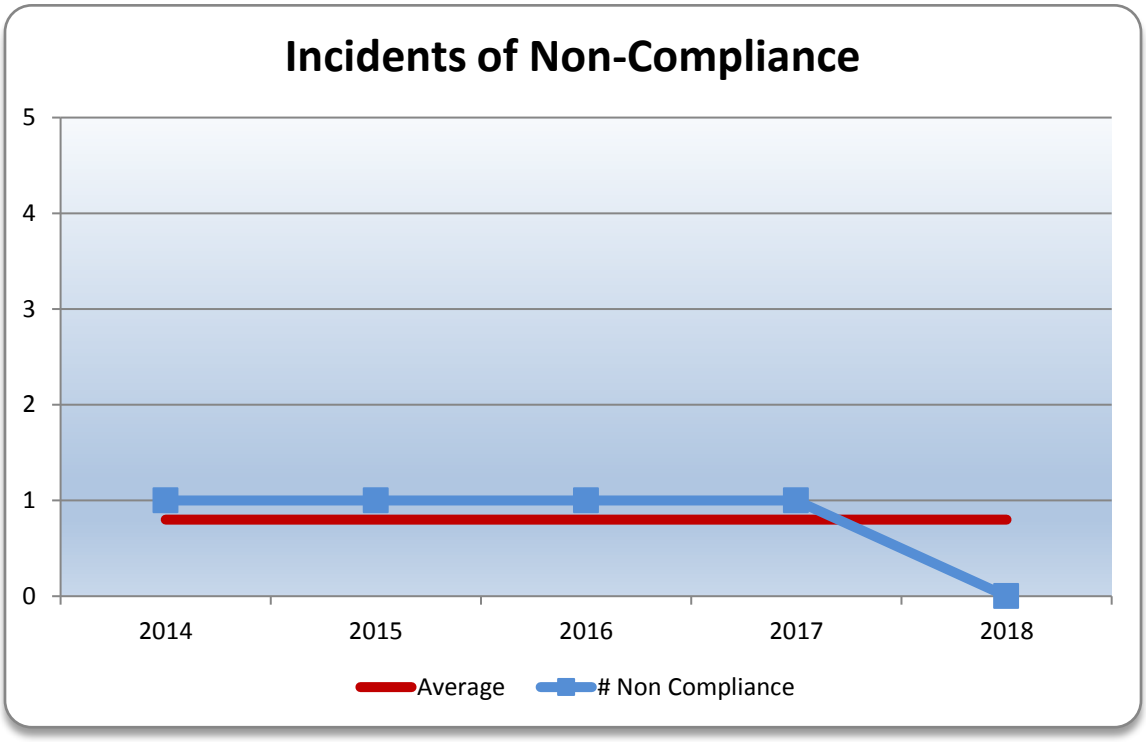
a) Incidents of Regulatory Non-Compliance

There were no incidents of regulatory non-compliance in 2018.

A Ministry of the Environment, Conservation and Parks (MECP) annual inspection was completed in November 2018.

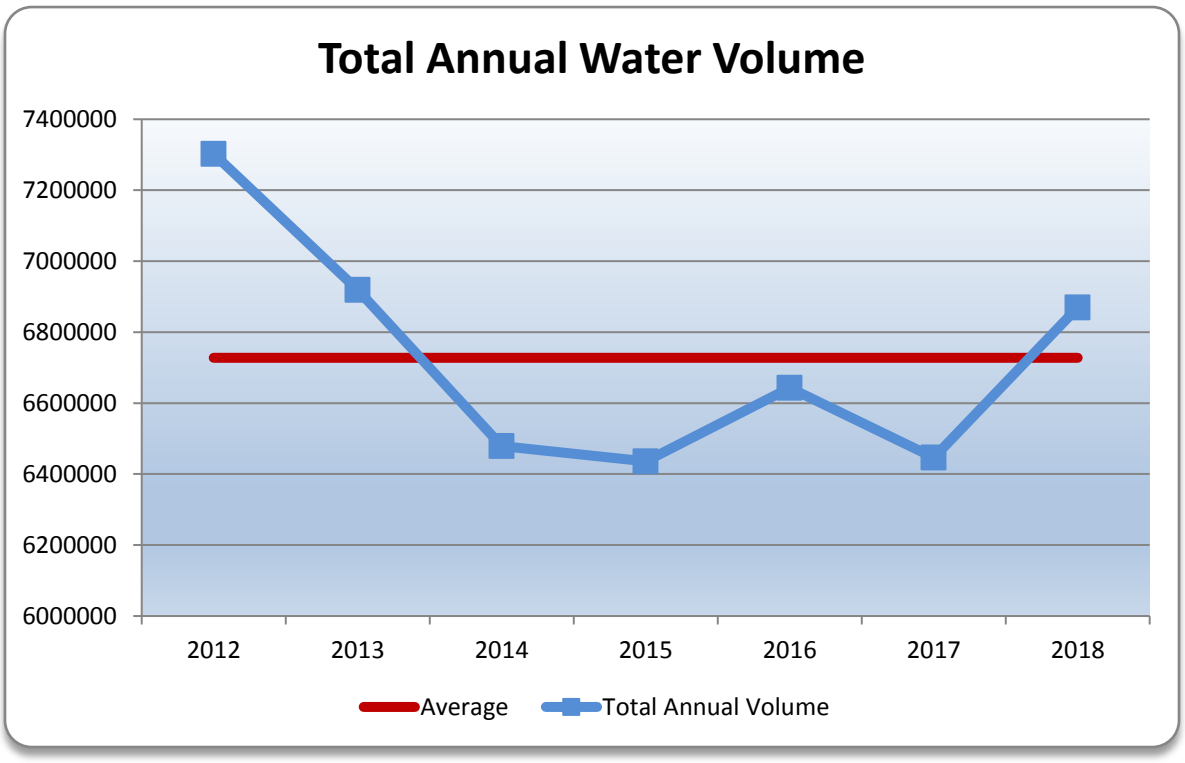
Findings: No regulatory non-compliances were identified during the inspection.

