



2016 Annual Water Quality Summary Report



This Report provides a summary of the performance of the Newmarket Water Distribution System (DWS 260003188) for the period of 1 January 2016 – 31 December 2016. Please note that this report has been created with the best available information at the time of publication, and that every reasonable effort has been made to ensure the accuracy of this report.

2016 Annual Water Quality Summary Report

NEWMARKET WATER DISTRIBUTION SYSTEM

Executive Summary

Town of Newmarket Public Works Services, under the Development and Infrastructure Services Commission of the Corporation of the Town of Newmarket (“the Town”, “our”) delivers drinking water to its residents’ through the Newmarket WDS. The Town acts as both the Owner and Operating Authority for the Newmarket WDS (*DWS 260003188*).

During the period covered by this report, the Newmarket WDS consisted of approximately:

- 25,187 residential and 837 commercial metered water service connections
- 306 kilometers of watermain
- 2,713 mainline valves
- 2,348 fire hydrants
- A population of 79,978 (2011 Census)

The Newmarket WDS is classified as a **Class 1 Large Municipal Residential System** by the Ministry of the Environment and Climate Change (MOECC), under regulation of the *Safe Drinking Water Act, 2002*.

In 2016, the Newmarket WDS consisted of 3 pressure districts/zones (East, Central, and West) that ranged in pressure from approximately 40 psi – 100 psi. We also maintained 2 Pressure Regulating Valves, which are on the Leslie St 750mm watermain from Aurora into the Copper Hills area.

The Town’s water operators, certified by the Province of Ontario through the MOECC, maintained and operated our WDS. Some of the typical operational activities performed by staff include, but are not limited to:

- Water quality sampling/monitoring
- System flushing
- Infrastructure locates, repairs
- Valve exercising/inspections
- Fire hydrant maintenance/inspections
- Customer Service calls re: WDS quality

The Newmarket WDS is required by law to comply with the MOECC *Safe Drinking Water Act, 2002* (SDWA) and all regulations contained therein (i.e. *O. Reg. 170/03*), as well as all applicable Federal, Provincial, and/or Municipal legislation. Our Water Quality Sampling Strategy/Plan annually exceeds the requirements of *O. Reg. 170/03*.

The provision of safe drinking water is our top priority.

Our WDS is routinely monitored and tested to ensure that the water we provide remains safe for our residents and business owners, and that our infrastructure is sound. In 2016, water samples were collected at locations throughout the WDS using designated sampling stations. This practice assured that samples were collected at points that represented the entire distribution system.

All samples collected were analyzed in the field for (at a minimum) disinfectant residual (free, total, and combined chlorine) by our highly trained operators, and submitted to a provincially accredited laboratory for analysis. In 2016, the York-Durham Regional Environmental Laboratory (located in Pickering, Ontario), an accredited laboratory registered with the Canadian Association for Laboratory Certification Inc. (CALA), was under contract with the Town for the analysis of water samples.

From 1 January 2016 to 31 December 2016, the Operating Authority for the Newmarket WDS reported 123 Adverse Water Quality Incidents (AWQIs) to the MOECC and local MOH for the Newmarket WDS.

Of these:

- 113 were due to adverse (low) combined chlorine residual
- 1 for sodium above regulated levels (x4 locations)
- 9 for Total Coliform

In 2016, in an effort to address the ongoing challenges in the Newmarket WDS in regards to disinfectant residual decay, we continued to work collaboratively with local area municipalities (LAMs), and the Region of York. In addition, we continued to employ the services of industry experts and consultants such as Confluence Engineering, LLC, and Stantec Consulting to assist with data analysis, system maintenance recommendations, flow monitoring, and modelling water quality trends/scenarios.

Where does our water come from?

The Region of York (“the Region”) is responsible for the supply, treatment, storage, and transmission of potable water to the Town of Newmarket WDS. All supplied water was tested against regulatory standards. Continuous monitoring by the Region via online monitoring systems (SCADA) monitored the quality of water being provided to our municipality at all times. Six Regionally-owned/operated/maintained storage tanks located throughout the distribution system provided additional storage, pressure, and fire protection. The Region also publishes an annual report (available at www.york.ca) with respect to water quality of both source and treated waters.

The Newmarket WDS is supplied with both ground source (underground aquifer) and surface (lake-based) waters. The purpose of blending these two sources is to decrease the demand on the aquifer, as well as providing additional security by having a second supply source to support the future development of our community.

From 1 January 2016 – 28 April 2016, the supply of ground water to the Newmarket WDS originated primarily at five wells located along the Yonge Street corridor (numbered 13 & 16, 1 & 2, and 15) - as well as supply from additional wells located in the community of Queensville, and blended water from the Town of Aurora (wells/surface water). These wells are all owned, operated, and maintained by the Region of York. In 2016, as a part of ongoing collaborative research in regards to water quality optimization, a trial was put into place whereas the Newmarket wells were placed into “standby” status. Essentially, from 1 May 2016 to 31 December 2016, the Newmarket WDS was not receiving water from the Newmarket wells. Therefore, our sources were: blended water from Aurora, and surface water from Lake Ontario (via Peel Region).

The Region supplements the ground water supply with surface water from Lake Ontario via Peel Region. This water is conveyed through four connections with the Town of Aurora located along our Southern boundary (Bathurst Street, Yonge Street, Bayview Avenue, and Leslie Street). Five interface connections owned and operated by the Region, with the Town of East Gwillimbury have also been established to provide water to their drinking water systems (Harry Walker Parkway, Davis Drive, Yonge Street-east side, Yonge Street-west side, and Woodspring Avenue).

Treatment of the water supplied to the Newmarket WDS by the Region is through the process of chloramination (the addition of chlorine and ammonia).

As the Operating Authority, the Town of Newmarket undergoes an annual inspection of our WDS and all associated practices by an MOECC Drinking Water Inspector/Officer. This annual inspection checks that we are in compliance with regulatory requirements. **For 2016, an unannounced inspection occurred 20 December 2016 (completed 11 January 2017) with a resulting final rating of 89.90%**

The MOECC mandates the implementation of an Operational Plan under the Drinking Water Quality Management Standard (DWQMS) for all DWS in the Province of Ontario. The Operational Plan serves to provide an understanding of the DWS, the responsibilities of the owner and operator (operating authority) of the water system, and a commitment to the provision of safe drinking water, which in turn allows us to plan, implement, check, and continually improve our system. Newmarket’s Operational Plan was created internally and exceeds minimum requirements laid out by the MOECC. In 2016, our Operational Plan was audited both internally and externally, and re-accredited by SAI Global (third party auditors) under the requirements of the SDWA. Newmarket’s Operational Plan is available to view upon request from the Town of Newmarket Operations Centre at 1275 Maple Hill Court.

The Town continues to meet the Quality Management System Requirements as required under the SDWA.

In 2016, the Town maintained the DWS in a fit state of repair and followed best industry practices during the repair, inspection, and maintenance of the system and its components.

The Town has completed this Annual Water Quality Summary Report to satisfy regulatory requirements under the MOECC SDWA, O. Reg. 170/03. For more information, please visit www.newmarket.ca or call The Town of Newmarket at 905-895-5193.

Any questions related to the Newmarket Water Distribution System, this report, or water quality may be directed to the Overall Responsible Operator (ORO), Jeff Ellis (Supervisor, Water/Wastewater Services) at our Operations Centre 905-953-5300, ext. 2564, or via email at jellis@newmarket.ca.

**The provision of
safe drinking water
is our top priority.**



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Definitions

“**Applicable Legislative and Regulatory Requirements**” refers to the *Safe Drinking Water Act, 2002*, the *Ontario Water Resources Act*, and all regulations and instruments issued under these Acts which are associated with drinking water.

