



Report to: General Committee

Report Date: March 1, 2011

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**SUBJECT:** Annual Water Quality Report (January – December, 2010)

**PREPARED BY:** Helena Frantzke, Ext 2449  
Water Quality Coordinator, Waterworks  
Karen Dennison, Ext 2519  
Manager, System Engineering, Waterworks

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**RECOMMENDATION:**

- 1) THAT the report titled “Annual Water Quality Report (January-December 2010)” as required by Schedule 22 of Ontario Regulation 170/03 enclosed herein be received;
- 2) THAT Attachment “A”; 2010 Annual Regulatory Water Quality Report, is to be made available to the public on or before February 28, 2011 as required by Section 11 of Ontario Regulation 170/03.
- 3) AND FURTHER THAT Staff be authorized and directed to do all things necessary to give effect to this resolution.

**EXECUTIVE SUMMARY:**

This Council report titled “Annual Water Quality Report (January-December 2010)”, is to inform and update Council as owner of the drinking water system on the quality of water delivered through the drinking water system to the residents of Markham during the past year (2010). Any issues regarding drinking water quality in Markham during the period from January 1 to December 31, 2010 are detailed as required under Ontario Regulation 170/03.

A copy of the detailed technical information requested from the MOE regarding the drinking water system supply and water quality is found as Attachment “A; 2010 Annual Regulatory Water Quality Report”. This information is to be made available to the public on or before February 28, 2011 as required by Section 11 of Ontario Regulation 170/03 and as a result was posted on Markham’s web site and is available at the Contact Centre counter.

Markham purchased from the Region of York 31,315,130 m<sup>3</sup> of water over 365 days and distributed it to residential, industrial, commercial and institutional customers.

Throughout 2010, the Markham drinking water system was well maintained, proactively managed and high quality drinking water was delivered to our customers.

Through the regulated quality control process, representative water quality sampling was undertaken throughout the drinking water distribution system and analyzed according to O. Reg 170/03. In total, eight (8) adverse water quality incidents were reported to the Ministry of the Environment (MOE) for 2010 (out of 9727 tests, 0.08%). Five (5) of the

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incidents were related to the detection of microbiological indicators in the drinking water system. Three (3) of the incidents were on-site observations as a result of severe watermain break conditions. In all cases approved corrective actions were taken (flushing & re-sampling) and the incidents were fully resolved.

**FINANCIAL CONSIDERATIONS:**

Not applicable

**PURPOSE:**

To inform and update Council, as owner of the drinking water system, on the quality of drinking water provided in 2010 to the residents of Markham through the water distribution system and in doing so, meet the requirements of Ontario Regulation 170/03 Schedule 22.

To inform Council on the information made available to the public both at the Contact Centre counter and on the Town's website as required by the MOE on or before February 28, 2011. The information included as "Attachment A" is required by the MOE under Ontario Regulation 170/03 and is to be provided to the public free of charge, in hard copy and is more detailed, technical and statistical including drinking water system sampling activity, corrective action and any major system expenses undertaken in 2010.

**BACKGROUND:**

In order to meet Regulatory requirements, strengthen customer confidence in the Town's drinking water quality supply and inform Council, Waterworks has prepared annual update reports on the on the performance of the Water Distribution System over the past year.

Attachment "A"; 2010 Annual Regulatory Water Quality Report is intended to be a stand alone document. This detailed report summarizes the 2010 existing water distribution system, results of tests, corrective actions and any major system expenses.

In addition, the Waterworks Department submits population and contact updates to the MOE on an annual basis or as needed.

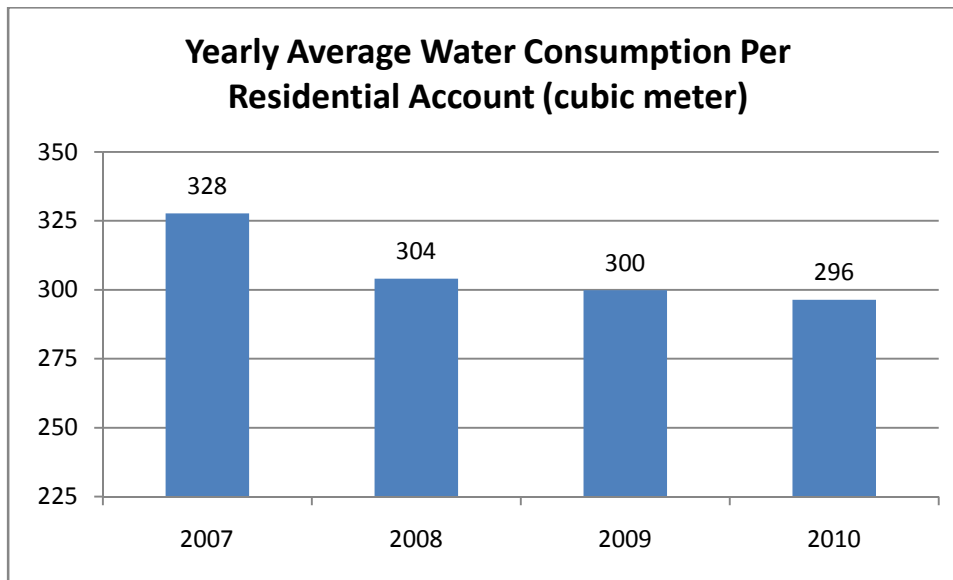
**2010 Drinking Water System Information:**

