



TOWN OF MARKHAM

WATER SAMPLING PROGRAM

January 1 to December 31, 2010

To comply with the Ontario Drinking Water System Regulation, Markham collects and tests water samples throughout the distribution system at a total of 103 locations. Sampling is rotated through the 103 locations and the drinking water is tested for Chlorine residual, Bacteria, Trihalomethanes, Nitrites & Nitrates, Lead, Sodium, Fluoride, Organics & Inorganics in compliance with Ontario Regulation 170/03. The samples are collected by Waterworks licensed operators and analyzed by the provincially approved York-Durham Regional Environmental Laboratory.

Waterworks follows rigorous testing and compliance procedures. The Town reports any adverse sampling results that occur to the York Region Medical Officer of Health and the Ministry of Environment (MOE) and immediately undertakes the necessary corrective action.

Summary of the sampling for 2010 follows:

Sampling Program:

Total Number of Samples collected and tested in 2010 = 9,727

Adverse Test Results:

Total Number of Adverse Water Quality Incidents (AWQI) = 8

Breakdown of Adverse Results:

Total adverse due to Coliform Exceedances (24 hours) = 5

Total adverse due to on-site observations = 3

The drinking water distributed to the Town of Markham residents in 2010 was of high quality. During the operation of the water distribution system during 2010, there were very few adverse reports (0.08% of all system tests undertaken) and these were immediately resolved. The drinking water system is maintained by Waterworks with continual improvements and programs in place to ensure water quality.



ANNUAL REPORT

Drinking-Water System Number:	220004162
Drinking-Water System Name:	Markham Water Distribution
Drinking-Water System Owner:	The Corporation of the Town of Markham
Drinking-Water System Category:	Large Municipal Residential System
Period being reported:	January 1, 2010 to December 31, 2010

<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 [x] No []</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] 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;"> <ul style="list-style-type: none"> • 8100 Warden Ave. – Waterworks Department • Markham Civic Centre – 101 Town Centre Blvd. – Contact Centre • www.markham.ca </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <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 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

Markham distribution system is an extension of the Toronto and York Region distribution systems. Raw surface water from Lake Ontario is disinfected, treated and tested by both Toronto and Peel for microbiological, organic and inorganic parameters prior to reaching the York Region distribution system. York Region performs independent water testing and supplies Markham through feeder mains. Water directly from Toronto also enters Markham through feeder mains. York Region distribution system acts as a wholesale supplier of water and provides storage and pressure boosting for the Markham system.

Markham is a distribution only system, without pumping and storage facilities. Markham's drinking water within the distribution system is tested for standard parameters, in compliance with the Ontario Drinking Water system regulation. Markham's drinking water samples are taken to the provincially-approved York-Durham Regional Environmental Laboratory for analysis.

List all water treatment chemicals used over this reporting period

Not applicable

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

Watermain cement relining (Watermain rehabilitation)	= \$1,046,838.00
Cathodic Protection of Iron Watermains	= \$466,022.00
Water meter replacement/Upgrades	= \$584,687.00
Watermain replacement	= \$2,386,664.00
Watermain replacement design for 2011	= \$100,000.00
Water system condition rating system	= \$64,105.00
Watermain repair	= \$293,756.00
Watermian Looping/ Disconnection	= \$848,122.00



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
2010-06-08 (AWQI # 95239)	Total Coliform	P	P/A	Flush Mains and Resample	2010-06-08
2010-06-29 (AWQI # 95670)	Total Coliform	P	P/A	Flush Mains and Resample	2010-06-29
2010-06-29 (AWQI # 95692)	Total Coliform – 2 samples	P	P/A	Flush Mains and Resample	2010-06-29
2010-07-28 (AWQI # 96653)	On-Site Observation (No adverse water quality sample results were obtained)			Repair Broken Watermain, Flush Mains and Sample	2010-07-28
2010-09-13 (AWQI # 97972)	On-Site Observation (No adverse water quality sample results were obtained)			Repair Watermain, Flush Mains and Sample	2010-09-13
2010-10-13 (AWQI # 98622)	Total Coliform	P	P/A	Flush Mains and Resample	2010-10-13
2010-12-16 (AWQI # 99416)	On-Site Observation (No adverse water quality sample results were obtained)			Repair Broken Watermain, Flush Mains and Sample	2010-12-16

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					
Treated	2,524	0	0 - Presence	1259	0 - 310
Distribution					



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		
Chlorine	5,412	0.26 mg/L – 1.26 mg/L
Fluoride (If the DWS provides fluoridation)	1	0.129 mg/L

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

*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	Parameter	Date Sampled	Result	Unit of Measure