“**Audit**” refers to a systematic and documented verification process that involves objectively obtaining and evaluating documents and processes to determine whether a Quality Management System conforms to the requirements of the Standard.

“**Competency**” refers to a combination of both observable and measurable knowledge, skills, and abilities which are required for a person to carry out assigned responsibilities.

“**Consumer**” is the drinking water system end user.

“**Corrective Action**” refers to an action to eliminate the cause of a detected nonconformity of the QMS with the requirements of the DWQMS or other undesirable situation.

“**Drinking Water Quality Management Standard (DWQMS)**” The DWQMS is a Ministry of Environment Standard which specifies the minimum requirements for the Quality Management System of an Operating Authority for a subject system. It facilitates the Operating Authority’s ability to consistently produce and/or deliver drinking water that meets applicable legislative, regulatory and Owner requirements, and enhances consumer protection through the effective application and continual improvement of the Quality Management System.

“**Municipal Drinking Water System**” refers to a large municipal residential system or a small municipal residential system as defined in O. Reg. 170/03.

“**Operating Authority**”, in respect of a Subject System, the person or entity that is given responsibility by the owner for the operation, management, maintenance, or alteration of the Subject System.

“**Operator**” is a person(s) or contractor employed by the Town of Newmarket who has direct influence on the water distribution system and water quality.

“**Overall Responsible Operator (ORO)**” refers to the Overall Responsible Operator as appointed by the Owner and Top Management.

“**Owner**”, in respect to a drinking-water system, refers to the Corporation of the Town of Newmarket, represented by the Mayor and Council.

“**Public**” refers to the subject system consumers and stakeholders.

“**Quality Management System (QMS)**” is a system to establish policy and objectives, and to achieve those objectives direct and control an organization with regard to quality.

“Swabbing” involves scouring the watermain with foam swabs and high velocity water. These swabs are injected at a hydrant and pushed along the watermain to be removed further down the main through another fire hydrant. The fast moving water scours and cleans the mains. The hydrants are left open until the water runs clear. This helps to keep your water clean, fresh and flowing freely.

“Uni-Directional Flushing” (UDF) refers to the method of ‘cleaning’ watermains through a network of flushing sequences in which the water is discharged from a fire hydrant. A UDF program involves closing valves in a specific sequence to create water movement in one direction while opening specific hydrants at the end of that sequence. This technique allows higher water flow velocities by isolating certain sections of water mains. The higher water velocity allows for better scouring of the pipes and will use on average 40% less water than conventional flushing methods. Flushing pipes at higher velocities will dislodge and remove mineral deposits, biofilm and sediment that accumulate in the water mains.

Introduction

PURPOSE

The purpose of this Annual Water Quality Summary report is to provide information to our consumers and stakeholders as well as to satisfy the regulatory requirements of the *Safe Drinking Water Act, 2002* including the *Drinking Water Quality Management System (DWQMS)*, reports to Owner, and regulatory reporting required under *O. Reg. 170/03*. This report is a compilation of information that documents the means of ensuring the ongoing delivery of safe drinking water to our consumers in the Town of Newmarket.

SCOPE

This Annual Water Quality Report includes information pertaining to the Town of Newmarket's WDS for the period of 1 January 2016 to 31 December 2016.

We are bound by Provincial law to report this information to the following:

1. The Drinking Water System Owners (The Corporation of the Town of Newmarket, Mayor and Council)
2. Top Management (Director, Public Works Services and Manager, Water/Wastewater Services)
3. The public

Newmarket's Quality Management Policy

"The Town of Newmarket Water Distribution System is recognized by the Ministry of Environment & Climate Change (MOECC) as a Large Municipal Residential Drinking Water System. We at the Town of Newmarket are committed to the consistent delivery of safe drinking water through compliance with applicable legislative and regulatory requirements. We will strive to achieve this goal through the implementation, maintenance, and continuous improvement of the Quality Management System.

The Town of Newmarket also pledges to ensure open communication, both with public, as well as staff concerning all policies, procedures, and documentation pertaining to drinking water quality.

The Quality Management Policy applies to all municipal management and staff, and is posted at the municipal offices, operations centre and on the municipal website."

7 December 2016

Report Requirements under the Ontario Safe Drinking Water Act, 2002

This report satisfies the requirements of the MOECC's Safe Drinking Water Act (SDWA), 2002 and Ontario Regulation (O. Reg.) 170/03. These requirements are outlined below.

Section 11, Annual Reports which include:

- a brief description of the Drinking Water System
- a summary of the most recent water test results required under O.Reg. 170/03
- a summary of adverse test results and other issues reported to the Ministry including corrective actions taken
- a description of the major expenses incurred to install, repair, or replace required equipment/infrastructure
- the locations where this report is available for inspection

And;

Schedule 22, Summary Report which includes:

- a list of the requirements of the SDWA, the regulations, the system's approval, Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), and any orders applicable for the system that were not met at any time during the period covered by the report
- for each requirement that was not met, the duration of the failure and the measures that were taken to correct the failure

This Annual Water Quality Summary report satisfies the requirements for the Newmarket WDS. Copies are available for viewing at:

- Newmarket Operations Centre, 1275 Maple Hill Court
- Newmarket Municipal Offices, Customer Service Counter, 395 Mulock Drive
- online at www.newmarket.ca

NOTICE:

Please note that every reasonable effort has been made to ensure the accuracy of this report. This report is published with the best available information at the time of publication.

Newmarket Water Distribution System Overview

Town of Newmarket Public Works Services, as part of the Development and Infrastructure Services Commission of the Corporation of the Town of Newmarket (“the Town”, “our”) delivers drinking water to its residents’ through the Newmarket WDS. The Town acts as both the Owner and Operating Authority for the Newmarket WDS (*DWS 260003188*).

During the period covered by this report, the Newmarket WDS consisted of approximately:

- 25,187 residential and 837 commercial metered water service connections
- 306 kilometers of watermain
- 2,713 mainline valves
- 2,348 fire hydrants
- A population of 79,978 (2011 Census)

The Newmarket WDS is classified as a Large Municipal Residential WDS, and operates under the provincially regulated requirements of the *Safe Drinking Water Act, 2002* which may be found at <http://www.e-laws.gov.on.ca>.

In 2016, our DWS operated under:

- Municipal Drinking Water Licence (MDWL) 124-101 (Issue 4)
- Drinking Water Works Permit (DWWP) 124-201 (Issue 2)

The MDWL and the DWWP describe system-specific requirements that are supplementary to provincial regulations and act as licences for water distribution systems. These documents outline specific conditions and requirements regarding operation, maintenance and upgrades that are required by the system and considered regulatory in nature. These documents are available by request for viewing at the Newmarket Operations Centre, 1275 Maple Hill Court.

In 2016, the Newmarket WDS consisted of 3 pressure districts/zones (East, Central, and West) that ranged in pressure from approximately 40 psi – 100 psi. We also maintained 2 Pressure Regulating Valves, which are on the Leslie St 750mm watermain from Aurora into the Copper Hills area.

The Town’s water operators, certified by the Province of Ontario through the MOECC, maintained and operated our WDS. Some of the typical operational activities performed by staff include, but are not limited to:

- Water quality sampling/monitoring
- System flushing
- Infrastructure repair
- Locates of municipal infrastructure
- Valve exercising/inspections

- Fire hydrant maintenance/inspections
- Customer Service calls re: WDS quality

The Newmarket WDS is required by law to comply with the MOECC *Safe Drinking Water Act, 2002* (SDWA) and all regulations contained therein (i.e. *O. Reg. 170/03*), as well as all applicable Federal, Provincial, and/or Municipal legislation. Our Water Quality Sampling Strategy/Plan annually exceeds the requirements of *O. Reg. 170/03*.

The provision of safe drinking water is our top priority.

