

2019 Annual Drinking Water System Quality Report for Keswick DWS

Prepared by The Regional Municipality of York pursuant to Section 11 of O.Reg. 170/03

Drinking Water System Number: 210003280

Drinking Water System Name: Keswick DWS

Drinking Water System Owner: The Regional Municipality of York

Drinking Water System Category: Large Municipal Residential

Drinking Water System Classification: Water Treatment III

Reporting period: Jan 1, 2019 - Dec 31, 2019

The Keswick DWS serves approximately 32,450 people

(Population is a year-end forecasted estimate based on Statistics Canada census data, and building permits)

List all Drinking Water Systems which receive their drinking water from the Keswick DWS:

Keswick-Sutton Distribution System (260062686)

This annual report is available to the public at no charge on the Region's website (york.ca/drinkingwater) and upon request. Accessible formats or communication supports are also available upon request. Please contact AccessYork@york.ca or call 1-877-464-9675.

A copy of York Region's annual report was provided to all Drinking Water System owners that are connected to and receive drinking water from York Region.

System users were notified that York Region's annual report is available free of charge by public access and notice through:

- Media (internet, social media)
- Public requests at any time

Summary report required under O.Reg. 170/03 Schedule 22 will be available for inspection at:

The Regional Municipality of York
Administrative Centre
Environmental Services Department
17250 Yonge Street, Newmarket ON

Description of the Keswick DWS

Introduction

The community of Keswick is located on the east shore of Cook's Bay in the Town of Georgina. The Keswick sub-system is part of the larger Georgina DWS. Surface water from Lake Simcoe and Cook's Bay supplies this community. York Region operates the water supply, and the Town of Georgina maintains water quality and distributes it to users. The Province governs the Region's operations with Acts and Regulations, a Permit to Take Water, a Municipal Drinking Water License and an operating Permit.

Raw water source

Lake Simcoe

Profile of water in distribution system

Lake Simcoe

Water treatment description

The Keswick DWS includes one Water Treatment Plant and three storage/rechlorination facilities. Lake water is screened and chlorine prevents mussel growth on the intake pipe. Filtration removes particles. Granular activated carbon improves water taste, and chlorine disinfects it. Fluoride is added at levels recommended by Ontario's Chief Medical Officer of Health. Operators test the water and inspect the process. Online analyzers continuously monitor the facilities and automatically pause operation if an issue is detected.

List of water treatment chemicals used in this system

Chlorine gas; Carbon Dioxide (pH control); Polyaluminum Chloride (coagulation); Granular activated carbon (filtration); Non water treatment chemical: Hydrofluosilicic Acid applied

Brief description and breakdown of monetary expenses incurred

\$78,187 for general maintenance and repairs.

Notices submitted under Section 18(1) of the Safe Drinking Water Act or Section 16-4 of O.Reg. 170/03 and reported to MECP Spills Action Centre

Adverse Parameter	Incident Date	Adverse Test Result	Corrective Action	Corrective Action Date
Fluoride	24-Jan-19	1.6 mg/L	Operator attended site, restored facility to normal operation. Compliant grab sample taken.	24-Jan-19
	13-Feb-19	1.65 mg/L	Operator attended site, restored facility to normal operation. Compliant grab sample taken.	13-Feb-19
	05-Dec-19	1.51 mg/L	Reported as due diligence. Operator attended site. Facility returned to normal operation. Compliant grab sample taken.	05-Dec-19

Microbiological testing completed under Schedule 10 of O.Reg. 170/03

*For additional distribution samples collected under Schedule 10, refer to the local municipality

Test Parameter	Sample Source	Count Of Samples	Count Of Presence
E. coli	Raw	54	2
	Treated	52	0
Heterotrophic Plate Count	Treated	52	9
Total Coliforms	Raw	54	22
	Treated	52	0

Operational testing completed under Schedule 7 of Regulation 170/03 during this reporting period

