

## The Regional Municipality of Durham

### Blackstock Drinking Water System 2018 Annual Report

**Drinking Water System Number:** 220003751

**Municipal Drinking Water Licence Number:** 003-101

**Drinking Water System Owner:** The Regional Municipality of Durham

**Drinking Water System Category:** Large Municipal Residential

This Annual Report for the calendar year 2018 is designed to inform you about your drinking water system. This report has been prepared to satisfy Section 11 of Ontario Regulation (O. Reg.) 170/03. O. Reg. 170/03 sets requirements for drinking water systems with regard to sampling and testing, levels of treatment, certification of staff, and notification of authorities and the public about water quality. Hard copies of this report and the Schedule 22 Summary Report are available at the Regional Municipality of Durham Headquarters office that is located at 605 Rossland Road East, Whitby. The annual report is also available on the [Region of Durham's website](http://www.durham.ca) at [www.durham.ca](http://www.durham.ca). Further information regarding the Drinking Water Regulations can be found on the [Ministry of the Environment, Conservation and Parks website](http://www.ontario.ca/ministry-environment-conservation-parks) at [www.ontario.ca/ministry-environment-conservation-parks](http://www.ontario.ca/ministry-environment-conservation-parks).

### Drinking Water System Process Description

#### General

The Blackstock Drinking Water System provides potable water to consumers in the Hamlet of Blackstock in the Township of Scugog. Blackstock has two municipal wells designated Well No. 7 and Well No. 8. Well No. 7 is currently not in service. Blackstock is a Class Two Distribution and Supply System with an approved combined capacity of 994 cubic metres per day (m<sup>3</sup>/d). The wells feed a Class One Distribution System. The Blackstock treatment and distribution systems are owned and operated by the Regional Municipality of Durham.

The water supply system includes the following processes:

- Disinfection (sodium hypochlorite),
- Iron sequestering (sodium silicate),
- Water storage/pressurization,
- Distribution.

#### Raw Water Supply

Well No. 8 is drilled to a depth of 54 metres (m). Well No. 7 is drilled to a depth of 61 m and is not currently in service.

### **Disinfection/Iron Sequestering**

Sodium silicate is added to raw water once it leaves the well for iron sequestering (control). Sodium hypochlorite is added to provide disinfection. The free chlorine residual and turbidity are monitored continuously by online analyzers.

### **Water Storage/Pressurization**

Treated water flows to a 340 cubic metre reservoir after chlorination. It is then pumped to the distribution system by high lift pumps. Pressure tanks are used to assist in maintaining distribution system pressure.

### **Distribution System**

The distribution system delivers the treated water through approximately 6 kilometres of watermains. There is no water storage in the distribution system.

### **Major Monetary expenses(above \$10,000)**

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of major expenses for this drinking water system are as follows:

There were no major expenses incurred during this reporting period.

## Tables

For a description of terms and abbreviations in all tables, refer to the glossary at the end of the report.

### Blackstock Drinking Water System (DWS) Table 1

Summary of all Adverse Water Quality Incidents (AWQI) in 2018 Reported to Spills Action Centre in Accordance with Schedule 16-3 and 16-4 of O. Reg. 170/03.

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
December 5	Total Coliforms (Distribution)	Presence	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	December 5

### Blackstock DWS Table 2

Microbiological Membrane Filtration (MF) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of Escherichia Coli MF Colony Forming Units per 100 Millilitres	Range of Total Coliforms MF Colony Forming Units per 100 Millilitres
Raw	54	Non-Detect (ND)	ND
Treated	2	ND	ND
Distribution	3	ND	ND

### Blackstock DWS Table 3

Microbiological Presence Absence (P/A) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Escherichia Coli P/A per 100 Millilitres	Total Coliforms P/A per 100 Millilitres
Treated	52	Absence (A)	A
Distribution	154	A	A – Presence (1)*

\*Number in parenthesis represents number of exceedance(s).

#### Blackstock DWS Table 4

#### Microbiological Heterotrophic Plate Count (HPC) Testing Under Schedule 10 of O. Reg. 170/03.

Type of Sample	Number of Samples	Range of HPC Samples Colony Forming Units per Millilitre
Treated	54	Non-Detect (ND) - 11
Distribution	82	ND - 2

#### Blackstock DWS Table 5

#### Operational Testing Done Under Schedule 7 of O. Reg. 170/03.

Test	Number of Samples	Range of Results	Unit of Measure	Parameter Description
Turbidity - Raw Water	54	0.06 - 0.29	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
Free Chlorine - Plant	Continuous	1.23 - 1.94*	Milligram per Litre (mg/L)	Must be sufficient to ensure disinfection has been achieved.
Free Chlorine - Distribution	Continuous	1.00 - 1.85*	mg/L	Recommended level of at least 0.20 mg/L in the distribution system to maintain secondary disinfection, 0.05 mg/L is the minimum required.