Through our vigorous water quality monitoring/sampling programmes, our WDS is monitored to ensure that the water we provide remains safe for our residents and business owners, and that our infrastructure is sound. In 2016, water samples were collected at various locations throughout the WDS using designated sampling stations. This practice assured that samples were collected at points that represented the entire distribution system.



All samples collected were analyzed in the field for (at a minimum) disinfectant residual (free, total, and combined chlorine) by our highly trained operators, and submitted to a provincially accredited laboratory for analysis. In 2016, the York-Durham Regional Environmental Laboratory (located in Pickering, Ontario), an accredited laboratory registered with the Canadian Association for Laboratory Certification Inc. (CALA), was under contract with the Town for the analysis of water samples.

In 2016, under our regulatory sampling plan, approximately 3,700 water samples were analyzed for microbiological and chemical parameters from key locations throughout our WDS. These samples were all collected by provincially certified operators and submitted to accredited, licenced laboratories for analysis. Please refer to tables 4 and 5 (pages 22-24) for a detailed breakdown of results.

From 1 January 2016 to 31 December 2016, the Operating Authority for the Newmarket WDS reported **123 Adverse Water Quality Incidents** (AWQIs) to the MOECC and local MOH for the Newmarket WDS.

Of these:

- 113 were due to adverse (low) combined chlorine residual
- 1 for sodium above regulated levels (x4 locations)
- 9 for Total Coliform

Corrective actions were initiated for all AWQIs as per mandated requirements under O. Reg. 170/03, and resolved without incident.

In all cases, the drinking water supplied to the public was confirmed safe.

In 2016, in an effort to address the ongoing challenges in the Newmarket WDS in regards to disinfectant residual decay, we continued to work collaboratively with local area municipalities (LAMs), and the Region of York. In addition, we continued to employ the services of industry experts and consultants such as Confluence Engineering, LLC, and Stantec Consulting to assist with data analysis, system maintenance recommendations, flow monitoring, and modelling water quality trends/scenarios.

Where does our water come from?

The Region of York (“the Region”) is responsible for the supply, treatment, storage, and transmission of potable water to the Town of Newmarket WDS. All supplied water was tested against regulatory standards. Continuous observation by the Region via online monitoring systems (SCADA) observed the quality of water being provided to our municipality at all times. Six Regionally-owned/operated/maintained storage tanks located throughout the distribution system provided additional storage, pressure, and fire protection. The Region also publishes an annual report (available at www.york.ca) with respect to water quality of both source and treated waters.

The Newmarket WDS is supplied with both ground source (*underground aquifer*) and surface (*lake-based*) waters. The purpose of blending these two sources is to decrease the demand on the underground aquifer as well as providing additional security by having a second supply source to support the future development of our community.

From 1 January 2016 – 28 April 2016, the supply of ground water to the Newmarket WDS originated primarily at five wells located along the Yonge Street corridor (numbered 13 & 16, 1 & 2, and 15) - as well as supply from an additional wells located in the community of Queensville, and blended water from the Town of Aurora (wells/surface water). These wells are all owned, operated, and maintained by the Region of York. In 2016, as a part of ongoing collaborative research in regards to water quality optimization, a trial was put into place whereas the Newmarket wells were placed into “standby” status. Essentially, **from 1 May 2016 to 31 December 2016, the Newmarket WDS was not receiving water from the Newmarket wells.** Therefore, our sources were: blended water from Aurora, and surface water from Lake Ontario (via Peel Region).

The Region supplements the ground water supply with surface water from Lake Ontario via Peel Region. This water is conveyed through four connections with the Town of Aurora located along our southern boundary (Bathurst Street, Yonge Street, Bayview Avenue, and Leslie Street). Five interface connections owned and operated by the Region, with the Town

of East Gwillimbury have also been established to provide water to their drinking water systems (Harry Walker Parkway, Davis Drive, Yonge Street-east side, Yonge Street-west side, and Woodspring Avenue).

Treatment of the water supplied to the Newmarket WDS by the Region is through the process of chloramination (the addition of chlorine *and* ammonia).

How much water did Newmarket buy, sell, or flush in 2016....?

From 1 January 2016 – 31 December 2016, 8,194,733 m³ of water was purchased from the Region of York for the Newmarket WDS. Of this total amount purchased, the Town of Newmarket sold 6,940,811 m³ to its residents and businesses; therefore, the total amount of unmetered water was 1,253,922 m³. Of this, approximately 314,589 m³ can be broken down further as follows:

- | | |
|--|-----------------------|
| • Watermain swabbing (cleaning) | 31,154 m ³ |
| • Uni-directional flushing of watermains | 86,338 m ³ |
| • Water flushed for sampling programmes | 53,762 m ³ |
| • Temporary autoflushers | 45,622 m ³ |
| • Permanent autoflushers | 11,421 m ³ |
| • Known leakage attributed to watermain breaks | 37,122 m ³ |

From 1 January 2016 to 31 December 2016, the Town logged 890 water related inquiries, questions and/or concerns (a total of 0.91% of all customer contacts recorded).

The concerns from customers were in relation to such topics as; colour, taste, and/or odour in relation to their drinking water. Overall, customers are satisfied with level of customer service they receive from our department. In our last public survey, customer service in our department ranked at 79%. This was the highest of all departments in the Public Work Services Commission. The majority of concerns that we receive are related to:

- general taste/odour complaints (musty, metallic, sulphurous/"rotten egg")
- amount of water being flushed
- discolouration
- water pressure (low/high/no water)
- swabbing programme

As the Operating Authority, the Town of Newmarket undergoes an annual inspection of our WDS and all associated practices by a Provincial Drinking Water Inspector/Officer from the MOECC. This annual inspection checks that we are in compliance with regulatory requirements. For 2016, an unannounced inspection occurred 20 December 2016 (completed 11 January 2017) with a resulting **final inspection rating of 89.90%**.

DWQMS

The MOECC mandates the implementation of an Operational Plan under the Drinking Water Quality Management Standard (DWQMS) for all DWS in the Province of Ontario. The Operational Plan serves to provide an understanding of the drinking water system, the responsibilities of the owner and operator (operating authority) of the water system, and a commitment to the provision of safe drinking water, which in turn allows us to plan, implement, check, and continually improve our system. Newmarket's Operational Plan was created internally under minimum requirements laid out by the MOECC. In 2016, it was audited both internally and externally, and re-accredited by SAI Global (third party auditors) under the requirements of the SDWA. Newmarket's Operational Plan is available to view upon request from the Town of Newmarket Operations Centre at 1275 Maple Hill Court.

The Town continues to meet the Quality Management System Requirements as required under the SDWA.

In 2016, the Town maintained the DWS in a fit state of repair and followed best industry practices during the repair, inspection, and maintenance of the system.

Major Expenses

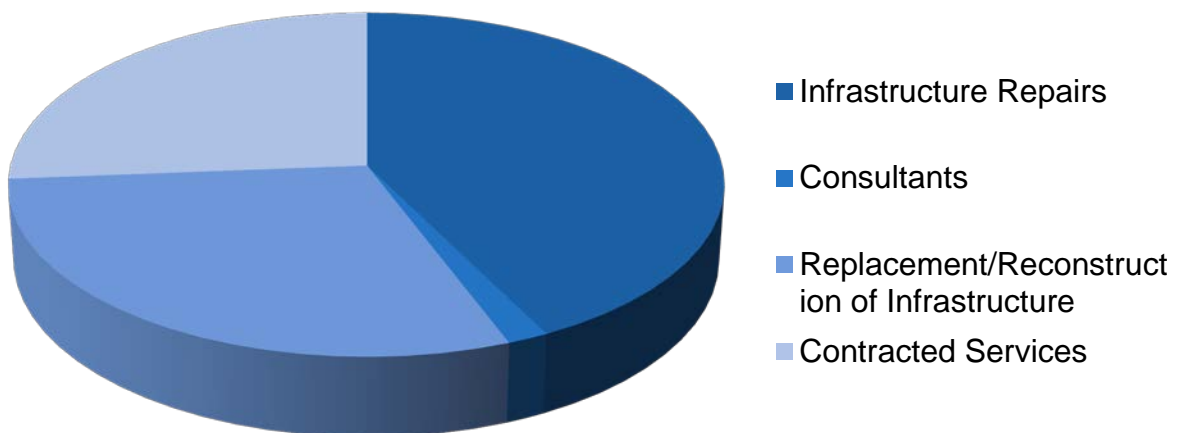
Each year, the Town incurs significant expenses in regards to the installation, repair, or replacement of equipment/infrastructure vital to the operation of the WDS.

