



CITY OF BROCKVILLE  
DRINKING-WATER SYSTEM

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2009 ANNUAL WATER QUALITY REPORT

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D. Richards, Chief Operator – Water Treatment

DATE: February 22, 2010  
FILE: W03-03

**Part III Form 2**

**Section 11. ANNUAL REPORT.**

<b>Drinking-Water System Number:</b>	<b>20001263</b>
<b>Drinking-Water System Name:</b>	<b>Brockville Water Works</b>
<b>Drinking-Water System Owner:</b>	<b>City of Brockville</b>
<b>Drinking-Water System Category:</b>	<b>Class 3</b>
<b>Period being reported:</b>	<b>January 1, 2009 to December 31, 2009</b>

**Location of Annual Reports:**

This annual report is available to the public at no charge on the City of Brockville's website: [www.brockville.com](http://www.brockville.com) or by calling the City of Brockville at 613-342-8772. Users of this drinking-water system have been notified that this annual report is available by placing a notice on the website.

The 2009 Annual Summary Report for Council and Flow Study, as required under O. Reg. 170/03 Schedule 22, will be available for inspection no later than March 31, 2010 at:

- City of Brockville's Website
- City of Brockville – Public Library
- City of Brockville – Water Billing Notice and hard copy at the Revenue Office, City Hall

**Connected Drinking-Water Systems:**

<b>Drinking-Water System Number:</b>	<b>260007777</b>
<b>Drinking-Water System Name:</b>	<b>Elizabethtown-Kitley Distribution System</b>
<b>Drinking-Water System Owner:</b>	<b>Township of Elizabethtown-Kitley</b>
<b>Drinking-Water System Category:</b>	<b>Class 1</b>

A copy of this report has been forwarded to the Township of Elizabethtown-Kitley along with the Report prepared for this System. Both Reports are available on the City of Brockville's website, as well as at the above noted locations.

**DRINKING WATER QUALITY MANAGEMENT SYSTEM POLICY**

*The City of Brockville is dedicated to delivering a safe, reliable, drinking water supply while remaining compliant with all regulatory requirements. Achievement of those commitments is supported by risk-based process evaluation, staff competency, effective communications, and appropriate contingency / incident response measures.*

*The managers and employees of the City of Brockville who are directly involved in the production and delivery of safe drinking water are committed to and share in the responsibilities for implementing, maintaining, and contributing to the continual improvement of the **Drinking Water Quality Management System**.*

## **Description of the City of Brockville Drinking-Water System:**

The City of Brockville's Water Treatment Plant is a Class III Facility located at 20 Rivers Avenue and operates under Certificate of Approval Number 7894-78ZK8P. The Water Distribution System has been separated into a Trunk Distribution System and Local Distribution System. The Trunk WDS is a Class III System (Certificate #3811) and the Local System is a Class II System (Certificate #2193). The Treatment Plant and Distribution Systems are described as follows:

### **Water Treatment Plant**

The City of Brockville Water Treatment Plant is a direct filtration plant, located on the St. Lawrence River and serves the City of Brockville (population 22,000), and a portion of the Township of Elizabethtown-Kitley (population 350). A 900 mm raw water intake pipe equipped with zebra mussel control lies on the bottom of the St. Lawrence River extending 300 metres off shore at a depth of 10.5 metres. The treatment process has a Design maximum flow rate of 36.4 ML/d and is composed of a number of sub-units:

- Low Lift pumping station
- coagulation and flocculation using polyaluminum chloride (PAC)
- pre- and post-filter disinfection with chlorine gas;
- two granular activated carbon filters;
- fluoride addition;
- Reservoir and High Lift pumping station
- final treated water UV disinfection;
- process (filter backwash residuals) wastewater treatment.

### **Water Distribution System – Trunk and Local Systems**

- **Parkedale Avenue Reservoir**  
The Parkedale Avenue Reservoir, Booster Pumping Station and Re-chlorination Facility services two geographical areas which are Zone 1, which is the area South of Highway 401, and Zone 2 which is the area North of Highway 401. It is a 7,600 m<sup>3</sup> capacity reservoir at-grade, single cell, concrete non-baffled, treated water reservoir.
  - **Perth Street Elevated Storage Tank (Water Tower)**  
The City of Brockville has a 1,900 m<sup>3</sup> overhead storage tank located on Perth St. It is a single cell, steel, non-baffled treated water tank.
  - **Water Booster Stations**  
There are three (3) booster pump stations which are part of the distribution system. The purpose of booster stations is to ensure consistent pressure is maintained throughout the system.
- Feeder Main & Local WDS**  
20" single feeder main from the WTP to the Church St./Perth St. area where flow splits between the Water Tower and the Local and Trunk distribution systems.