\*Results include all analyzers and grab samples.

#### Blackstock DWS Table 6

#### Summary of Additional Testing and Sampling Carried Out in Accordance With the Requirement of an Approval, Order or Other Legal Instrument.

Type of Sample	Parameter	Number of Samples	Result Range	MAC	Unit of Measure
Raw Water	Gross Beta	1	Non-Detect (ND)	Not Applicable (N/A)	Becquerels per Litre (Bq/L)
Raw Water	Gross Alpha	1	ND	N/A	Bq/L
Raw Water	Tritium	1	ND	7,000	Bq/L

## Blackstock DWS Table 7

### Summary of Treated Water Chemical Parameters Tested Under Schedule 13 and 23 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources <sup>1</sup>
Antimony	5	Non-Detect (ND) - 0.0006	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
Arsenic	5	ND	0.01	mg/L	No	Mining.
Barium	1	0.108	1.0	mg/L	No	Metal refineries, oil drilling.
Boron	1	0.006	5.0	mg/L	No	Industrial.
Cadmium	5	ND	0.005	mg/L	No	Industrial.
Chromium	5	ND - 0.0019	0.05	mg/L	No	Industrial.
Haloacetic acids - Distribution (annual average)	4	ND	80	Microgram per Litre (ug/L)	No	By-product of chlorination of drinking water.
Mercury	1	ND	0.001	mg/L	No	Industrial.
Selenium	5	ND	0.05	mg/L	No	Refineries, mines, chemical manufacturing.
Sodium	4	9.73 - 11.0	Not Applicable <sup>2</sup>	mg/L	No	Storm water runoff including road salt.
Trihalomethane - Distribution (annual average)	4	10.5	100	ug/L	No	By-product of chlorination of drinking water.
Uranium	1	ND	0.02	mg/L	No	Power generation.
Fluoride	4	0.07	1.5	mg/L	No	Mining
Nitrite	4	ND	1.0	mg/L	No	Agriculture runoff, landfill leachate and animal waste.
Nitrate	4	ND	10.0	mg/L	No	Fertilizer.

1 Parameters may occur naturally in the environment.

2 Sodium does not have a Maximum Acceptable Concentration (MAC); only an aesthetic objective of 200 mg/L. Sodium results exceeding 20 mg/L are to be reported to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03.

### Blackstock DWS Table 8

#### Summary of Lead Testing Under Schedule 15.1 of O. Reg. 170/03.

No plumbing samples were required to be taken in 2018.

Location Type	Number of Samples	Range of Lead Results Milligram per Litre	MAC	Number of Exceedances	pH	Alkalinity Milligram per Litre
Plumbing	0	Not Applicable (N/A)	0.01	0	N/A	N/A
Distribution	4	Non-Detect	0.01	0	7.50 - 7.69	212 - 217

### Blackstock DWS Table 9

#### Summary of Treated Water Organic Parameters Tested Under Schedule 24 of O. Reg. 170/03.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Alachlor	1	Non-Detect (ND)	5	Microgram per Litre (ug/L)	No	Agricultural herbicide.
Atrazine + N-dealkylated metabolites	1	ND	5	ug/L	No	Agricultural herbicide.
Azinphos-methyl	1	ND	20	ug/L	No	Insecticide.
Benzene	1	ND	1	ug/L	No	Plastics manufacturing, leaking fuel tanks.
Benzo(a)pyrene	1	ND	0.01	ug/L	No	Formed from the incomplete burning of organic matter.
Bromoxynil	1	ND	5	ug/L	No	Agricultural herbicide.
Carbaryl	1	ND	90	ug/L	No	Agricultural, forestry, household insecticide.

