

## The Regional Municipality of Durham

### Greenbank Drinking Water System 2020 Annual Report

**Drinking Water System Number:** 220003760

**Municipal Drinking Water Licence Number:** 003-104

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

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

This Annual Report for the calendar year 2020 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. 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-and-climate-change) at www.ontario.ca/ministry-environment-and-climate-change.

### Drinking Water System Process Description

#### General

The Greenbank Drinking Water System provides potable water to consumers in the Community of Greenbank in the Township of Scugog. Greenbank has five municipal wells designated as Well No. 1, Well No. 3, Well No. 4, Well No. 5 and Well No. 6. Greenbank is a Class One Distribution and Supply Subsystem with an approved combined capacity of 553 cubic metres per day (m<sup>3</sup>/d). The Greenbank Well Supply System feeds a Class One Distribution Subsystem. The Greenbank supply and distribution systems are owned and operated by the Regional Municipality of Durham. The water supply system includes the following processes:

- Disinfection (sodium hypochlorite),
- Water storage and high lift pumping, and
- Distribution.

#### Raw Water Supply

Water is pumped from five municipal wells within Greenbank to the reservoir for treatment. Wells No.1, 3, 4, 5 and 6 are drilled to a depth of 28.8 metres (m), 24.1 m, 34.1 m, 32.2 m and 29.1 m, respectively.

## **Disinfection**

The raw water is disinfected with sodium hypochlorite as it enters the reservoir. The free chlorine residual and turbidity are monitored continuously by online analyzers on the treated water.

## **Water Storage and High Lift Pumping**

Treated water is stored in a 671 cubic metre three-cell below ground storage reservoir. From here the treated water flows to the high lift suction well. Pressure in the system is maintained by high lift pumps and five hydropneumatic tanks.

## **Distribution System**

The distribution system delivers the treated water through approximately 7 kilometres of watermains. There is no water storage in the distribution system.

## **Major Monetary expenses**

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:

- Rehabilitation of Well No. 6 - \$4750.00

- Flow profile and sealing of casement of Well No. 6 - \$4950.00

**Tables**

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

**Greenbank Drinking Water System (DWS) Table 1**

**Summary of all Adverse Water Quality Incidents in 2020 Reported to Spills Action Centre in Accordance with Schedule 16-3 and 16-4 of O. Reg. 170/03.**

<b>Incident Date</b>	<b>Parameter</b>	<b>Result</b>	<b>Corrective Action</b>	<b>Corrective Action Date</b>
<b>April 6</b>	Lead (Distribution)	0.0115 Milligrams per Litre (mg/L)	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	April 16
<b>April 6</b>	Lead (Distribution)	0.103 mg/L	Flushed, resampled. Results met Ontario Drinking Water Quality Standards (ODWQS).	April 16
<b>April 17</b>	Sodium (Distribution)	27.5 mg/L	Resampled.	April 24

**Greenbank DWS Table 2**

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

<b>Type of Sample</b>	<b>Number of Samples</b>	<b>Range of Escherichia Coli MF Colony Forming Units per 100 Millilitres</b>	<b>Range of Total Coliforms MF Colony Forming Units per 100 Millilitres</b>
<b>Raw</b>	281	Non-Detect (ND)	ND - 22
<b>Treated</b>	1	ND	ND
<b>Distribution</b>	1	ND	ND

**Greenbank 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	53	Absence (A)	A
Distribution	114	A	A

**Greenbank 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	53	Non-Detect (ND) - 15
Distribution	59	ND - 32

**Greenbank 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	257	0.03 - 0.68	Nephelometric Turbidity Units (NTU)	Turbidity is a measure of particles in water.
Free Chlorine - Plant	Continuous	0.55 – 1.80*	Milligram per Litre (mg/L)	Must be sufficient to ensure disinfection has been achieved.
Free Chlorine - Distribution	Continuous	0.55 - 1.43*	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.

## Greenbank DWS Table 6

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

It is a requirement that one water sample be collected every 36 months and tested for the parameters listed in Schedule 23. The next scheduled sample is in 2021.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources <sup>1</sup>
Antimony	4	Non-Detect (ND)	0.006	Milligram per Litre (mg/L)	No	Fire retardants, ceramics, electronics, solder.
Arsenic	4	ND	0.01	mg/L	No	Mining.
Barium	Not Required (N/R)	N/R	1.0	mg/L	No	Metal refineries, oil drilling.
Boron	N/R	N/R	5.0	mg/L	No	Industrial.
Cadmium	4	ND	0.005	mg/L	No	Industrial.
Chromium	4	ND	0.05	mg/L	No	Industrial.
Total 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	4	ND	0.05	mg/L	No	Refineries, mines, chemical manufacturing.
Sodium	4	27.5 – 30.9	Not Applicable <sup>2</sup>	mg/L	Yes (4) <sup>3</sup>	Storm water runoff including road salt.
Total Trihalomethanes - Distribution (annual average)	4	16.6	100	ug/L	No	By-product of chlorination of drinking water.
Uranium	N/R	N/R	0.02	mg/L	No	Power generation.
Fluoride	4	0.05 - 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	0.57 - 0.64	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.

3 Number in parenthesis represents number of exceedance(s). For Sodium, regulations require reporting when results exceed 20 mg/L if it has not been reported in the preceding 57 months.

### Greenbank DWS Table 7

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

Location Type	Number of Samples	Range of Lead Results Milligram per Litre	MAC	Number of Exceedances	pH	Alkalinity Milligram per Litre
Plumbing	Not Required (N/R)	N/R	0.01	N/R	N/R	N/R
Distribution	4	Non-Detect (ND) – 0.103	0.01	0	7.30 - 7.70	228 - 235

### Greenbank DWS Table 8

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

It is a requirement that one water sample be collected every 36 months and tested for the parameters listed in Schedule 24. The next scheduled sample is in 2021.

