

2008 Annual Report

Drinking-Water Systems Regulation O. Reg. 170/03

Drinking-Water System Number:	220008890
Drinking-Water System Name:	Ajax Water Supply System
Drinking-Water System Owner:	Regional Municipality of Durham
Drinking-Water System Category:	Large Municipal Residential System
Period being reported:	January 1 to December 31, 2008

Complete if your Category is Large Municipal Residential or Small Municipal Residential

Does your Drinking-Water System serve more than 10,000 people? Yes [] No []

Is your annual report available to the public at no charge on a web site on the Internet?
Yes [] No []

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection:

Regional Municipality of Durham
Works Department
605 Rossland Rd E.
5th Floor
Whitby, Ontario
L1N 6A3

Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web
- Public access/notice via Government Office – Durham Region Works Department
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method - Bi-annual newsletter to residents

Describe your Drinking-Water System

The **Ajax Water Supply System** is a surface water treatment facility that supplies quality drinking water to approximately 195,525 residents in the Town of Ajax and in the City of Pickering. Raw water is drawn from Lake Ontario through a 2,100mm diameter intake pipe extending 2,506m into the lake. The intake structure has a diameter of 9m and is located at a depth of 18m.

The **treatment plant** facility has a rated capacity of 163,500 m³/day and utilizes the following unit processes and systems: zebra mussel control, screening, pre-chlorination, low lift pumping, coagulation, flocculation, direct filtration, post-chlorination / dechlorination, water storage, and high lift pumping. The six (6) filters are dual media type with air scour backwash. Four (4) of the filters use Granulated Activated Carbon (GAC) and two (2) use anthracite. The process is controlled and monitored by a SCADA (Supervisory Control and Data Acquisition) system.

The **distribution system** delivers the treated water through approximately 693.17 kilometers of watermains in six (6) pressure zones and includes three (3) reservoirs, one (1) elevated tank, and five (5) booster stations. Additional chlorination is applied at one (1) of the booster station facilities.

List all water treatment chemicals used over this reporting period

Sodium hypochlorite (disinfectant)
Aluminum sulphate (coagulant agent)
Hydrofluosilicic acid (fluoride)
Sodium bisulphite (dechlorination)
Sulfuric acid (zebra mussel control and pH adjustment)

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

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Please provide a brief description and a breakdown of monetary expenses incurred

Backwash pump repair	\$14,536
Chemical pump replacement	\$24,835
GAC replacement	\$167,000

Provide 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

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
Jan 10	Sodium (plant)	21.4	mg/L	Resample collected.	Jan 10
Jan 21	Fluoride (plant)	>1.5	mg/L	Grab samples taken; results meet regulatory requirements. Metering equipment reset.	Jan 21
Feb 19	Chlorine residual (plant)	0.01	mg/L	Plant and distribution flushed until required residuals were maintained. Bacteriological sample collected.	Feb 19
Feb 26	Lead (distribution)	45.1	ug/L	Flushed, resample collected.	Feb 26
Feb 29 *	Lead (distribution)	20.6	ug/L	Flushed, resample collected.	Feb 29
Mar 6 *	Lead (distribution)	36.4	ug/L	Flushed, resample and 2 vicinity samples collected.	Mar 6
Mar 10 *	Lead (distribution)	14.7	ug/L	Hydrant inspected. Flushed. Resample collected.	Mar 10
Apr 10	Total coliform (distribution)	Presence	P/A	Flushed, resample and 2 vicinity samples collected. Chlorine residuals measured.	Apr 10
Jun 18	Fluoride (plant)	1.728	mg/L	Grab samples taken; results meet regulatory requirements. Analyzer reset.	Jun 18
Aug 27	Low pressure (distribution)	-	-	Flushed. Pressure restored. Chlorine residuals measured. Bacteriological samples taken.	Aug 27
Aug 28	Low pressure (distribution)	-	-	Flushed. Chlorine residuals measured. Bacteriological samples collected.	Aug 28
Aug 29	Low pressure (distribution)	-	-	Flushed. Chlorine residuals measured. Bacteriological samples collected.	Aug 29
Aug 30	Total coliform (distribution)	1	CFU/100 mL	Flushed, resample and 2 vicinity samples collected.	Aug 30
Sept 5	Total coliform (distribution)	150	CFU/100 mL	Flushed, resample and 2 vicinity samples collected. See Sept 6.	Sept 5
Sept 6	Total coliform (distribution)	6	CFU/100 mL	Flushed. 2 sets of resamples, and 2 vicinity samples, were collected 24-48 hours apart.	Sept 6, Sept 7
Sept 6	Total coliforms (distribution)	180	CFU/100 mL	Flushed, resample and 2 vicinity samples collected.	Sept 6
Oct 2	Chlorine residual (distribution)	0.02	mg/L	Flushed until chlorine residual was restored to required levels. Bacteriological sample collected.	Oct 2
Nov 18	Low pressure (distribution)	-	-	Flushed. Bacteriological samples collected. Chlorine residuals measured.	Nov 18

* The samples taken on February 29, March 6 and 10 are a result of the sample taken on February 26.