Blackstock DWS Table 9 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Carbofuran	1	Non-Detect (ND)	90	Microgram per Litre (ug/L)	No	Agricultural insecticide.
Carbon Tetrachloride	1	ND	2	ug/L	No	Chemical and industrial activities.
Chlorpyrifos	1	ND	90	ug/L	No	Agricultural, household insecticide.
Diazinon	1	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
Dicamba	1	ND	120	ug/L	No	Agricultural herbicide
1,2-Dichlorobenzene	1	ND	200	ug/L	No	Chemical and industrial factories.
1,4-Dichlorobenzene	1	ND	5	ug/L	No	Chemical and industrial factories.
1,2-Dichloroethane	1	ND	5	ug/L	No	Industrial chemical factories.
1,1-Dichloroethylene (vinylidene chloride)	1	ND	14	ug/L	No	Industrial chemical factories.
Dichloromethane	1	ND	50	ug/L	No	Pharmaceutical and chemical factories.
2,4-dichlorophenol	1	ND	900	ug/L	No	Industrial contamination, reaction with chlorine.
2,4-Dichlorophenoxy acetic acid (2,4-D)	1	ND	100	ug/L	No	Agricultural, residential herbicide.

**Blackstock DWS Table 9 continued**

<b>Parameter</b>	<b>Number of Samples</b>	<b>Results Range</b>	<b>MAC</b>	<b>Unit of Measure</b>	<b>MAC Exceedance</b>	<b>Potential Sources</b>
<b>Diclofop-methyl</b>	1	Non-Detect (ND)	9	Microgram per Litre (ug/L)	No	Agricultural herbicide.
<b>Dimethoate</b>	1	ND	20	ug/L	No	Agricultural, livestock, operation, residential insecticide.
<b>Diquat</b>	1	ND	70	ug/L	No	Agricultural, aquatic herbicide.
<b>Diuron</b>	1	ND	150	ug/L	No	Agricultural, industrial herbicide.
<b>Glyphosate</b>	1	ND	280	ug/L	No	Agricultural, forestry, household herbicide.
<b>Malathion</b>	1	ND	190	ug/L	No	Pest control insecticide.
<b>2-Methyl-4-chlorophenoxyacetic acid (MCPA)</b>	1	ND	100	ug/L	No	Agricultural herbicide.
<b>Metolachlor</b>	1	ND	50	ug/L	No	Agricultural herbicide.
<b>Metribuzin</b>	1	ND	80	ug/L	No	Agricultural herbicide.
<b>Monochlorobenzene</b>	1	ND	80	ug/L	No	Industrial and agricultural chemical factories and dry cleaning facilities.
<b>Paraquat</b>	1	ND	10	ug/L	No	Agricultural, aquatic herbicide.



**Blackstock DWS Table 9 continued**

<b>Parameter</b>	<b>Number of Samples</b>	<b>Results Range</b>	<b>MAC</b>	<b>Unit of Measure</b>	<b>MAC Exceedance</b>	<b>Potential Sources</b>
<b>Pentachlorophenol</b>	1	Non-Detect (ND)	60	Microgram per Litre (ug/L)	No	Pesticide, wood preservative residue.
<b>Phorate</b>	1	ND	2	ug/L	No	Agricultural insecticide.
<b>Picloram</b>	1	ND	190	ug/L	No	Industrial herbicide.
<b>Polychlorinated Biphenyls(PCB)</b>	1	ND	3	ug/L	No	Residue from various industrial uses.
<b>Prometryne</b>	1	ND	1	ug/L	No	Agricultural herbicide.
<b>Simazine</b>	1	ND	10	ug/L	No	Agricultural herbicide.
<b>Terbufos</b>	1	ND	1	ug/L	No	Agricultural insecticide.
<b>Tetrachloroethylene (perchloroethylene)</b>	1	ND	10	ug/L	No	Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser).
<b>2,3,4,6 - Tetrachlorophenol</b>	1	ND	100	ug/L	No	Wood preservative.
<b>Triallate</b>	1	ND	230	ug/L	No	Agricultural herbicide.
<b>Trichloroethylene</b>	1	ND	5	ug/L	No	Metal degreasing sites and other factories.

**Blackstock DWS Table 9 continued**

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>2,4,6-Trichlorophenol</b>	1	Non-Detect (ND)	5	Microgram per Litre (ug/L)	No	Pesticide manufacturing.
<b>Trifluralin</b>	1	ND	45	ug/L	No	Agricultural herbicide.
<b>Vinyl Chloride</b>	1	ND	1	ug/L	No	Leaching from PVC pipes; discharge from plastics factories.

**Blackstock DWS Table 10**

**Inorganic or Organic Parameter(s) that Exceed Half the Standard Prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards.**

No inorganic or organic parameters exceeded half the maximum allowable concentration in 2018.

Parameter	Result	Unit of Measure	Date of Sample
<b>Not Applicable (N/A)</b>	N/A	N/A	N/A