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	May 18, 2010	0.0005	mg/L	No
Arsenic	May 18, 2010	0.0006	mg/L	No
Barium	May 18, 2010	0.0216	mg/L	No
Boron	May 18, 2010	0.026	mg/L	No
Cadmium	May 18, 2010	<0.0001	mg/L	No
Chromium	May 18, 2010	<0.0001	mg/L	No
*Lead	Not applicable			
Mercury	May 18, 2010	<0.02	mg/L	No
Selenium	May 18, 2010	0.0002	mg/L	No
Sodium	January 7, 2010	13.5	mg/L	No
Uranium	May 18, 2010	0.0003	mg/L	No
Fluoride	January 7, 2010	0.129	mg/L	No
Nitrite	Nov. 24, 2010	<0.002	mg/L	No
Nitrate	Nov. 24, 2010	0.336	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period



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

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	338*	<0.0001mg/L – 0.0068 mg/L	0
Distribution	78*	0.0001mg/L – 0.0043mg/L	0

*Includes results for Sampling Period 12/15/09 – 04/15/10 and 06/15/10 – 10/15/10

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	May 17, 2010	<0.4	ug/L	No
Aldicarb	May 17, 2010	<4.5	ug/L	No
Aldrin + Dieldrin	May 17, 2010	<0.006	ug/L	No
Atrazine + N-dealkylated metabolites	May 17, 2010	<0.2	ug/L	No
Azinphos-methyl	May 17, 2010	<0.3	ug/L	No
Bendiocarb	May 17, 2010	<3.0	ug/L	No
Benzene	May 17, 2010	<0.1	ug/L	No
Benzo(a)pyrene	May 17, 2010	<0.01	ug/L	No
Bromoxynil	May 17, 2010	<0.4	ug/L	No
Carbaryl	May 17, 2010	<3.0	ug/L	No
Carbofuran	May 17, 2010	<3.0	ug/L	No
Carbon Tetrachloride	May 17, 2010	<0.2	ug/L	No
Chlordane (Total)	May 17, 2010	<0.006	ug/L	No
Chlorpyrifos	May 17, 2010	<0.2	ug/L	No
Cyanazine	May 17, 2010	<0.3	ug/L	No
Diazinon	May 17, 2010	<0.2	ug/L	No
Dicamba	May 17, 2010	<0.4	ug/L	No
1,2-Dichlorobenzene	May 17, 2010	<0.1	ug/L	No
1,4-Dichlorobenzene	May 17, 2010	<0.1	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	May 17, 2010	<0.008	ug/L	No
1,2-Dichloroethane	May 17, 2010	<0.1	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	May 17, 2010	<0.3	ug/L	No
Dichloromethane	May 17, 2010	<0.5	ug/L	No
2-4 Dichlorophenol	May 17, 2010	<0.7	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	May 17, 2010	<0.8	ug/L	No
Diclofop-methyl	May 17, 2010	<0.4	ug/L	No
Dimethoate	May 17, 2010	<0.3	ug/L	No
Dinoseb	May 17, 2010	<0.5	ug/L	No
Diquat	May 17, 2010	<1.0	ug/L	No
Diuron	May 17, 2010	<3.0	ug/L	No



Glyphosate	May 17, 2010	<25	ug/L	No
Heptachlor + Heptachlor Epoxide	May 17, 2010	<0.008	ug/L	No
Lindane (Total)	May 17, 2010	<0.005	ug/L	No
Malathion	May 17, 2010	<0.2	ug/L	No
Methoxychlor	May 17, 2010	<0.009	ug/L	No
Metolachlor	May 17, 2010	<0.2	ug/L	No
Metribuzin	May 17, 2010	<0.3	ug/L	No
Monochlorobenzene	May 17, 2010	<0.1	ug/L	No
Paraquat	May 17, 2010	<1.0	ug/L	No
Parathion	May 17, 2010	<0.2	ug/L	No
Pentachlorophenol	May 17, 2010	<0.4	ug/L	No
Phorate	May 17, 2010	<0.2	ug/L	No
Picloram	May 17, 2010	<0.7	ug/L	No
Polychlorinated Biphenyls(PCB)	May 17, 2010	<0.02	ug/L	No
Prometryne	May 17, 2010	<0.2	ug/L	No
Simazine	May 17, 2010	<0.2	ug/L	No
THM (NOTE: show latest annual average)	Nov. 29, 2010	14.5	ug/L	No
Temephos	May 17, 2010	<3	ug/L	No
Terbufos	May 17, 2010	<0.2	ug/L	No
Tetrachloroethylene	May 17, 2010	<0.3	ug/L	No
2,3,4,6-Tetrachlorophenol	May 17, 2010	<0.5	ug/L	No
Triallate	May 17, 2010	<4.0	ug/L	No
Trichloroethylene	May 17, 2010	<0.1	ug/L	No
2,4,6-Trichlorophenol	May 17, 2010	<0.5	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	May 17, 2010	<0.5	ug/L	No
Trifluralin	May 17, 2010	<0.006	ug/L	No
Vinyl Chloride	May 17, 2010	<0.2	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