These may include, but are not limited to:

- Replacement/Reconstruction of infrastructure
- Infrastructure Repairs
- Consultants
- Contracted Services
- Asset replacement (i.e. vehicles, specialty equipment, etc.)

The details of these items for the period of 1 January 2016 – 31 December 2016 are outlined below.

Figure 1: Major expenses related to the Newmarket Water Distribution System in 2016



INFRASTRUCTURE REPAIRS

Date	Address	Pipe Material	Pipe Size	Nature of Break	Apparent Cause
6 Jan 2016	109 Lorne Ave	Cast iron	150 mm	Circumference	Beam Failure/ Corrosion
19 Jan 2016	327 Burford St.	Ductile iron	200mm	Blow Hole	Corrosion/Bedding
19 Jan 2016	27 Huron Heights Dr.	Ductile iron	150mm	Circumference	Beam Failure/ Corrosion
20 Jan 2016 21 Jan 2016	171 Patterson St.	Ductile iron	250mm	Circumference	Beam Failure/ Corrosion
26 Feb 2016	796 Greenfield Cres.	Cast Iron	150mm	Circumference	Beam Failure/ Corrosion
07 Mar 2016	153 Cherrywood Dr.	Ductile iron	150mm	Circumference	Beam Failure/ Corrosion
31 Aug 2016	187 Harrison Dr.	Ductile iron	150mm	Blow hole	Corrosion/Bedding
22 Aug 2016	115 William Roe Blvd.	Ductile iron	300mm	Blow Hole	Corrosion/Bedding
29 Aug 2016	339 Ella Court		150mm	Circumference	Beam Failure/ Corrosion
11 Aug 2016	984 Gorham St.	Ductile iron	300mm	Blow Hole	Corrosion/Bedding
6 Oct 2016 7 Oct 2016	984 Gorham St.	Ductile iron	300mm	Cut out pipe - PVC	Corrosion/Bedding
25 Oct 2016	42 Newbury Dr.	Cast Iron	150mm	Circumference	Age
06 Nov 2016	981 Birchwood Dr.	Ductile iron	300mm	Blow Hole	Corrosion/Bedding
07 Nov 2016	915 Wayne Dr.	Ductile iron	200mm	Blow Hole	Pressure spike
07 Nov 2016	984 Gorham St.	Ductile iron	300mm	Blow Hole	Pressure spike
07 Nov 2016	17915 Leslie St.	Ductile iron	300mm	Blow Hole	Pressure spike
15 Dec 2016	22 Wilstead Dr.	Cast Iron	150mm	Crack	Beam Failure/ Corrosion

Date	Address	Pipe Material	Pipe Size	Nature of Break	Apparent Cause
03 Dec 2016	79 Alexander Rd.	Cast iron	200mm	Circumference	Beam Failure/ Corrosion
05 Dec 2016	361 Cloverdale Crt.	Cast Iron	150mm	Circumference	Beam Failure/ Corrosion
25 Dec 2016	173 William Roe Blvd.	Ductile iron	300mm	Blow hole	Corrosion/Bedding
14 Dec 2016	359 Simcoe St.	Cast Iron	150mm	8" split on top of pipe	Corrosion/Bedding
25 Dec 2016	359 Simcoe St.	Cast Iron	150mm	Holes/crack	Corrosion/Bedding

CONSULTANTS

In an effort to streamline operational efficiencies, and to optimize water quality, we continue to work collaboratively with local area municipalities (LAMs), and the Region of York. In addition, we continue to employ the services of industry experts and consultants to assist with data analysis/system maintenance recommendations, flow monitoring, and modelling water quality trends/scenarios. We have some of the industry’s leading experts, cutting edge technologies, and operations staff working together to come up with advanced operational strategies to assist us in our daily operations, and specific areas of challenge in regards to water quality.

In late 2015, York Region engaged Confluence Engineering Group LLC to complete a peer review of the work undertaken to date to assess distribution system practices and provide recommendations to manage residual loss in the distribution system. Confluence Engineering is a leading expert in North America on best practices for optimal distribution system water quality.

Confluence concluded that the key variables that are affecting distribution system water quality in the Town of Newmarket are source water, chemical stability, pipe conditions, and water age.

A comprehensive work plan commenced in April 2016 based on recommendations from the Confluence Engineering report.

Confluence recommended a comprehensive strategy with five main objectives to mitigate adverse chloramine residual incidents in the Town of Newmarket drinking water system, as follows:

- Clean the entire central pressure zone district of the Newmarket Distribution System to remove accumulated iron and biofilm

- Significantly reduce or eliminate the loading of iron and manganese from wells
- Raise the chloramine residual entering the Newmarket Distribution System to greater than 3.0 mg/L, with Ministry of the Environmental and Climate Change (MOECC) and York Region Public Health approvals
- Modify instrumentation to verify dosages and ratios at treatment plants
- Implement Diagnostic Surveillance and Monitoring Plan, and associated Coordinated Response Plans

The Town of Newmarket continues to work in partnership with York Region, local area municipalities, the local Medical Officer of Health, and the MOECC to provide the highest quality drinking water to our customers.

REPLACEMENT / RECONSTRUCTION

Replacement and reconstruction programmes are an integral part of annual infrastructure maintenance and an effective asset management program. An infrastructure review is to be conducted annually by the Director of Public Works Services, Manager of Water/Wastewater Services, and the Supervisor of Water/Wastewater Services.

Methods of determining infrastructure condition include:

- previous infrastructure review reports
- staff input
- MOECC compliance inspection reports
- water quality
- maintenance records
- break frequency
- infrastructure age
- customer complaints

The findings of this review are to be communicated to the Director of Engineering Services who will include any infrastructure deficiencies in the 10 year projections plan. Replacement of aging or deteriorating infrastructure is coordinated with road reconstruction projects. Priority is given to replacement or rehabilitation of any infrastructure that may jeopardize water quality. The infrastructure review shall be included in an annual report to Top Management and the Owner. The infrastructure review report shall be revisited and revised as necessary by management during the preparation of the proposed annual budget. In 2016, the most significant replacements/reconstructions were Forest Glen, and Arnold Crescent.

CONTRACTED SERVICES

In order to meet our levels of service, to save costs, and to ensure minimum maintenance standards are met, it is periodically necessary to hire qualified third party contractors. In 2016, some of the operations which were contracted out included, but were not limited to:

- hydrant inspections
- hydrant painting
- watermain flushing and swabbing

By bringing in this support, our department was able to more effectively meet the demands of our day-to-day operations and service levels.

Water Sampling Programmes

Regulatory Lead Sampling Programme

As per Section 15 of O. Reg. 170/03, under the SDWA, the Town of Newmarket WDS is mandated to participate in a community lead testing programme. This involves the sampling of a set number of residential locations, non-residential locations, and distribution system sampling points.