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NOTE: Sample results under detection limit will be listed as ND.

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

	Number of Samples	Range of E.Coli MF	Range of Total Coliform MF	Number of Samples	E.Coli P/A	Total Coliform P/A	Number of HPC Samples	Range of HPC Results
Raw	210	ND-12	ND-900	-	-	-	-	-
Treated	210	-	-	-	A	A	209	ND-69
Distribution	242	ND	ND-150	1782	A	A-P(1)*	901	ND-6000

MF: Membrane Filter; P/A: Presence/Absence; HPC: Heterotrophic Plate Count

Units for MF are CFU/100mL and HPC are CFU/mL

*Number in parentheses represents number of exceedance(s).

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

	Number of Samples	Range of Results	Unit of Measure
Turbidity – filter effluent	8760	0.006-0.722	NTU
Free Chlorine – Plant	8760	0.01-2.02	mg/L
Free Chlorine - Distribution	2430	0.01-2.04	mg/L
Fluoride	8760	0.15-0.79	mg/L

NOTE: 8760 samples represents continuous monitoring.

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
May 25, 2006	Raw Water			
	Gross Beta	Jan – Dec	0.06 – 0.12	Bq/L
	Tritium	Jan – Dec	2.5 – 13.2	Bq/L
	Treated Water			
	Gross Alpha	Jan – Apr	ND	Bq/L
	Gross Beta	Jan - Apr	0.06	Bq/L
	Tritium	Jan – Jun	5.3 – 17.0	Bq/L
	Cesium-134	Jan – July	ND	Bq/L
	Cesium-137	Jan – July	ND	Bq/L
	Cobalt-60	Jan – July	ND	Bq/L
	Iodine-131	Jan – July	ND	Bq/L
	Residue Management			
	Chlorine Residual	Jan 9 – Dec 10	0.00 – 0.52	mg/L
	Suspended Solids	Jan 9 – Dec 10	8.5 – 57.5	mg/L

Not all radionuclide results were available at the time of printing.

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

Parameter	Sample Date	Result	Unit of Measure	Exceedance	Number of Samples
Antimony	Feb 13-Nov 20	0.0004-0.0008	mg/L	No	5
Arsenic	Feb 13-Nov 20	0.0005-0.0006	mg/L	No	5
Barium	Mar 19, Nov 20	0.021,0.022	mg/L	No	2
Boron	Mar 19, Nov 20	0.019, 0.027	mg/L	No	2
Cadmium	Feb 13-Nov 20	ND	mg/L	No	5
Chromium	Feb 13-Nov 20	ND	mg/L	No	5
Mercury	Mar 19, Nov 20	ND, 0.06	ug/L	No	2
Selenium	Feb 13-Nov 20	ND-0.0001	mg/L	No	5
Sodium	Jan 8-Nov 20	16.4-21.4	mg/L	Yes (3)*	9

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Parameter	Sample Date	Result	Unit of Measure	Exceedance	Number of Samples
Uranium	Mar 19, Nov 20	0.0003	mg/L	No	2
Nitrite	Jan 8-Dec 2	ND	mg/L	No	16
Nitrate	Jan 8-Dec 2	0.36-0.61	mg/L	No	16

*Number in parentheses represents number of exceedance(s).

Summary of lead testing under Schedule 15.1 during this reporting period

Samples taken from plumbing do not need to be reported as per Section 18 of the Safe Drinking Water Act and Schedule 16 of O. Reg. 170/03.