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Alachlor	Not Required (N/R)	N/R	5	Microgram per Litre (ug/L)	N/R	Agricultural herbicide.
Atrazine + N-dealkylated metabolites	N/R	N/R	5	ug/L	N/R	Agricultural herbicide.
Azinphos-methyl	N/R	N/R	20	ug/L	N/R	Insecticide.
Benzene	N/R	N/R	1	ug/L	N/R	Plastics manufacturing, leaking fuel tanks.
Benzo(a)pyrene	N/R	N/R	0.01	ug/L	N/R	Formed from the incomplete burning of organic matter.
Bromoxynil	N/R	N/R	5	ug/L	N/R	Agricultural herbicide.
Carbaryl	N/R	N/R	90	ug/L	N/R	Agricultural, forestry, household insecticide.

Greenbank DWS Table 8 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
Carbofuran	Not Required (N/R)	N/R	90	Microgram per Litre (ug/L)	N/R	Agricultural insecticide.
Carbon Tetrachloride	N/R	N/R	2	ug/L	N/R	Chemical and industrial activities.
Chlorpyrifos	N/R	N/R	90	ug/L	N/R	Agricultural, household insecticide.
Diazinon	N/R	N/R	20	ug/L	N/R	Agricultural, livestock, operation, residential insecticide.
Dicamba	N/R	N/R	120	ug/L	N/R	Agricultural herbicide
1,2-Dichlorobenzene	N/R	N/R	200	ug/L	N/R	Chemical and industrial factories.
1,4-Dichlorobenzene	N/R	N/R	5	ug/L	N/R	Chemical and industrial factories.
1,2-Dichloroethane	N/R	N/R	5	ug/L	N/R	Industrial chemical factories.
1,1-Dichloroethylene (vinylidene chloride)	N/R	N/R	14	ug/L	N/R	Industrial chemical factories.
Dichloromethane	N/R	N/R	50	ug/L	N/R	Pharmaceutical and chemical factories.
2,4-Dichlorophenol	N/R	N/R	900	ug/L	N/R	Industrial contamination, reaction with chlorine.
2,4-Dichlorophenoxy acetic acid (2,4-D)	N/R	N/R	100	ug/L	N/R	Agricultural, residential herbicide.

Greenbank DWS Table 8 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>Diclofop-methyl</b>	Not Required (N/R)	N/R	9	Microgram per Litre (ug/L)	N/R	Agricultural herbicide.
<b>Dimethoate</b>	N/R	N/R	20	ug/L	N/R	Agricultural, livestock, operation, residential insecticide.
<b>Diquat</b>	N/R	N/R	70	ug/L	N/R	Agricultural, aquatic herbicide.
<b>Diuron</b>	N/R	N/R	150	ug/L	N/R	Agricultural, industrial herbicide.
<b>Glyphosate</b>	N/R	N/R	280	ug/L	N/R	Agricultural, forestry, household herbicide.
<b>Malathion</b>	N/R	N/R	190	ug/L	N/R	Pest control insecticide.
<b>2-Methyl-4-chlorophenoxyacetic acid (MCPA)</b>	N/R	N/R	100	ug/L	N/R	Agricultural herbicide.
<b>Metolachlor</b>	N/R	N/R	50	ug/L	N/R	Agricultural herbicide.
<b>Metribuzin</b>	N/R	N/R	80	ug/L	N/R	Agricultural herbicide.
<b>Monochlorobenzene</b>	N/R	N/R	80	ug/L	N/R	Industrial and agricultural chemical factories and dry cleaning facilities.
<b>Paraquat</b>	N/R	N/R	10	ug/L	N/R	Agricultural, aquatic herbicide.
<b>Pentachlorophenol</b>		N/R	60		N/R	Pesticide, wood preservative residue.
<b>Phorate</b>	N/R	N/R	2	ug/L	N/R	Agricultural insecticide.



Greenbank DWS Table 8 continued

Parameter	Number of Samples	Results Range	MAC	Unit of Measure	MAC Exceedance	Potential Sources
<b>Picloram</b>	Not Required (N/R)	N/R	190	Microgram per Litre (ug/L)	N/R	Industrial herbicide.
<b>Polychlorinated Biphenyls(PCB)</b>	N/R	N/R	3	ug/L	N/R	Residue from various industrial uses.
<b>Prometryne</b>	N/R	N/R	1	ug/L	N/R	Agricultural herbicide.
<b>Simazine</b>	N/R	N/R	10	ug/L	N/R	Agricultural herbicide.
<b>Terbufos</b>	N/R	N/R	1	ug/L	N/R	Agricultural insecticide.
<b>Tetrachloroethylene (perchloroethylene)</b>	N/R	N/R	10	ug/L	N/R	Leaching from PVC pipes; discharge from factories; dry cleaners and auto shops (metal degreaser).
<b>2,3,4,6 - Tetrachlorophenol</b>	N/R	N/R	100	ug/L	N/R	Wood preservative.
<b>Triallate</b>	N/R	N/R	230	ug/L	N/R	Agricultural herbicide.
<b>Trichloroethylene</b>	N/R	N/R	5	ug/L	N/R	Metal degreasing sites and other factories.
<b>2,4,6-Trichlorophenol</b>	N/R	N/R	5	ug/L	N/R	Pesticide manufacturing.
<b>Trifluralin</b>	N/R	N/R	45	ug/L	N/R	Agricultural herbicide.
<b>Vinyl Chloride</b>	N/R	N/R	1	ug/L	N/R	Leaching from PVC pipes; discharge from plastics factories.

**Greenbank DWS Table 9**

**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 2020.

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