



Attachment 'A'

**The Corporation of the City of Markham
Annual Water Quality Report**

Covering the period from
January 1, 2013 to December 31, 2013

**In compliance with
The Ministry of the Environment (MOE)
Ontario Drinking Water Systems Regulation 170/03**



ANNUAL REPORT

Drinking-Water System Number:	220004162
Drinking-Water System Name:	Markham Water Distribution
Drinking-Water System Owner:	The Corporation of the City of Markham
Drinking-Water System Category:	Large Municipal Residential System
Period being reported:	January 1, 2013 to December 31, 2013

<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 <input type="checkbox"/></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 <input type="checkbox"/></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"> • www.markham.ca • 8100 Warden Ave. – Waterworks Department • Markham Civic Centre – 101 Town Centre Blvd. – Contact Centre </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Not applicable</div> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Number of Interested Authorities you report to:</p> <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;">Not applicable</div> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes <input type="checkbox"/> No <input type="checkbox"/></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
Not applicable	

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

The City of Markham’s distribution system is an extension of the Toronto and York Region distribution systems. Raw surface water from Lake Ontario is disinfected, treated and tested rigorously by the City of Toronto and Peel Region for microbiological, organic and inorganic parameters prior to reaching the York Region distribution system. Markham is supplied with treated water via feeder mains from Toronto and Peel Region. York Region distribution system acts as a wholesale supplier of water and provides further testing, storage and pressure boosting for the Markham system.

Markham’s Distribution System provides treated water to approximately 330,000 residents and is comprised of approximately 1,000 kilometers of various size watermains, 10,800 watermain valves and 8,400 municipal fire hydrants. 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 Ontario Regulation 170/03. The samples are collected by licensed Waterworks operators and analyzed by the provincially approved York-Durham Regional Environmental Laboratory.

List all water treatment chemicals used over this reporting period

Not applicable; treatment chemicals are introduced at various sources by the City of Toronto, Peel Region and York Region 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

Cathodic Protection of Iron Watermains	= \$396,896
Water Meter Replacement/Upgrades	= \$566,663
Watermain Replacement	= \$410,000
Hydrant Replacement Project	= \$560,000
Watermain Replacement Design for 2013	= \$30,000



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
June 25, 2013 (AWQI #111862)	Total Coliform	P	P/A	Flush Mains and Resample	June 25, 2013
July 9, 2013 (AWQI # 11284)	Total Coliform	P	P/A	Flush Mains and Resample	July 9, 2013
July 16, 2013 (AWQI #112508)	Total Coliform	P	P/A	Flush Mains and Resample	July 16, 2013
July 17, 2013 (AWQI #112551)	Total Coliform	15	CFU/mL	Flush Mains and Resample	July 17, 2013
July 18, 2013 (AWQI #112589)	Total Coliform	4	CFU/mL	Flush Mains, hyper-chlorinate sample station and Resample	July 18, 2013
July 30, 2013 (AWQI #113019)	Total Coliform	P	P/A	Flush Mains and Resample	July 30, 2013
September 24, 2013 (AWQI #114258)	Total Coliform	P	P/A	Flush Mains and Resample	September 24, 2013

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	N/A				
Treated	N/A				
Distribution	1,874	0-0	0-15	594	0-12

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	5,041	0.16-1.96
Fluoride (If the DWS provides fluoridation)	0*	

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

* N/A – next Fluoride testing is scheduled for 2015

*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 14, 2013	0.006	mg/L	No
Arsenic	May 14, 2013	0.007	mg/L	No
Barium	May 14, 2013	0.0228	mg/L	No
Boron	May 14, 2013	0.025	mg/L	No
Cadmium	May 14, 2013	<0.001	mg/L	No
Chromium	May 14, 2013	0.003	mg/L	No
*Lead	Not applicable			
Mercury	May 14, 2013	<0.02	mg/L	No
Selenium	May 14, 2013	0.007	mg/L	No
Sodium	Not applicable			
Uranium	May 14, 2013	0.003	mg/L	No
Fluoride	Not applicable			
Nitrite	November 27, 2013	<0.003	mg/L	No
Nitrate	November 27, 2013	0.480	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

(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	N/A*		
Distribution	20	0.0001-0.0002	0

*The City of Markham has been exempt for Lead Testing from plumbing servicing private residences and plumbing servicing non-residential buildings. Relief was granted as sample results for seven rounds of sampling were confirmed to be well below the MOE's limit of 0.01mg/L.