In 2013, lead sampling programs were conducted in compliance with Schedule 15.1 of O. Reg. 170/03 of the Safe Drinking Water Act. Sixteen (16) samples were taken and submitted to the York-Durham Regional Environmental Laboratory for analysis. Sample results ranged from between 0.0001mg/L-0.0005mg/L for distribution system samples. Due to sufficient evidence indicating that lead is not leaching from infrastructure in the Newmarket WDS, combined with a significant decline in volunteers for residential samples, the Corporation of the Town of Newmarket, on April 20, 2012, submitted a request for Regulatory Relief from Lead Sampling Requirements.

“Amendments to Ontario Regulation 170/03 (Drinking Water Systems) to reduce the potential for elevated levels of lead in drinking water at the tap came into effect on July 26, 2007. These amendments include mandatory community-wide testing for lead, notification of results from the community testing programme, and the development and implementation of corrosion control measures for lead reduction... Under Part V (municipal systems) and Part VI (regulated non-municipal systems) of the Safe Drinking Water Act, 2002, the Director, through conditions of an approval, may provide relief for a drinking water system from a regulatory requirement related to the treatment of water, the sampling, testing or monitoring of water quality, or the reporting of the results. As outlined in the December 17, 2007 letter to municipal and non-municipal residential drinking water system owners, the ministry will consider granting regulatory relief to owners who, despite best efforts, are not able to secure the required number of sampling locations.”

Section 38 (Municipal Drinking Water Systems), Guide for Requesting Regulatory Relief from Lead Sampling Requirements in Schedule 15.1 of Regulation 170/03, SDWA, 2002

The application for relief was approved by the Ontario Ministry of the Environment, with the below table updated to illustrate the Newmarket WDS new regulatory requirements (effective until October 15, 2016).

Table 1: Number of Sampling Points Required For Compliance with Schedule 15.1 of O. Reg. 170/03

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Number of Sampling Points in Plumbing that Serves Private Residences	Column 4 Number of Sampling Points in Plumbing that Does Not Serve Private Residences	Column 5 Number of Sampling Points in Distribution System
Newmarket Distribution System	260003188	40	4	8

Under the Corporation of the Town of Newmarket’s Drinking Water Licence, we were granted “Relief from Regulatory Requirements” in regards to lead sampling (Table 2) for the sampling periods as outlined in the Table 3: Sampling Periods for Regulatory Relief from Lead Sampling.

Table 2: Number of Sampling Points Required for Relief from Regulatory Requirements

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Number of Sampling Points in Plumbing that Serves Private Residences	Column 4 Number of Sampling Points in Plumbing that Does Not Serve Private Residences	Column 5 Number of Sampling Points in Distribution System
Newmarket Distribution System	260003188	10	0	8

Table 3: 2016 Lead Sampling Periods

Column 1 Drinking Water System or Drinking Water Subsystem Name	Column 2 DWS Number	Column 3 Sampling Period
Newmarket Distribution System	260003188	December 15, 2015 to April 15, 2016 June 15, 2016 to October 15, 2016 December 15, 2016 to April 15, 2017

In the event O. Reg. 170/03 is amended to require fewer sampling locations than specified under the relief granted, then the regulation shall prevail.

2016 Water Sampling Summary

In 2016, water samples were collected in accordance with Newmarket’s water sampling plan, which was developed according to O. Reg. 170/03 under the *Safe Drinking Water Act, 2002*. All sampling information (chain of custody forms, sample results, chlorine residual data) is kept in the office of the Compliance Coordinator. The laboratory sent all sampling results to the Supervisor of Water/Wastewater, Compliance Coordinator, and Water/Wastewater Administrative Assistant.

Routine residual monitoring results are entered into external information tracking/reporting software (WaterTrax).

Table 4: Microbiological Parameters

Parameter	Regulated Limit	Total no. of Samples Tested	Total no. of Detectable Results	Samples Exceeding Limit	Reported Exceedances	Range of Results
Heterotrophic Plate Count (HPC)	*no current standards	666	197	16	0	<1 – 4,200 CFU/mL
Total Coliforms (MPN/PA)	0 MAC	1316	6	6	6	A MPN/100mL - P MPN/100mL
Escherichia E. Coli/E. (MPN/PA)	0 MAC	1316	0	0	0	A MPN/100mL

Table 5: Organic/Inorganic Parameters

Parameter	Regulated Limit	Total no. of Samples Tested	Total no. of Detectable Results	Samples Exceeding Limit	Reported Exceedances	Range of Results
Alkalinity (total as CaCO3)	Operational Guideline: 30-500mg/L	18	18	0	0	99.9 -198 mg/L
Ammonia (free, as N)	*no current standards	2	2	0	0	7 – 8 mg/L
Ammonia (total, as N)	*no current standards	18	17	0	0	<0.04 – 0.43 mg/L
Bromide		52	0	0	0	<0.008 - <0.02 mg/L
Bromodichloromethane	*no current standards	16	16	0	0	0.0024 - 0.083 mg/L
Bromoform	(one of the 4 THMs that make up Total THMs)	16	15	0	0	<0.0002 - 0.0007 mg/L
Calcium	*no current standards	18	18	0	0	35.3 – 47.7 mg/L
Chloride	Aesthetic Object (AO) 250 mg/L	18	18	0	0	10.7 – 41.8 mg/L

Parameter	Regulated Limit	Total no. of Samples Tested	Total no. of Detectable Results	Samples Exceeding Limit	Reported Exceedances	Range of Results
Chloramine (as combined chlorine)	*0.25 mg/L *(if combined chlorine is <0.25mg/L but free chlorine is ≥0.05 mg/L, residual is not considered to be adverse)	4,740	4,737	496	*449	-0.04 – 2.94 mg/L
Chloroform	(one of the 4 THMs that make up Total THMs)	16	16	0	0	0.0032 - 0.0153 mg/L
Dibromochloromethane	(one of the 4 THMs that make up Total THMs)	16	16	0	0	0.0011 - 0.0053 mg/L
Fluoride	1.5 mg/L	18	18	0	0	0.115 - 0.490 mg/L
Hardness (total, as CaCO₃)	Operational Guideline 80-100mg/L	18	18	18	0	125 – 190 mg/L
Lead (total)	0.01 mg/L	18	1	0	0	<0.0005 – 0.0007 mg/L
Magnesium (total)	*no current standards	18	18	0	0	9.0 – 18.7 mg/L
Nitrate (as N)	10 mg/L (as Nitrogen)	18	18	0	0	<0.006 – 0.175 mg/L
Nitrate + Nitrite (as N)	10 mg/L (as Nitrogen)	18	18	0	0	0.010 – 0.541 mg/L
Nitrite (as N)	10 mg/L (as Nitrogen)	18	7	0	0	<0.008 – 0.039 mg/L
o-Phosphate (as P)	*no current standards	18	0	0	0	<0.004 - <0.005 mg/L
pH (*field tested)	Operational Guideline 6.5 – 8.5	2,862	2,862	0	0	6.00 – 9.17

Parameter	Regulated Limit	Total no. of Samples Tested	Total no. of Detectable Results	Samples Exceeding Limit	Reported Exceedances	Range of Results
Potassium (total)	*no current standards	18	18	0	0	1.2 – 1.7 mg/L
Sodium (total)**	Aesthetic Objective (AO) 200 mg/L Indicator of adverse quality 20 mg/L	18	18	7	1	12.7 – 24.6 mg/L
Sulphate	Aesthetic Objective (AO) 500 mg/L	18	18	0	0	3.12 – 29.1 mg/L
Total Trihalomethanes (THMs)*	0.100 mg/L	16	16	0	0	0.0089 – 0.0257 mg/L

*Effective January 1, 2016, the MOECC implemented new sampling, testing, and reporting requirements for THMs. Laboratories are no longer responsible for calculating DWS' running annual average (RAA) of THM results. All DWS are now responsible for calculating the RAA and reporting it to the MOECC. All DWS are required to calculate a new RAA and notify existing authorities of any adverse test results within seven days of the end of every calendar quarter. We will no longer be required to make contact with existing authorities (i.e. MOH, MOECC SAC) by telephone for a THM report. Resamples will no longer be required as part of the prescribed corrective actions for adverse results for THMs because multiple test results are already used in calculating the THM RAA.