Based on the Ministry established rating methodology the Collingwood Drinking Water System received a 100% rating.



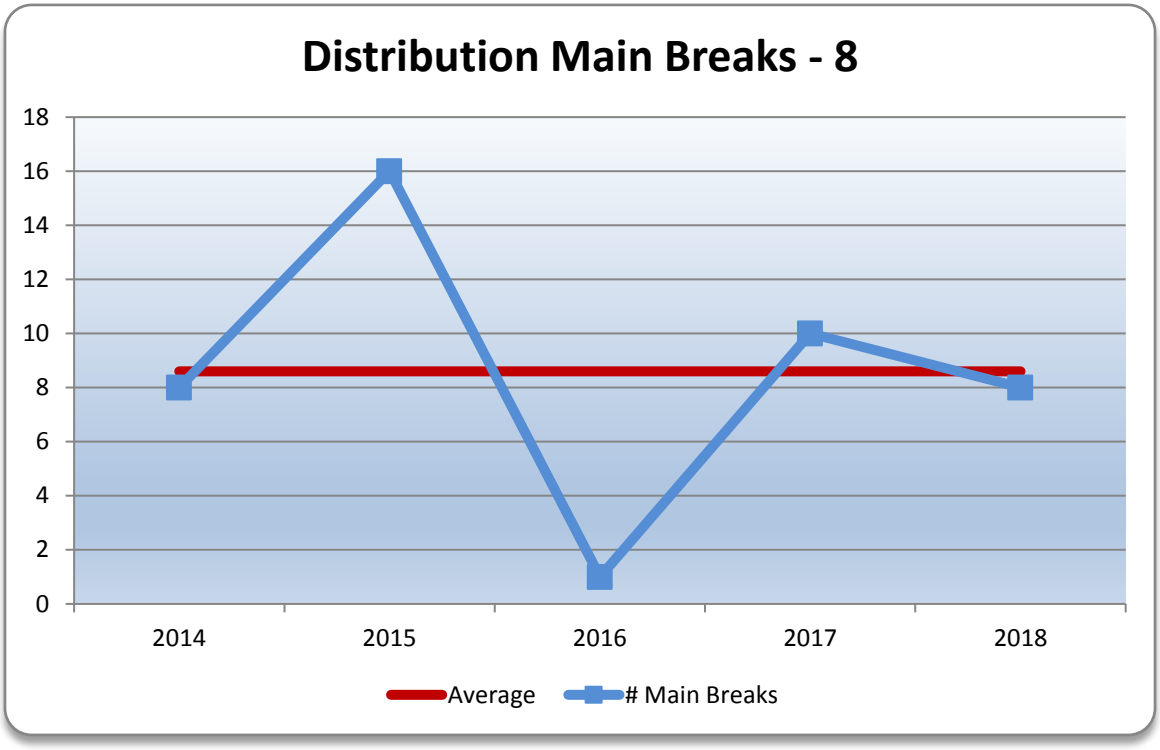
b) Total Treatment Plant Production

The water treatment plant supplied 6,869,293 m^3 of safe, potable water in 2018. That is an increase of 9% from 6,446,507 m^3 in 2017. Production is based solely on demand and 2017 had an unusually cool and rainy summer.



c) Watermain Breaks

There were eight watermain breaks in 2018. Repairs were completed with minimal service interruption to consumers.



d) Backflow Prevention Program

The Backflow Prevention Program has completed the first full year of operation. There are currently 183 compliant premises and 313 premises that have completed an initial survey and are in the process of becoming compliant. A total of 656 premises are included in the program.

16. Conclusion

The Town of Collingwood continues to provide a safe, reliable supply of potable drinking water to our customers, while meeting or exceeding all legislative requirements.

Report Prepared by:

Marie Richardson
Water Compliance Officer