

**Part III Form 2
Section 11. ANNUAL REPORT.**

Drinking-Water System Number:	220001860
Drinking-Water System Name:	Kingston Central Water Treatment Plant
Drinking-Water System Owner:	City of Kingston
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2005 – December 31, 2005

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [<input checked="" type="checkbox"/>] No []</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [<input checked="" type="checkbox"/>] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>The Summary Report prepared in accordance to section 22 of O. Reg.170/03 has been given to the members of the municipal council of the City of Kingston.</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?
Yes [] No []

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

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 _____

Describe your Drinking-Water System

ZEBRA MUSSEL CONTROL – When the water temperature rises above 10°C (above this temperature zebra mussels are active), pre-chlorination takes place at the mouth of the intake. This protects the intake from becoming encrusted with zebra mussels which would restrict the flow of water through the intake.

PRE-CHLORINATION – The purpose of chlorination is to provide disinfection. 12% Sodium Hypochlorite is applied to the raw water in solution form.

SCREENING – A revolving screen in the suction well of the low lift building removes any large debris such as weeds, fish, etc.

LOW LIFT PUMPS – These pumps lift the water from lake level to the main plant. There are two headers from the low lift building directing the water to the mixing tanks.

COAGULATION\FLOCCULATION – Aluminum Sulphate (alum) is added to the water as it leaves the low lift building at a rate of 10 mg/l. Particles in the water are attracted to the alum.

MIXING TANKS – Water flows rapidly in these tanks in a spiral motion, allowing proper mixing of the chlorine and alum with the water.

SETTLING TANKS – These are large tanks designed to reduce the velocity of the water allowing the heavier floc particles to settle out. They also provide detention time, allowing the chlorine time to achieve disinfection.

FILTERS – Four Granular Activated Carbon (GAC) filters and two rapid sand filters remove the particles which did not settle out in the settling tanks as well as compounds which cause taste & odours. Water flows through the filters to a clean water reservoir called the clearwell.

BACKWASHING – Filters are washed daily to remove any particulates they have collected over the previous 24 hrs. Cleaned water from the clearwell is pumped backwards through the filter and the top layer of the filter is agitated during the backwash by spraying water on to it to break up any large particles.

POST-CHLORINATION – Sodium Hypochlorite is added to the water as it enters the clearwell to provide a 'chlorine residual' which remains throughout the distribution system. This ensures protection to the point of the customers tap.

HIGHLIFT PUMPS – Five high lift pumps with capacities ranging from 19,500 to 45,500 m³/day pump treated water from the clearwell into the distribution system.

STANDBY EQUIPMENT – Diesel driven pumps are maintained to provide a continuous supply of water during power failures. These pumps provide enough capacity to meet fire-fighting requirements as well as normal flows during power outages. A diesel generator provides electricity to run metering and lighting in the water plant.

RESERVOIR AND PUMPING STATION – The reservoir has a capacity of 22,700 m³. Water is pumped into this reservoir during the night, and out during the day.

BOOSTER STATION – The station pumps water into the distribution system east of the Cataraqui River. Fluoride is added as a requirement of DND Kingston. As well, sodium hypochlorite is added to ensure adequate residuals in this part of the system. The city east system has three elevated tanks for storage.

ELEVATED TANK – With a capacity of 3400m³, the elevated tank's main purpose is to provide system pressure and to act as a buffer to pressure fluctuations.

DISTRIBUTION SYSTEM – Approximately 80,000 people are supplied with water from the Kingston Central Water Treatment Plant. There are approximately 250 km of water mains, and over 1200 fire hydrants in the system.

List all water treatment chemicals used over this reporting period

Aluminum Sulphate, Sodium Hypochlorite, Hydrofluorosilicic acid (Kingston East Only)

Were any significant expenses incurred to?

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

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

Constructed new process wastewater facility at the central WTP.
 Upgraded security systems at the central WTP, water towers and water storage facilities.
 Completed repairs to the Gore Rd. Tower.
 Completed tower inspections on all four towers within the central water system.
 Replaced impeller on highlift # 3.