The Town of Markham system is strictly a distribution system. We do not operate any treatment plants and therefore the rated capacity of our system as requested by the MOE is not applicable. The Region of York receives treated water from the City of Toronto and the Region of Peel, stores and supplies it to various municipalities including Markham through trunk watermain from York and Toronto. The Town of Markham purchases its water entirely from the Region of York, and distributes this water to its residents through metered connections.

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### Water Supplied During 2010:

The Town of Markham consumed 31,315,130m<sup>3</sup> of water over 365 days in 2010. This amounts to an average of 2,609,594 m<sup>3</sup>/ month. In Markham 67.1% of water (21,020,233 m<sup>3</sup>) is consumed by our 303,000 residents at a rate of 190 l/person/day (0.190 m<sup>3</sup>/person/day). The additional 32.9% (10,294,897 m<sup>3</sup>) of water is consumed by our industrial, commercial and institutional clients.



### Drinking Water Quality Sampling Results:

Ontario's Drinking Water Systems Regulation (O.Reg.170/03) requires all drinking water system owners to collect and test a minimum prescribed number of representative water quality samples. It further requires that drinking water system owners prepare an annual report (in MOE format) on the operation and the quality of drinking water within their jurisdictional boundaries. Markham Waterworks Department has complied with this requirement.

During the period January 1, 2010 to December 31, 2010, the total number of water samples collected and tested by Waterworks Operators was 9,727. These samples are tested for the presence of bacteria (*Escheria coli*, Total Coliforms, and Heterotrophic Plate Count), for chemical analysis (Trihalomethanes (THM), Lead (Pb), Nitrate & Nitrite, Sodium, Fluoride and Organic and Inorganic chemical scans) and for chlorine residuals as required.

For the calendar year January 1, 2010 to December 31, 2010; an annual regulatory report was prepared (MOE format) in January 2011 on the Markham Water Distribution System and is enclosed as Attachment "A". This report will be posted prior to Feb. 28, 2011 as required by the Regulation. In this report, we are detailing the eight (8) adverse sampling results/incidents which are summarized below:

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In 2010, there were five (5) reports of adverse water quality incidents (out of 9,727 samples) which did not meet the Ontario's Drinking Water Systems Regulation (O. Reg. 170/03) required parameters with respect to microbiological indicators.

In additional, there were three (3) adverse water quality incidents of on-site observations as a result of severe watermain break conditions.

Markham is conservative and exceeds the required number of samples tested for microbiological parameters every week during our regular sampling process and by taking additional samples following every watermain repair, regardless of severity. This is necessary to enable faster response to potential adverse conditions, should such a situation arise.

#### Adverse Water Quality – Presence of Bacteria

Of the 2,524 samples tested for microbiology during 2010 on the drinking water system as part of our regular sampling, only five (5) samples detected the presence of coliforms which led to four (4) separate adverse water quality incidences. The detection of these coliforms in water samples is considered to be an indicator of adverse water quality.