*8,760 is used as the number of samples for continuous analyzers

Test Parameter (group)	Test Units	No. of Samples	Average	Minimum	Maximum
Fluoride	mg/L	8,760	0.68	0.20	1.65
Free Chlorine	mg/L	8,760	1.43	0.00	5.00
Turbidity (Raw)	NTU	8,760	0.53	0.10	25.00
Turbidity (Treated)	NTU	8,760	0.06	0.02	3.00

Summary of testing pursuant to Schedule 13 of O. Reg. 170/03 and sampling carried out in accordance with the requirement of an approval, order or other legal instrument

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to three decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater

Test Parameter	Test Units	No. of Samples	Average	Minimum	Maximum
Haloacetic Acids	mg/L	8	0.041	0.024	0.063
Nitrate	mg/L	12	0.500	<0.5	<0.5
Nitrite	mg/L	12	0.050	<0.05	<0.05
Sodium	mg/L	3	34.475	32.3	36.4
Total Suspended Solids Backwash	mg/L	12	14.708	1.2	87.8
Trihalomethanes	mg/L	37	0.045	0.0189	0.0886

*Lead testing under Schedule 15.1 is conducted by the Local Municipality - refer to Local Municipality reports for results. York Region occasionally collects samples tested for lead for non-regulatory research purposes

Organic and inorganic parameter(s) that exceeded half the standard prescribed in Schedule 2 of O.Reg. 169/03 Ontario Drinking Water Quality Standards

Test Parameter	Sample Facility	Sample Date	Test Units	Test Result	ODWS Limit
Trihalomethanes	Keswick West Park Heights Reservoir	07-Jan-19	mg/L	0.0518	0.100
		04-Feb-19	mg/L	0.0508	0.100
		08-Apr-19	mg/L	0.0559	0.100
		06-May-19	mg/L	0.0579	0.100
		05-Jun-19	mg/L	0.068	0.100
		10-Jul-19	mg/L	0.0727	0.100
		05-Aug-19	mg/L	0.0762	0.100
		02-Sep-19	mg/L	0.0804	0.100
		07-Oct-19	mg/L	0.0886	0.100
		06-Nov-19	mg/L	0.0666	0.100
	04-Dec-19	mg/L	0.0614	0.100	
	Keswick Woodbine Elevated Tank	05-Jun-19	mg/L	0.0522	0.100
		10-Jul-19	mg/L	0.0584	0.100
		05-Aug-19	mg/L	0.0591	0.100
		02-Sep-19	mg/L	0.0614	0.100
07-Oct-19		mg/L	0.0661	0.100	
Keswick WTP Clearwell	06-Nov-19	mg/L	0.0512	0.100	
	Keswick WTP Clearwell	01-Apr-19	mg/L	0.0578	0.100

Summary of inorganic parameters tested pursuant to Schedule 23 of O.Reg. 170/03

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to five decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater

Test Parameter	No. of Samples	Test Units	Average	Minimum	Maximum	ODWS Limit
Antimony	3	mg/L	0.00050	<0.0005	<0.0005	0.006
Arsenic	3	mg/L	0.00053	<0.0005	0.0006	0.01
Barium	3	mg/L	0.02680	0.0254	0.0293	1
Boron	3	mg/L	0.02290	0.0219	0.0245	5
Cadmium	3	mg/L	0.00050	<0.0005	<0.0005	0.005
Chromium	3	mg/L	0.00050	<0.0005	<0.0005	0.05
Mercury	3	mg/L	0.00005	<0.00005	<0.00005	0.001
Selenium	3	mg/L	0.00050	<0.0005	<0.0005	0.05
Uranium	3	mg/L	0.00050	<0.0005	<0.0005	0.02

Summary of organic parameters tested pursuant to Schedule 24 of O.Reg. 170/03

Values with a less than sign (" $<$ ") indicate that the test result is below the method detection limit from the accredited laboratory (i.e. non-detect). Average results include values which were returned as non-detect and are rounded to four decimals. For a complete set of results, see the open dataset available at york.ca/drinkingwater