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
01/21/2005	Notification was made under Schedule 16-4 of O. Reg. 170/03, Duty to report observation	n/a	n/a	A section of the distribution system experienced a loss of pressure as a result of a main break. Following repair of the main break, directional flushing to >1.0 mg/l free chlorine residual was completed. Bacteriological samples were collected for two consecutive days with all sample results negative for bacteria presence.	01/21/2005
03/03/2005	Notification was made under Schedule 16-4 of O. Reg. 170/03, Duty to report observation	n/a	n/a	A leak on the post disinfectant feed line at the Kingston Central WTP caused a reduction in disinfectant flow to the post disinfection application point and resulted in on-line instrumentation indicating that greater than 100% of required contact time was not achieved for a period of approximately 35 minutes	03/03/2005

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				Repair work was initiated immediately, and post disinfectant feed was re-established by re-routing flow from standby feed pumps through alternate piping while repairs were made. Following repairs disinfectant feed routes were returned to normal. Downstream sampling was initiated.	
06/21/2005	Total Coliform	Present	n/a	Notifications were made to SAC and the local MOH. Re-sampling was initiated in accordance to O.Reg.170/03 for corrective actions. Subsequent re-samples did not indicate any adverse conditions.	06/22/2005
07/18/2005	Total Coliform	Present	n/a	Notifications were made to SAC and the local MOH. Re-sampling was initiated in accordance to O.Reg.170/03 for corrective actions. Subsequent re-samples did not indicate any adverse conditions.	07/19/2005

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	79	0 - 100	0 - 420	0	
Treated	276	0	0 - 1	269	0 - 120
Distribution	1112	0	0 - 1	549	0 - 300

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

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	8760	0.012 – 0.091 NTU
Chlorine (Treated & James St Booster Stn.)	8760	0.57 – 2.74 mg/l
Chlorine Residual	8760	0.09 – 2.04 mg/l

***NOTE:** For continuous monitors use 8760 as the number of samples.*

Distribution System		
Fluoride (City East Only) Fluoridation provided	8760	0.09 – 0.88 mg/l

NOTE: Record the unit of measure if it is **not** milligrams per litre.

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	Sample Type	Parameter	Date Sampled	Result	Unit of Measure
January 7, 2003	Backwash Effluent	Suspended Solids	01/17/2005	76	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	02/10/2005	59	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	03/08/2005	50	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	04/07/2005	110	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	05/16/2005	61	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	06/10/2005	35	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	07/12/2005	66	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	08/17/2005	6	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	09/12/2005	52	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	10/12/2005	116	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	11/15/2005	23	mg/l
January 7, 2003	Backwash Effluent	Suspended Solids	12/6/2005	74	mg/l

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	01/17/2005	<0.001	mg/l	No
Arsenic	01/17/2005	<0.001	mg/l	No
Barium	01/17/2005	0.021	mg/l	No
Boron	01/17/2005	0.021	mg/l	No
Cadmium	01/17/2005	<0.0001	mg/l	No
Chromium	01/17/2005	<0.002	mg/l	No
Lead(Distribution)	01/17/2005	<0.0002	mg/l	No
Mercury	01/17/2005	<0.00006	mg/l	No
Selenium	01/17/2005	0.001	mg/l	No
Sodium	01/17/2005	13.6	mg/l	No
Uranium	01/17/2005	0.0002	mg/l	No
Fluoride	01/17/2005	0.2	mg/l	No
Nitrite	01/17/2005	<0.1	mg/l	No
Nitrate	01/17/2005	0.4	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	2/9/2005	<0.1	mg/l	No
Nitrate	2/9/2005	0.4	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	3/7/2005	<0.1	mg/l	No

Nitrate	3/7/2005	0.4	mg/l	No
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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Fluoride	4/7/2005	0.1	mg/l	No
Nitrite	4/7/2005	<0.1	mg/l	No
Nitrate	4/7/2005	0.4	mg/l	No
Lead(Distribution)	4/7/2005	<0.0002	mg/l	No
Sodium	4/7/2005	14.3	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	5/16/2005	<0.05	mg/l	No
Nitrate	5/16/2005	0.35	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	6/9/2005	<0.05	mg/l	No
Nitrate	6/9/2005	0.36	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	7/12/2005	<0.001	mg/l	No
Arsenic	7/12/2005	0.002	mg/l	No
Barium	7/12/2005	0.025	mg/l	No
Boron	7/12/2005	<0.005	mg/l	No
Cadmium	7/12/2005	<0.0001	mg/l	No
Chromium	7/12/2005	<0.002	mg/l	No
Lead (Ditribution)	7/12/2005	<0.001	mg/l	No
Mercury	7/12/2005	<0.0001	mg/l	No
Selenium	7/12/2005	<0.001	mg/l	No
Sodium	7/12/2005	14.6	mg/l	No
Uranium	7/12/2005	<0.001	mg/l	No
Fluoride	7/12/2005	0.2	mg/l	No
Nitrite	7/12/2005	<0.1	mg/l	No
Nitrate	7/12/2005	0.4	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	8/17/2005	<0.05	mg/l	No
Nitrate	8/17/2005	0.17	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Sodium	9/14/2005	13.5	mg/l	No
Nitrite	9/14/2005	<0.1	mg/l	No
Nitrate	9/14/2005	0.3	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Fluoride	10/12/2005	0.1	mg/l	No
Sodium	10/12/2005	13.6	mg/l	No
Nitrite	10/12/2005	<0.1	mg/l	No
Nitrate	10/12/2005	0.2	mg/l	No
Lead (Ditribution)	10/12/2005	<0.0002	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Sodium	11/15/2005	14.8	mg/l	No
Nitrite	11/15/2005	<0.1	mg/l	No
Nitrate	11/15/2005	0.3	mg/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Sodium	12/6/2005	14	mg/l	No
Nitrite	12/6/2005	<0.1	mg/l	No
Nitrate	12/6/2005	0.3	mg/l	No