Water Quality Challenges

Beginning in the fall of 2009, the Newmarket Water Distribution System has been experiencing escalating water quality challenges in regards to maintaining disinfectant (chloramine) residual. As a result, many ambitious initiatives have been undertaken in addition to routine, regulated activities. These include (but are not limited to):

- Free Chlorine Conversions (2012/2013, 2015)
- Enhanced sampling programmes
- Retained the services of several industry experts/professional organizations to assist by undertaking such projects as: analysis of water quality trends/scenarios, water distribution system modelling, and system optimization studies

- Contracted Corix Water Services to assist with conventional watermain flushing, hydrant inspections/repairs, uni-directional flushing, and swabbing

We also continue to work very closely with the Local Medical Officer of Health (MOH), the Ministry of the Environment and Climate Change (MOECC), the Region of York, consultants, and Local Area Municipalities (LAMs) in trying to develop both short and long term strategies to address our water quality challenges and optimize system operations.

2016 Watermain Cleaning

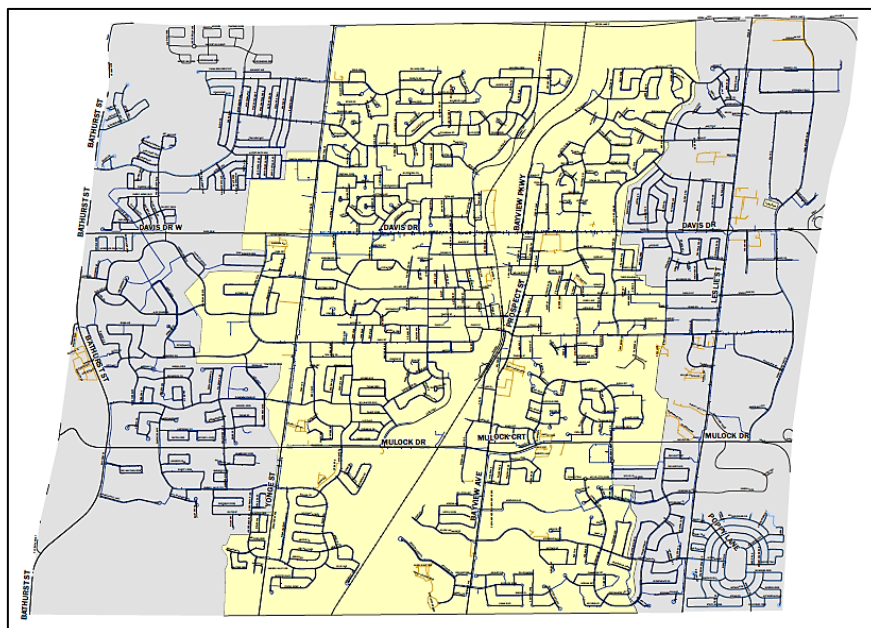
In late 2015, York Region engaged Confluence Engineering Group LLC to complete a peer review of the work undertaken to date to assess distribution system practices and provide recommendations to manage residual loss in the distribution system. Confluence Engineering is a leading expert in North America on best practices for optimal distribution system water quality.

Confluence concluded that the key variables that are affecting distribution system water quality in the Town of Newmarket are source water chemical stability, pipe conditions, and water age.

A comprehensive work plan commenced in April 2016 based on recommendations from the Confluence Engineering report.

Confluence recommended a comprehensive strategy with five main objectives to mitigate adverse chloramine residual incidents in the Town of Newmarket drinking water system (as cited on pages 17/18). One of the key objectives identified was to clean the entire central pressure zone district of the Newmarket Distribution System to remove accumulated iron and biofilm, while significantly reducing or eliminating the loading of iron and manganese from wells.

Figure 2: Map Identifying the Central Pressure District of the Newmarket WDS (in yellow)

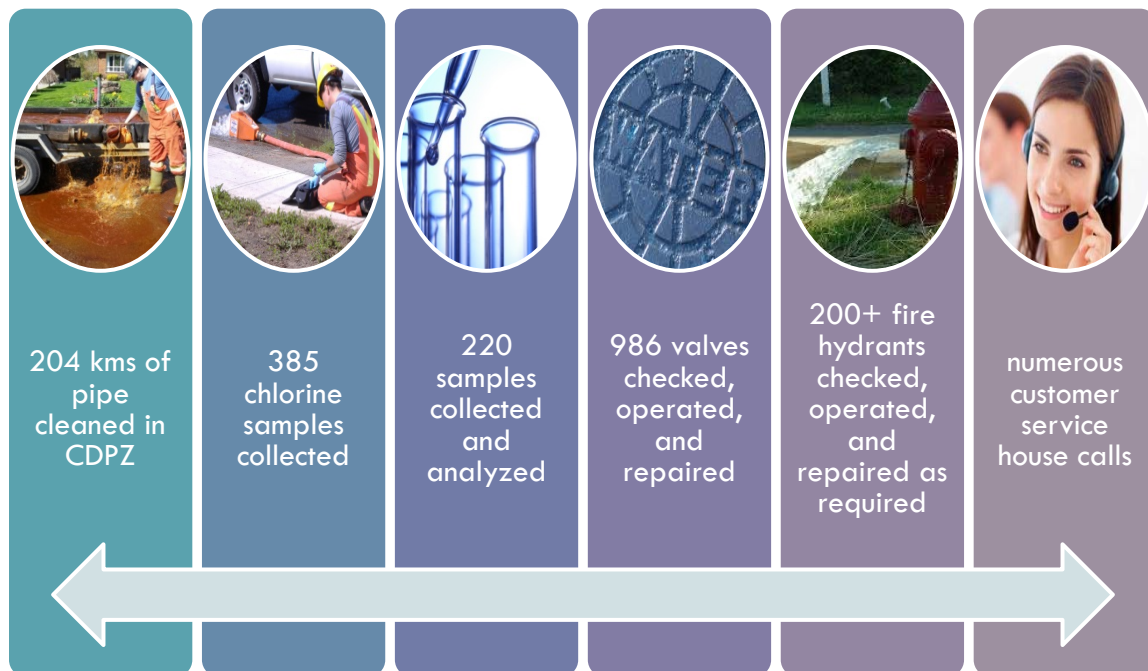


Watermain cleaning is an industry best practice activity that refers to planned and scheduled maintenance on a WDS.

There was much planning involved in this programme. Some of the key undertakings included:

- Development of an extensive communication plan, including:
 - Public education via information videos, newspaper ads, frequent website and social media updates
 - Enhanced communications internally (i.e. customer service & communications strategies)
 - Door hangers delivered to all customers and businesses in swabbing areas
 - Daily updates sent to Senior Management and key stakeholders
- Leveraging GIS technology to develop and document swabbing plans and data analysis
- Implementation of a diagnostic sampling plan (above and beyond regulatory sampling requirements) to determine effectiveness of swabbing program
- Enhanced data collection and analysis for evidence-based decision making
- Continued collaboration with York Region to develop an integrated, optimized operational strategy for the system

Figure 3: Key activities performed in relation to cleaning of the Central Zone of the WDS



2016 Adverse Water Quality Incidents

From 1 January 2016 to 31 December 2016, the Operating Authority for the Newmarket WDS reported 123 Adverse Water Quality Incidents (AWQIs) to the MOECC and local MOH for the Newmarket WDS.