### **Chemicals Used in the Drinking Water Treatment Process – 2009:**

- Chlorine Gas (Disinfection)
- Poly Aluminum Chloride (Coagulant)
- Hydrofluorosilicic acid (Fluoride)
- Sodium Hypochlorite (Secondary Distribution System Disinfection)

**Funds Required to Install, Repair or Replace Equipment:**

<b>PROJECT:</b>	<b>Approximate Expenditures</b>
Maintenance, Plant and Stations (PM, Scheduled & Unscheduled)	\$120,524
2009 Capital Projects	\$320,000
Previous Years Capital Projects Completed in 2009	\$236,673
<b>TOTAL EXPENDITURES:</b>	<b>\$677,179</b>

**2009 Adverse Water Quality Results and Notifications:**

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
May 21, 2009 <b>AWQI 88172</b>	Total Coliform Brockville Distribution	1 CFU/100mL	Flushed and re-sampled	May 27, 2009

**Operational Testing:**

The following table is a summary of the operational testing completed in 2009 (as per O. Reg. 170/03, Schedules 6 and 7).

<b>PARAMETER TESTED:</b>	<b># of Grab Samples</b>	<b>RANGE OF RESULTS:</b>	
		<b>Minimum</b>	<b>Maximum</b>
Turbidity – Raw (NTU)	8760	0.017	5.000
Turbidity – Filter 1 (NTU)	8760	0.026	0.238
Turbidity – Filter 2 (NTU)	8760	0.026	0.238
Turbidity – Treated (NTU)	8760	0.023	0.630
Chlorine – Pre Filter (mg/l)	8760	0	1.52
Chlorine – Reservoir (Main Plant) (mg/l)	8760	1.07	1.86
Chlorine – Plant Effluent (mg/l)	8760	0.52	1.85
Chlorine - Distribution System Parkedale (mg/l)	8760	0.21	2.5
Chlorine – Elizabethtown-Kitley Water Distribution System (mg/l)	365	0.53	1.39
Fluoride (mg/l)	8760	0.043	1.38
UV Dosage (mJ/sq. cm.)	8760	0	3277
UV Intensity (microW/sq cm)	8760	0	42
UV Transmittance (%)	8760	95	98.4

**Additional Testing as Required by the Certificate of Approval, Order or Other Legal Instrument for 2009:**

<b>TYPE OF LEGAL INSTRUMENT:</b>	<b>PARAMETER</b>
C of A No. 3458-649R3T Section 5.6	TSS Residue – Monthly
Residue Management System – Composite Sample	7 mg/L (annual average)

### Microbiological Testing:

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

Sample Description:	Number of Samples	Range of E.Coli Or Fecal Results CFU/100ml		Range of Total Coliform Results CFU/100ml		Number of HPC Samples	Range of HPC Results CFU/ml	
		Min.	Max.	Min.	Max.		Min.	Max.
Raw	52	0	20	4	680	52	<10	>2000
Treated	52	0	0	0	0	51	<10	210
Distribution	574	0	0	0	1	368	<10	300

### Chemical Testing:

The following Tables are a summary of the chemical testing completed in 2009 (as per O. Reg. 170/03, Schedule 13).

#### Schedule 23

Summary of Inorganic parameters tested during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceeded the Standard	Exceeded Half the Standard
Antimony	Jan. 6/09	0.0001	mg/l	No	No
Arsenic	Jan. 6/09	0.0008	mg/l	No	No
Barium	Jan. 6/09	0.017	mg/l	No	No
Boron	Jan. 6/09	0.015	mg/l	No	No
Cadmium	Jan. 6/09	<0.00002	mg/l	No	No
Chromium	Jan. 6/09	<0.002	mg/l	No	No
Mercury	Jan. 6/09	<0.00002	mg/l	No	No
Selenium	Jan. 6/09	0.0006	mg/l	No	No
Sodium	Weekly (52 samples)	12.49*	mg/l	No	n/a
Uranium	Jan. 6/09	0.00021	mg/l	No	No
Nitrite	Quarterly (4 samples)	<0.1*	mg/l	No	No
Nitrate	Quarterly (4 samples)	0.30*	mg/l	No	No

\*average

n/a – not applicable

#### Schedule 24

Summary of Organic parameters sampled during this reporting period or the most recent sample results:

Parameter	Sample Date	Result Value	Unit of Measure	Exceeded the Standard	Exceeded Half the Standard
Alachlor	Jan. 6/09	<0.3	ug/l	No	No
Aldicarb	Jan. 6/09	<3	ug/l	No	No
Aldrin + Dieldrin	Jan. 6/09	<0.02	ug/l	No	No