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	01/17/2005	<0.3	ug/l	No
Aldicarb	01/17/2005	<3	ug/l	No
Aldrin + Dieldrin	01/17/2005	<0.02	ug/l	No
Atrazine + N-dealkylated metabolites	01/17/2005	<0.5	ug/l	No
Azinphos-methyl	01/17/2005	<0.21	ug/l	No
Bendiocarb	01/17/2005	<3	ug/l	No
Benzene	01/17/2005	<0.5	ug/l	No
Benzo(a)pyrene	01/17/2005	<0.005	ug/l	No
Bromoxynil	01/17/2005	<0.094	ug/l	No
Carbaryl	01/17/2005	<3	ug/l	No
Carbofuran	01/17/2005	<1	ug/l	No
Carbon Tetrachloride	01/17/2005	<0.2	ug/l	No
Chlordane (Total)	01/17/2005	<0.04	ug/l	No
Chlorpyrifos	01/17/2005	<0.5	ug/l	No
Cyanazine	01/17/2005	<0.5	ug/l	No
Diazinon	01/17/2005	<1	ug/l	No
Dicamba	01/17/2005	<5	ug/l	No
1,2-Dichlorobenzene	01/17/2005	<0.1	ug/l	No
1,4-Dichlorobenzene	01/17/2005	<0.2	ug/l	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	01/17/2005	<0.14	ug/l	No
1,2-Dichloroethane	01/17/2005	<0.1	ug/l	No
1,1-Dichloroethylene (vinylidene chloride)	01/17/2005	<0.1	ug/l	No
Dichloromethane	01/17/2005	<0.3	ug/l	No
2-4 Dichlorophenol	01/17/2005	<0.1	ug/l	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	01/17/2005	<5	ug/l	No
Diclofop-methyl	01/17/2005	<0.4	ug/l	No
Dimethoate	01/17/2005	<1	ug/l	No
Dinoseb	01/17/2005	<0.5	ug/l	No
Diquat	01/17/2005	<5	ug/l	No
Diuron	01/17/2005	<5	ug/l	No
Glyphosate	01/17/2005	<25	ug/l	No
Heptachlor + Heptachlor Epoxide	01/17/2005	<0.1	ug/l	No
Lindane (Total)	01/17/2005	<0.1	ug/l	No
Malathion	01/17/2005	<5	ug/l	No
Methoxychlor	01/17/2005	<0.1	ug/l	No

Metolachlor	01/17/2005	<3	ug/l	No
Metribuzin	01/17/2005	<3	ug/l	No
Monochlorobenzene	01/17/2005	<0.2	ug/l	No
Paraquat	01/17/2005	<1	ug/l	No
Parathion	01/17/2005	<3	ug/l	No
Pentachlorophenol	01/17/2005	<0.1	ug/l	No
Phorate	01/17/2005	<0.3	ug/l	No
Picloram	01/17/2005	<5	ug/l	No
Polychlorinated Biphenyls(PCB)	01/17/2005	<0.05	ug/l	No
Prometryne	01/17/2005	<0.1	ug/l	No
Simazine	01/17/2005	<0.5	ug/l	No
THM (Treated) (NOTE: show latest annual average)	01/17/2005	12.5	ug/l	No
THM (Distribution) (NOTE: show latest annual average)	01/17/2005	24.8	ug/l	No
Temephos	01/17/2005	<10	ug/l	No
Terbufos	01/17/2005	<0.3	ug/l	No
Tetrachloroethylene	01/17/2005	<0.2	ug/l	No
2,3,4,6-Tetrachlorophenol	01/17/2005		ug/l	No
Triallate	01/17/2005	<10	ug/l	No
Trichloroethylene	01/17/2005	<0.1	ug/l	No
2,4,6-Trichlorophenol	01/17/2005	<0.1	ug/l	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	01/17/2005	<10	ug/l	No
Trifluralin	01/17/2005	<0.5	ug/l	No
Vinyl Chloride	01/17/2005	<0.2	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	2/9/2005	12.7	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	3/7/2005	12.7	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	4/7/2005	12.1	ug/l	No
THM (Distribution Water) (NOTE: show latest annual average)	4/7/2005	22.3	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	5/16/2005	11.7	ug/l	No