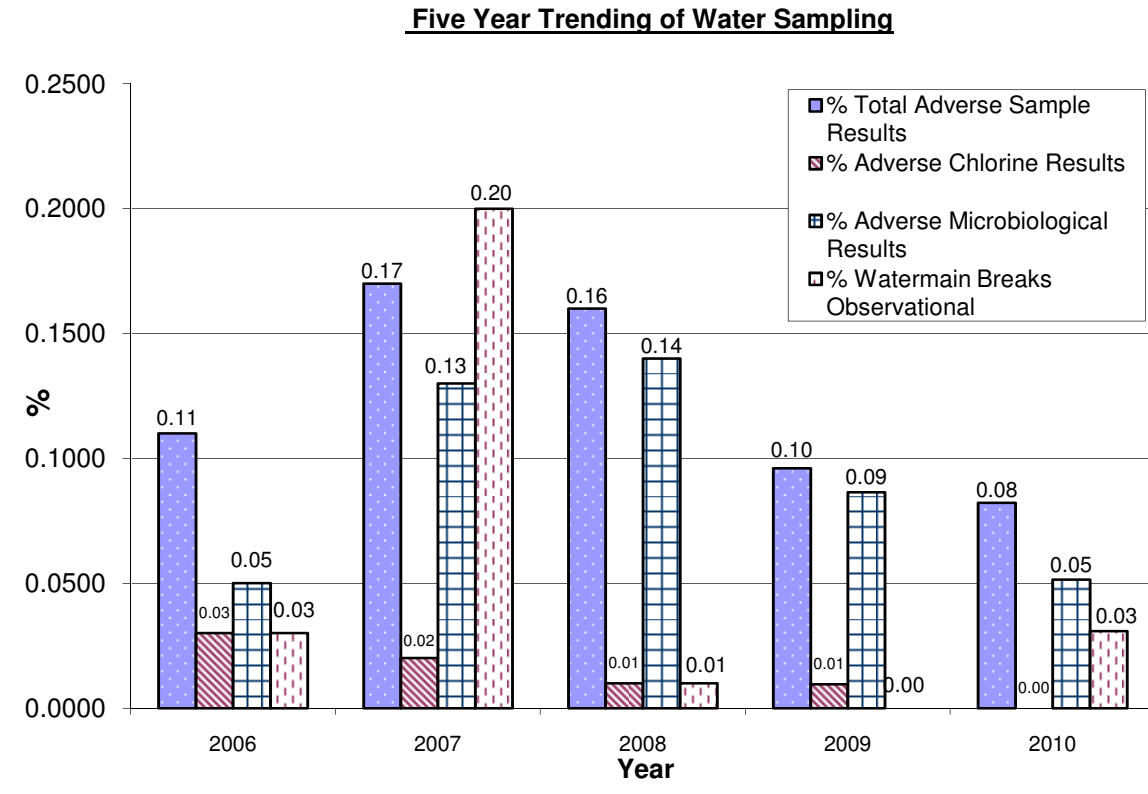
Upon being notified by the York-Durham Regional Environmental Lab (YDREL) that a given sample did not meet the water quality regulations for bacteria, corrective action was immediately initiated by Waterworks. Waterworks staff immediately notified the York Region Medical Officer of Health (MOH) and the MOE, the affected parts of the water distribution system were flushed and samples were taken at the affected sites, as well as at upstream and downstream locations, until satisfactory results were achieved. Markham's past experience has been that the bacterial presence in water samples was a result of external influences rather than being caused by the water supply itself.

#### Adverse Water Quality – On-site Observation

For the three (3) on-site observation incidents (during severe watermain break occurrences) reported as an adverse results, notification was sent by Waterworks to both the MOH and the MOE. The watermain break was repaired, the system was then flushed until acceptable chlorine residuals were established and a water sample was taken and tested for microbial contamination following the repair of the break.

As part of our due diligence, Markham proactively reports severe watermain breaks to the MOE and the MOH when water directed to the public may have adverse properties as a result of the watermain break. A severe watermain break is created by the collapse of the pipe wall resulting in entry of dirt in the watermain. Further, following every watermain repair, regardless of its severity, Waterworks initiates a procedure to test a water sample for microbial contamination.

### 5 Year Trending of Water Sampling:



### Conclusions:

The drinking water distributed to the Town of Markham residents in 2010 continues to be of the highest 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 excellent water quality.

### Attachment A: 2010 Annual Regulatory Water Quality Report

The format for the Annual Detailed Regulatory Water Quality Report intended to be made public on or before February 28, 2011 was established by the Ministry of the Environment.

This report was prepared in January 2011. The contents include:

1. A brief description of the drinking water system.
2. A description of where the report will be located and made available to the public.
3. A summary of water quality testing results for microbiological, inorganic chemical, and organic chemical parameters.
4. A summary of adverse water quality reports.
5. Identification of the laboratory that Markham is using for regulatory testing

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(York-Durham Regional Environmental Laboratory).

The Town of Markham through posting this information on the Town website and providing a hard copy at the Contact Centre has met the Regulation 170/03 water quality reporting submission dates and requirements.

**FINANCIAL CONSIDERATIONS AND TEMPLATE: (external link)**

Not Applicable

**ENVIRONMENTAL CONSIDERATIONS:**

Not Applicable

**ACCESSIBILITY CONSIDERATIONS:**

Not Applicable

**ENGAGE 21<sup>ST</sup> CONSIDERATIONS:**

The 2010 Annual Water Quality Report on the drinking water system meets legislative requirements and is consistent with the Town's corporate goals of Infrastructure Management and Quality Community.

These goals enhance several key Waterworks service delivery components:

- Proactive and preventative strategies to identify and manage risks to public health;
- Continuous Improvement of Waterworks activities and service delivery;

**BUSINESS UNITS CONSULTED AND AFFECTED:**

Not Applicable

The undersigned represent the Top Management of Town of Markham's Drinking Water Distribution System, and by signing below the Top Management of the Operating Authority has reviewed the deficiencies, decisions and action items identified in the Management Review, and hereby communicating these results to the Owner.

**RECOMMENDED BY:**

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Karen Dennison, P. Eng.  
Acting General Manager, Waterworks

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Peter Loukes, P. Eng.  
Director, Operations

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Brenda Librecz  
Commissioner, Community and Fire Services

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John Livey  
CAO, Town of Markham

**ATTACHMENTS:**

Attachment “A”- 2010 Annual Regulatory Water Quality Report.