Test Parameter	No. of Samples	Test Units	Average	Minimum	Maximum
1,1-dichloroethylene (vinylidene chloride)	1	mg/L	0.0003	<0.0003	<0.0003
1,2-(o-dcb) Dichlorobenzene	1	mg/L	0.0001	<0.0001	<0.0001
1,2-Dichloroethane	1	mg/L	0.0001	<0.0001	<0.0001
1,4-(p-dcb) Dichlorobenzene	1	mg/L	0.0001	<0.0001	<0.0001
2-methyl-4-chlorophenoxyacetic acid	1	mg/L	0.0050	<0.005	<0.005
2,3,4,6-Tetrachlorophenol	1	mg/L	0.0005	<0.0005	<0.0005
2,4-Dichlorophenol	1	mg/L	0.0007	<0.0007	<0.0007
2,4-dichlorophenoxyacetic acid (2,4-D)	1	mg/L	0.0008	<0.0008	<0.0008
2,4,6-Trichlorophenol	1	mg/L	0.0005	<0.0005	<0.0005
Alachlor	1	mg/L	0.0004	<0.0004	<0.0004
Atrazine + N-dealkylated metabolites	1	mg/L	0.0002	<0.0002	<0.0002
Azinphos-methyl	1	mg/L	0.0003	<0.0003	<0.0003
Benzene	1	mg/L	0.0001	<0.0001	<0.0001
Benzo(a)pyrene	1	mg/L	0.0000	<0.00001	<0.00001
Bromoxynil	1	mg/L	0.0004	<0.0004	<0.0004
Carbaryl	1	mg/L	0.0030	<0.003	<0.003
Carbofuran	1	mg/L	0.0030	<0.003	<0.003
Carbon Tetrachloride	1	mg/L	0.0002	<0.0002	<0.0002
Chlorpyrifos	1	mg/L	0.0002	<0.0002	<0.0002
Diazinon	1	mg/L	0.0002	<0.0002	<0.0002
Dicamba	1	mg/L	0.0004	<0.0004	<0.0004
Dichloromethane	1	mg/L	0.0020	<0.002	<0.002
Diclofop-methyl	1	mg/L	0.0004	<0.0004	<0.0004
Dimethoate	1	mg/L	0.0003	<0.0003	<0.0003
Diquat	1	mg/L	0.0010	<0.001	<0.001
Diuron	1	mg/L	0.0030	<0.003	<0.003
Glyphosate	1	mg/L	0.0250	<0.025	<0.025
Malathion	1	mg/L	0.0002	<0.0002	<0.0002
Metolachlor	1	mg/L	0.0002	<0.0002	<0.0002
Metribuzin	1	mg/L	0.0003	<0.0003	<0.0003
Monochlorobenzene	1	mg/L	0.0001	<0.0001	<0.0001
Paraquat	1	mg/L	0.0010	<0.001	<0.001
Pentachlorophenol	1	mg/L	0.0004	<0.0004	<0.0004
Phorate	1	mg/L	0.0002	<0.0002	<0.0002
Picloram	1	mg/L	0.0007	<0.0007	<0.0007
Polychlorinated Biphenyls (PCBs)	1	mg/L	0.0000	<0.00002	<0.00002
Prometryne	1	mg/L	0.0002	<0.00019	<0.00019
Simazine	1	mg/L	0.0002	<0.0002	<0.0002
Terbufos	1	mg/L	0.0002	<0.0002	<0.0002
Tetrachloroethylene (perchloroethylene)	1	mg/L	0.0003	<0.0003	<0.0003
Triallate	1	mg/L	0.0040	<0.004	<0.004
Trichloroethylene	1	mg/L	0.0001	<0.0001	<0.0001
Trifluralin	1	mg/L	0.0000	<0.000006	<0.000006
Vinyl Chloride	1	mg/L	0.0002	<0.0002	<0.0002