Of these:

- 113 were due to adverse (low) combined chlorine residual
- 1 for sodium above regulated levels (x4 locations)
- 9 for Total Coliform

Table 6: 2016 Adverse Water Quality Incidents

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
01-Jan-16	127893	Combined Chlorine (low)	0.13	SS-04 Sample Station adj. 531 Davis Dr	04-Jan-16	Flush and resample.
02-Jan-16	127896	Combined Chlorine (low)	0.14	Hydrant fronting 315 Patterson St	04-Jan-16	Flush and resample.
03-Jan-16	127902	Combined Chlorine (low)	0.08	SS-20 opp 124 Skelton	05-Jan-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
04-Jan-16	127915	Combined Chlorine (low)	0.17	SS-10 Lindsay Ave (adj. 175 Penn Ave)	05-Jan-16	Flush and resample.
06-Jan-16	127937	Combined Chlorine (low)	0.07	SS-20 opp 124 Skelton	07-Jan-16	Flush and resample.
07-Jan-16	127942	Combined Chlorine (low)	0.17	SS-20 opp 124 Skelton	08-Jan-16	Flush and resample.
08-Jan-16	127954	Combined Chlorine (low)	0.03	Hydrant fronting 93 Concession St	11-Jan-16	Flush and resample.
09-Jan-16	127964	Combined Chlorine (low)	0.13	Hydrant fronting 93 Concession St	09-Jan-16	Flush and resample.
13-Jan-16	128020	Combined Chlorine (low)	0.11	Hydrant @ Youth Centre (56 Charles St)	14-Jan-16	Flush and resample.
14-Jan-16	128026	Combined Chlorine (low)	0.12	Hydrant fronting 93 Concession St	15-Jan-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
17-Jan-16	128053	Combined Chlorine (low)	0.15	SS-08 adj 238 Lorne Ave	17-Jan-16	Flush and resample.
19-Jan-16	128083	Combined Chlorine (low)	0.05	Hydrant fronting 333 Burford	19-Jan-16	Flush and resample.
20-Jan-16	128086	Combined Chlorine (low)	0.20	Hydrant @ Youth Centre - 56 Charles St	21-Jan-16	Flush and resample.
25-Jan-16	128128	Combined Chlorine (low)	0.15	SS-20 opp 124 Skelton	27-Jan-16	Flush and resample.
28-Jan-16	128149	Combined Chlorine (low)	0.16	SS-10 Lindsay Ave (adj. 175 Penn Ave)	29-Jan-16	Flush and resample.
01-Feb-16	128181	Combined Chlorine (low)	-0.01	SS-08 adj 238 Lorne Ave	02-Feb-16	Flush and resample.
02-Feb-16	128195	Combined Chlorine (low)	0.16	Hydrant fronting 117 Aubrey Crt	04-Feb-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
03-Feb-16	128216	Combined Chlorine (low)	0.23	Hydrant fronting 756 Cedarwood	03-Feb-16	Flush and resample.
04-Feb-16	128229	Combined Chlorine (low)	0.14	Hydrant fronting 380 Traviss	05-Feb-16	Flush and resample.
05-Feb-16	128326	Combined Chlorine (low)	0.12	1st Hydrant N of London Rd on Main St N	08-Feb-16	Flush and resample.
08-Feb-16	128250	Combined Chlorine (low)	0.10	SS-10 Lindsay Ave (adj. 175 Penn Ave)	09-Feb-16	Flush and resample.
09-Feb-16	128252	Combined Chlorine (low)	0.13	SS-20 opp 124 Skelton	11-Feb-16	Flush and resample.
10-Feb-16	128258	Combined Chlorine (low)	0.16	Hydrant @ 56 Charles St	11-Feb-16	Flush and resample.
16-Feb-16	128290	Combined Chlorine (low)	0.03	SS-04 Sample Station adj. 531 Davis Dr	17-Feb-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
17-Feb-16	128301	Combined Chlorine (low)	0.02	SS-28 Main St N @ Max Stiles Park	18-Feb-16	Flush and resample.
19-Feb-16	128317	Combined Chlorine (low)	0.15	Hydrant @ Youth Centre - 56 Charles St	22-Feb-16	Flush and resample.
22-Feb-16	128335	Combined Chlorine (low)	0.23	SS-08 adj 238 Lorne Ave	23-Feb-16	Flush and resample.
23-Feb-16	128337	Combined Chlorine (low)	0.11	SS-10 Lindsay Ave (adj. 175 Penn Ave)	24-Feb-16	Flush and resample.
24-Feb-16	128345	Combined Chlorine (low)	0.12	SS-03 837 Legge Crt	25-Feb-16	Flush and resample.
25-Feb-16	128398	Combined Chlorine (low)	0.09	SS-06 Simcoe St (adj 30 Main St)	26-Feb-16	Flush and resample.
29-Feb-16	128438	Combined Chlorine (low)	0.15	SS-03 837 Legge Crt	01-Mar-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
01-Mar-16	128454	Combined Chlorine (low)	0.04	SS-28 Main St N @ Max Stiles Park	02-Mar-16	Flush and resample.
02-Mar-16	128460	Combined Chlorine (low)	0.17	SS-03 837 Legge Crt	03-Mar-16	Flush and resample.
03-Mar-16	128475	Combined Chlorine (low)	0.07	SS-06 Simcoe St (adj 30 Main St)	04-Mar-16	Flush and resample.
07-Mar-16	128489	Combined Chlorine (low)	0.13	SS-03 837 Legge Crt	09-Mar-16	Flush and resample.
08-Mar-16	128498	Combined Chlorine (low)	0.10	SS-06 Simcoe St (adj 30 Main St)	10-Mar-16	Flush and resample.
09-Mar-16	128509	Combined Chlorine (low)	0.13	SS-03 837 Legge Crt	11-Mar-16	Flush and resample.
10-Mar-16	128527	Combined Chlorine (low)	0.24	Hydrant beside SS-10 Lindsay Ave	11-Mar-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
11-Mar-16	128544	Combined Chlorine (low)	0.15	SS-11 adj 738 Cedarwood Ave	14-Mar-16	Flush and resample.
14-Mar-16	128566	Combined Chlorine (low)	0.13	SS-08 adj 238 Lorne Ave	15-Mar-16	Flush and resample.
15-Mar-16	128573	Combined Chlorine (low)	0.04	SS-28 Main St N @ Max Stiles Park	15-Mar-16	Flush and resample.
16-Mar-16	128586	Combined Chlorine (low)	0.19	SS-08 adj 238 Lorne Ave	17-Mar-16	Flush and resample.
17-Mar-16	128609	Combined Chlorine (low)	0.11	Hydrant adj 175 Penn Ave	18-Mar-16	Flush and resample.
21-Mar-16	128636	Combined Chlorine (low)	0.20	SS-20 opp 124 Skelton	23-Mar-16	Flush and resample.
22-Mar-16	128650	Combined Chlorine (low)	0.07	SS-28 Main St N @ Max Stiles Park	23-Mar-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
23-Mar-16	128665	Combined Chlorine (low)	0.22	Hydrant @ Youth Centre (56 Charles St)	24-Mar-16	Flush and resample.
24-Mar-16	128677	Combined Chlorine (low)	0.23	Hydrant @ Bristol/Dorchester	29-Mar-16	Flush and resample.
29-Mar-16	128859	Combined Chlorine (low)	0.11	SS-04 Sample Station adj. 531 Davis Dr	31-Mar-16	Flush and resample.
30-Mar-16	128868	Combined Chlorine (low)	0.04	SS-28 Main St N @ Max Stiles Park	31-Mar-16	Flush and resample.
01-Apr-16	129008	Combined Chlorine (low)	0.08	SS-04 Sample Station adj. 531 Davis Dr	05-Apr-16	Flush and resample.