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 14, 2013	<0.4	ug/L	No
Aldicarb	May 24, 2013	<4.5	ug/L	No
Aldrin + Dieldrin	May 14, 2013	<0.006	ug/L	No
Atrazine + N-dealkylated metabolites	May 14, 2013	<0.2	ug/L	No
Azinphos-methyl	May 14, 2013	<0.3	ug/L	No
Bendiocarb	May 24, 2013	<3.0	ug/L	No
Benzene	May 14, 2013	<0.1	ug/L	No
Benzo(a)pyrene	May 14, 2013	<0.01	ug/L	No
Bromoxynil	May 14, 2013	<0.4	ug/L	No
Carbaryl	May 24, 2013	<3.0	ug/L	No
Carbofuran	May 24, 2013	<3.0	ug/L	No
Carbon Tetrachloride	May 14, 2013	<0.2	ug/L	No
Chlordane (Total)	May 14, 2013	<0.006	ug/L	No
Chlorpyrifos	May 14, 2013	<0.2	ug/L	No
Cyanazine	May 14, 2013	<0.3	ug/L	No
Diazinon	May 14, 2013	<0.2	ug/L	No
Dicamba	May 14, 2013	<0.4	ug/L	No
1,2-Dichlorobenzene	May 14, 2013	<0.1	ug/L	No
1,4-Dichlorobenzene	May 14, 2013	<0.1	ug/L	No
Dichlorodiphenyltrichloroethane (DDT) + metabolites	May 14, 2013	<0.008	ug/L	No
1,2-Dichloroethane	May 14, 2013	<0.1	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	May 14, 2013	<0.3	ug/L	No
Dichloromethane	May 14, 2013	<0.5	ug/L	No
2-4 Dichlorophenol	May 14, 2013	<0.7	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	May 14, 2013	<0.8	ug/L	No
Diclofop-methyl	May 14, 2013	<0.4	ug/L	No
Dimethoate	May 14, 2013	<0.3	ug/L	No
Dinoseb	May 14, 2013	<0.5	ug/L	No
Diquat	May 14, 2013	<1.0	ug/L	No
Diuron	May 24, 2013	<3.0	ug/L	No
Glyphosate	May 14, 2013	<25	ug/L	No
Heptachlor + Heptachlor Epoxide	May 14, 2013	<0.008	ug/L	No
Lindane (Total)	May 14, 2013	<0.005	ug/L	No
Malathion	May 14, 2013	<0.2	ug/L	No
Methoxychlor	May 14, 2013	<0.009	ug/L	No
Metolachlor	May 14, 2013	<0.2	ug/L	No
Metribuzin	May 14, 2013	<0.3	ug/L	No
Monochlorobenzene	May 14, 2013	<0.1	ug/L	No
Paraquat	May 14, 2013	<1.0	ug/L	No

Parathion	May 14, 2013	<0.2	ug/L	No
Pentachlorophenol	May 14, 2013	<0.4	ug/L	No
Phorate	May 14, 2013	<0.2	ug/L	No
Picloram	May 14, 2013	<0.7	ug/L	No
Polychlorinated Biphenyls(PCB)	May 14, 2013	<0.02	ug/L	No
Prometryne	May 14, 2013	<0.2	ug/L	No
Simazine	May 14, 2013	<0.2	ug/L	No
THM (NOTE: show latest annual average)	Nov. 27, 2013	11.5	ug/L	No
Temephos	May 14, 2013	<3.0	ug/L	No
Terbufos	May 14, 2013	<0.2	ug/L	No
Tetrachloroethylene	May 14, 2013	<0.3	ug/L	No
2,3,4,6-Tetrachlorophenol	May 14, 2013	<0.5	ug/L	No
Triallate	May 24, 2013	<4.0	ug/L	No
Trichloroethylene	May 14, 2013	<0.1	ug/L	No
2,4,6-Trichlorophenol	May 14, 2013	<0.5	ug/L	No
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	May 14, 2013	<0.5	ug/L	No
Trifluralin	May 14, 2013	<0.006	ug/L	No
Vinyl Chloride	May 14, 2013	<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