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	6/9/2005	11.4	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	7/12/2005	<0.3	ug/l	No
Aldicarb	7/12/2005	<3	ug/l	No
Aldrin + Dieldrin	7/12/2005	<0.02	ug/l	No
Atrazine + N-dealkylated metabolites	7/12/2005	<0.5	ug/l	No
Azinphos-methyl	7/12/2005	<1	ug/l	No
Bendiocarb	7/12/2005	<3	ug/l	No
Benzene	7/12/2005	<0.5	ug/l	No
Benzo(a)pyrene	7/12/2005	<0.005	ug/l	No
Bromoxynil	7/12/2005	<0.3	ug/l	No
Carbaryl	7/12/2005	<3	ug/l	No
Carbofuran	7/12/2005	<1	ug/l	No
Carbon Tetrachloride	7/12/2005	<0.2	ug/l	No
Chlordane (Total)	7/12/2005	<0.04	ug/l	No
Chlorpyrifos	7/12/2005	<0.5	ug/l	No
Cyanazine	7/12/2005	<0.5	ug/l	No
Diazinon	7/12/2005	<1	ug/l	No
Dicamba	7/12/2005	<5	ug/l	No
1,2-Dichlorobenzene	7/12/2005	<0.1	ug/l	No
1,4-Dichlorobenzene	7/12/2005	<0.2	ug/l	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	7/12/2005	<0.1	ug/l	No
1,2-Dichloroethane	7/12/2005	<0.1	ug/l	No
1,1-Dichloroethylene (vinylidene chloride)	7/12/2005	<0.1	ug/l	No
Dichloromethane	7/12/2005	<0.3	ug/l	No
2-4 Dichlorophenol	7/12/2005	<0.1	ug/l	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	7/12/2005	<5	ug/l	No
Diclofop-methyl	7/12/2005	<0.4	ug/l	No
Dimethoate	7/12/2005	<1	ug/l	No
Dinoseb	7/12/2005	<0.5	ug/l	No
Diquat	7/12/2005	<5	ug/l	No
Diuron	7/12/2005	<5	ug/l	No
Glyphosate	7/12/2005	<25	ug/l	No
Heptachlor + Heptachlor Epoxide	7/12/2005	<0.1	ug/l	No
Linadane (Total)	7/12/2005	<0.1	ug/l	No
Malathion	7/12/2005	<5	ug/l	No
Methoxychlor	7/12/2005	<0.1	ug/l	No
Metolachlor	7/12/2005	<3	ug/l	No
Metribuzin	7/12/2005	<3	ug/l	No
Monochlorobenzene	7/12/2005	<0.2	ug/l	No
Paraquat	7/12/2005	<1	ug/l	No
Parathion	7/12/2005	<3	ug/l	No
Pentachlorophenol	7/12/2005	<0.1	ug/l	No
Phorate	7/12/2005	<0.3	ug/l	No
Picloram	7/12/2005	<5	ug/l	No

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Polychlorinated Biphenyls(PCB)	7/12/2005	<0.05	ug/l	No
Prometryne	7/12/2005	<0.1	ug/l	No
Simazine	7/12/2005	<0.5	ug/l	No
THM (Treated Water) (NOTE: show latest annual average)	7/12/2005	11.4	ug/l	No
THM (Distribution Water) (NOTE: show latest annual average)	7/12/2005	21.4	ug/l	No
Temephos	7/12/2005	<10	ug/l	No
Terbufos	7/12/2005	<0.3	ug/l	No
Tetrachloroethylene	7/12/2005	<0.2	ug/l	No
2,3,4,6-Tetrachlorophenol	7/12/2005	<0.1	ug/l	No
Triallate	7/12/2005	<10	ug/l	No
Trichloroethylene	7/12/2005	<0.1	ug/l	No
2,4,6-Trichlorophenol	7/12/2005	<0.1	ug/l	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	7/12/2005	<10	ug/l	No
Trifluralin	7/12/2005	<0.5	ug/l	No
Vinyl Chloride	7/12/2005	<0.2	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	8/17/2005	11.9	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	9/14/2005	10.8	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	10/12/2005	10.8	ug/l	No
THM (Distribution Water) (NOTE: show latest annual average)	10/12/2005	20.4	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	11/15/2005	10.9	ug/l	No

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
THM (Treated Water) (NOTE: show latest annual average)	12/6/2005	11.0	ug/l	No

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

Parameter	Result Value	Unit of Measure	Date of Sample

(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)