Location Type	Number of Samples	Range of Lead Results	Unit of Measure	Number of Exceedances
Plumbing	442	0.10-22.7	ug/L	1
Distribution	44	0.10-45.10	ug/L	4

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

Parameter	Sample Date	Result	Unit of Measure	Exceedance	Number of Samples
Alachlor	June 12, Oct 9	ND	ug/L	No	2
Aldicarb	June 12, Oct 9	ND	ug/L	No	2
Aldrin + Dieldrin	June 12, Oct 9	ND	ug/L	No	2
Atrazine + N-dealkylated metabolites	June 12, Oct 9	ND	ug/L	No	2
Azinphos-methyl	June 12, Oct 9	ND	ug/L	No	2
Bendiocarb	June 12, Oct 9	ND	ug/L	No	2
Benzene	June 12, Oct 9	ND	ug/L	No	2
Benzo(a)pyrene	June 12, Oct 9	ND	ug/L	No	2
Bromoxynil	June 12, Oct 9	ND	ug/L	No	2
Carbaryl	June 12, Oct 9	ND	ug/L	No	2
Carbofuran	June 12, Oct 9	ND	ug/L	No	2
Carbon Tetrachloride	June 12, Oct 9	ND	ug/L	No	2
Chlordane (Total)	June 12, Oct 9	ND	ug/L	No	2
Chlorpyrifos	June 12, Oct 9	ND	ug/L	No	2
Cyanazine	June 12, Oct 9	ND	ug/L	No	2
Diazinon	June 12, Oct 9	ND	ug/L	No	2
Dicamba	June 12, Oct 9	ND	ug/L	No	2
1,2-Dichlorobenzene	June 12, Oct 9	ND	ug/L	No	2
1,4-Dichlorobenzene	June 12, Oct 9	ND	ug/L	No	2
Dichlorodiphenyltrichloroethane (DDT) + metabolites	June 12, Oct 9	ND	ug/L	No	2
1,2-Dichloroethane	June 12, Oct 9	ND	ug/L	No	2
1,1-Dichloroethylene (vinylidene chloride)	June 12, Oct 9	ND	ug/L	No	2
Dichloromethane	June 12, Oct 9	ND	ug/L	No	2
2,4-Dichlorophenol	June 12, Oct 9	ND	ug/L	No	2
2,4-Dichlorophenoxy acetic acid (2,4-D)	June 12, Oct 9	ND	ug/L	No	2
Diclofop-methyl	June 12, Oct 9	ND	ug/L	No	2
Dimethoate	June 12, Oct 9	ND	ug/L	No	2
Dinoseb	June 12, Oct 9	ND	ug/L	No	2
Diquat	June 12, Oct 9	ND	ug/L	No	2
Diuron	June 12, Oct 9	ND	ug/L	No	2
Glyphosate	June 12, Oct 9	ND	ug/L	No	2
Heptachlor + Heptachlor Epoxide	June 12, Oct 9	ND	ug/L	No	2
Lindane (Total)	June 12, Oct 9	ND	ug/L	No	2
Malathion	June 12, Oct 9	ND	ug/L	No	2

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Parameter	Sample Date	Result	Unit of Measure	Exceedance	Number of Samples
Methoxychlor	June 12, Oct 9	ND	ug/L	No	2
Metolachlor	June 12, Oct 9	ND	ug/L	No	2
Metribuzin	June 12, Oct 9	ND	ug/L	No	2
Monochlorobenzene	June 12, Oct 9	ND	ug/L	No	2
Paraquat	June 12, Oct 9	ND	ug/L	No	2
Parathion	June 12, Oct 9	ND	ug/L	No	2
Pentachlorophenol	June 12, Oct 9	ND	ug/L	No	2
Phorate	June 12, Oct 9	ND	ug/L	No	2
Picloram	June 12, Oct 9	ND	ug/L	No	2
Polychlorinated Biphenyls(PCB)	June 12, Oct 9	ND	ug/L	No	2
Prometryne	June 12, Oct 9	ND	ug/L	No	2
Simazine	June 12, Oct 9	ND	ug/L	No	2
THM – Distribution (annual average)	Jan 24 - Dec 2	29.7	ug/L	No	12
Temephos	June 12, Oct 9	ND	ug/L	No	2
Terbufos	June 12, Oct 9	ND	ug/L	No	2
Tetrachloroethylene	June 12, Oct 9	ND	ug/L	No	2
2,3,4,6-Tetrachlorophenol	June 12, Oct 9	ND	ug/L	No	2
Triallate	June 12, Oct 9	ND	ug/L	No	2
Trichloroethylene	June 12, Oct 9	ND	ug/L	No	2
2,4,6-Trichlorophenol	June 12, Oct 9	ND	ug/L	No	2
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	June 12, Oct 9	ND	ug/L	No	2
Trifluralin	June 12, Oct 9	ND	ug/L	No	2
Vinyl Chloride	June 12, Oct 9	ND	ug/L	No	2

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result	Unit of Measure	Date of Sample
-	-	-	-