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<b>Atrazine + N-dealkylated metabolites</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Azinphos-methyl</b>	Jan. 6/09	<1	ug/l	No	No
<b>Bendiocarb</b>	Jan. 6/09	<3	ug/l	No	No
<b>Benzene</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Benzo(a)pyrene</b>	Jan. 6/09	<0.005	ug/l	No	No
<b>Bromoxynil</b>	Jan. 6/09	<0.3	ug/l	No	No
<b>Carbaryl</b>	Jan. 6/09	<3	ug/l	No	No
<b>Carbofuran</b>	Jan. 6/09	<1	ug/l	No	No
<b>Carbon Tetrachloride</b>	Jan. 6/09	<0.2	ug/l	No	No
<b>Chlordane (Total)</b>	Jan. 6/09	<0.04	ug/l	No	No
<b>Chlorpyrifos</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Cyanazine</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Diazinon</b>	Jan. 6/09	<1	ug/l	No	No
<b>Dicamba</b>	Jan. 6/09	<5	ug/l	No	No
<b>1,2-Dichlorobenzene</b>	Jan. 6/09	<5	ug/l	No	No
<b>1,4-Dichlorobenzene</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Dichlorodiphenyltrichloroethane (DDT) + metabolites</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>1,2-Dichloroethane</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>1,1-Dichloroethylene (vinylidene chloride)</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Dichloromethane</b>	Jan. 6/09	<0.3	ug/l	No	No
<b>2-4 Dichlorophenol</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>2,4-Dichlorophenoxy acetic acid (2,4-D)</b>	Jan. 6/09	<5	ug/l	No	No
<b>Diclofop-methyl</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Dimethoate</b>	Jan. 6/09	<1	ug/l	No	No
<b>Dinoseb</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Diquat</b>	Jan. 6/09	<5	ug/l	No	No
<b>Diuron</b>	Jan. 6/09	<5	ug/l	No	No
<b>Glyphosate</b>	Jan. 6/09	<25	ug/l	No	No
<b>Heptachlor + Heptachlor Epoxide</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Lindane (Total)</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Malathion</b>	Jan. 6/09	<5	ug/l	No	No
<b>Methoxychlor</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Metolachlor</b>	Jan. 6/09	<3	ug/l	No	No
<b>Metribuzin</b>	Jan. 6/09	<3	ug/l	No	No
<b>Monochlorobenzene</b>	Jan. 6/09	<0.2	ug/l	No	No
<b>Paraquat</b>	Jan. 6/09	<1	ug/l	No	No
<b>Parathion</b>	Jan. 6/09	<3	ug/l	No	No
<b>Pentachlorophenol</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Phorate</b>	Jan. 6/09	<0.3	ug/l	No	No
<b>Picloram</b>	Jan. 6/09	<5	ug/l	No	No
<b>Polychlorinated Biphenyls(PCB)</b>	Jan. 6/09	<0.05	ug/l	No	No
<b>Prometryne</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>Simazine</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>THM (NOTE: show latest annual average)</b>	Quarterly (4 samples)	0.0382	ug/l	No	No
<b>Temephos</b>	Jan. 6/09	<10	ug/l	No	No
<b>Terbufos</b>	Jan. 6/09	<0.3	ug/l	No	No
<b>Tetrachloroethylene</b>	Jan. 6/09	<0.2	ug/l	No	No
<b>2,3,4,6-Tetrachlorophenol</b>	Jan. 6/09	<0.1	ug/l	No	No

<b>Triallate</b>	Jan. 6/09	<10	ug/l	No	No
<b>Trichloroethylene</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>2,4,6-Trichlorophenol</b>	Jan. 6/09	<0.1	ug/l	No	No
<b>2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)</b>	Jan. 6/09	<10	ug/l	No	No
<b>Trifluralin</b>	Jan. 6/09	<0.5	ug/l	No	No
<b>Vinyl Chloride</b>	Jan. 6/09	<0.2	ug/l	No	No

**2009 LEAD SAMPLING RESULTS:**

In 2009 two sampling periods were conducted for the City of Brockville's Drinking Water System. The results are summarized in the table below.

**LEAD SAMPLING REGULATION 170/03 SCHEDULE 15.1**

Location	Number of Samples	Lead (mg/l)	Number of Exceedances	Field pH	Alkalinity (mg/l)
Residential Services	120	<0.00002 – 0.0110	1	7.26 – 8.07	N/A
Commercial Services	12	<0.00002 – 0.0104	1	7.40 – 7.78	N/A
Distribution System	31	<0.00002 – 0.00201	0	7.10 – 7.81	80 - 96

Based on the 2009 results, Section 15 of Ontario Regulation 170/03, the Lead sampling program qualifies for the reduced lead sampling schedule. Lead sampling will commence again in 2012.