04-Apr-16	129028	Combined Chlorine (low)	0.16	SS-28 Main St N @ Max Stiles Park	05-Apr-16	Flush and resample.
07-Apr-16	129074	Combined Chlorine (low)	0.08	SS-28 Main St N @ Max Stiles Park	08-Apr-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
11-Apr-16	129107	Combined Chlorine (low)	0.15	SS-20 opp 124 Skelton	12-Apr-16	Flush and resample.
11-Apr-16	129109	Sodium (x4)	22.50	SS-15 Woodspring Ave	25-Apr-16	Flush and resample.
13-Apr-16	129131	Combined Chlorine (low)	0.24	Hydrant @ Youth Centre (56 Charles St)	14-Apr-16	Flush and resample.
15-Apr-16	129165	Combined Chlorine (low)	0.10	Hydrant @ 333 Fred Evans Crt	18-Apr-16	Flush and resample.
18-Apr-16	129202	Combined Chlorine (low)	0.14	SS-20 opp 124 Skelton	19-Apr-16	Flush and resample.
19-Apr-16	129211	Combined Chlorine (low)	0.11	1st Hydrant N of London Rd on Main St N	21-Apr-16	Flush and resample.
20-Apr-16	129219	Combined Chlorine (low)	0.24	Hydrant @ Youth Centre (56 Charles St)	21-Apr-16	Flush and resample.
21-Apr-16	129239	Combined Chlorine (low)	0.20	Hydrant @ Bristol/Dorchester	22-Apr-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
25-Apr-16	129272	Combined Chlorine (low)	0.18	SS-04 Sample Station adj. 531 Davis Dr	28-Apr-16	Flush and resample.
27-Apr-16	129301	Combined Chlorine (low)	0.10	Hydrant fronting 315 Patterson St	29-Apr-16	Flush and resample.
03-May-16	129338	Combined Chlorine (low)	0.13	SS-28 Main St N @ Max Stiles Park	04-May-16	Flush and resample.
09-May-16	129377	Combined Chlorine (low)	0.09	SS-28 Main St N @ Max Stiles Park	10-May-16	Flush and resample.
10-May-16	129391	Combined Chlorine (low)	0.18	Hydrant. Fronting 380 Traviss	12-May-16	Flush and resample.
16-May-16	129448	Combined Chlorine (low)	0.16	SS-28 Main St N @ Max Stiles Park	17-May-16	Flush and resample.
17-May-16	129457	Combined Chlorine (low)	0.11	Hydrant fronting 378 Erin Trail	19-May-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
30-May-16	129606	Combined Chlorine (low)	0.16	SS-28 Main St N @ Max Stiles Park	01-Jun-16	Flush and resample.
04-Jun-16	129667	Total Coliform	P	Hydrant fronting 59 Forest Glen	07-Jun-16	Flush and resample.
16-Jun-16	129795	Combined Chlorine (low)	0.08	SS-28 Main St N @ Max Stiles Park	20-Jun-16	Flush and resample.
13-Jul-16	130215	Total Coliform	P	SS-10 Lindsay Ave (adj. 175 Penn Ave)	25-Jul-16	Flush and resample.
18-Jul-16	130313	Combined Chlorine (low)	0.02	Hydrant @ 18100 Yonge St	19-Jul-16	Flush and resample.
28-Jul-16	130501	Combined Chlorine (low)	0.09	Hydrant fronting 853 Boronia Cres	29-Jul-16	Flush and resample.
03-Aug-16	130578	Combined Chlorine (low)	0.24	SS-28 Main St N @ Max Stiles Park	04-Aug-16	Flush and resample.
17-Aug-16	130807	Combined Chlorine (low)	0.07	Hydrant @ Bristol/Dorchester	18-Aug-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
19-Aug-16	130858	Combined Chlorine (low)	0.21	Hydrant adj. 166 Millard Ave	19-Aug-16	Flush and resample.
29-Aug-16	131017	Total Coliform	P	Hydrant @ west end of Micklebergh	28-Sep-16	Flush and resample.
29-Aug-16	131017 a	Total Coliform	P	Hydrant @ west end of Micklebergh	28-Sep-16	Flush and resample.
01-Sep-16	131050	Total Coliform	P	Hydrant @ west end of Micklebergh	28-Sep-16	Flush and resample.
03-Sep-16	131071	Total Coliform	P	Hydrant @ west end of Micklebergh	28-Sep-16	Flush and resample.
05-Sep-16	131084	Total Coliform	P	Hydrant @ west end of Micklebergh	28-Sep-16	Flush and resample.
07-Sep-16	131119	Total Coliform	P	Hydrant @ west end of Micklebergh	28-Sep-16	Flush and resample.
12-Sep-16	131166	Combined Chlorine (low)	0.11	Hydrant fronting 655 Haines Rd	13-Sep-16	Flush and resample.
19-Sep-16	132105	Combined Chlorine (low)	0.24	Hydrant fronting 651 Haines Rd	22-Dec-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
22-Sep-16	131268	Combined Chlorine (low)	0.23	Hydrant @ Bristol/Dorchester	23-Sep-16	Flush and resample.
29-Sep-16	131355	Combined Chlorine (low)	0.15	Hydrant fronting 837 Columbia Crt	30-Sep-16	Flush and resample.
03-Oct-16	131396	Combined Chlorine (low)	0.17	Hydrant fronting 583 Red Deer St	04-Oct-16	Flush and resample.
04-Oct-16	131404	Combined Chlorine (low)	0.14	SS-28 Main St N @ Max Stiles Park	05-Oct-16	Flush and resample.
05-Oct-16	131421	Combined Chlorine (low)	0.16	Hydrant fronting 347 Simcoe St	06-Oct-16	Flush and resample.
06-Oct-16	131443	Combined Chlorine (low)	0.23	Hydrant fronting 482 Ontario St	07-Oct-16	Flush and resample.
07-Oct-16	131460	Combined Chlorine (low)	0.12	Hydrant fronting 474 Davis Dr	11-Oct-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
11-Oct-16	131492	Combined Chlorine (low)	0.16	Hydrant fronting 482 Ontario St	12-Oct-16	Flush and resample.
12-Oct-16	131501	Combined Chlorine (low)	0.05	SS-28 Main St N @ Max Stiles Park	13-Oct-16	Flush and resample.
18-Oct-16	131554	Combined Chlorine (low)	0.08	SS-06 Simcoe St (adj 30 Main St)	21-Oct-16	Flush and resample.
20-Oct-16	131592	Combined Chlorine (low)	0.09	Hydrant fronting 113 Willow Ln	21-Oct-16	Flush and resample.
21-Oct-16	131601	Combined Chlorine (low)	0.10	SS-06 Simcoe St (adj 30 Main St)	24-Oct-16	Flush and resample.
24-Oct-16	131622	Combined Chlorine (low)	0.13	Hydrant fronting 654 Haines Rd	25-Oct-16	Flush and resample.
25-Oct-16	131636	Combined Chlorine (low)	0.13	Hydrant @ 490 Dover Cres	26-Oct-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
26-Oct-16	131650	Combined Chlorine (low)	0.21	Hydrant fronting 490 Dover Cres	27-Oct-16	Flush and resample.
27-Oct-16	131666	Combined Chlorine (low)	0.03	Hydrant fronting 395 Waratah Ave	28-Oct-16	Flush and resample.
28-Oct-16	131676	Combined Chlorine (low)	0.13	Hydrant fronting 452 Glover Lane	31-Oct-16	Flush and resample.
29-Oct-16	131688	Combined Chlorine (low)	0.13	Hydrant fronting 452 Glover Lane	29-Oct-16	Flush and resample.
30-Oct-16	131698	Combined Chlorine (low)	0.13	Hydrant fronting 452 Glover Lane	30-Oct-16	Flush and resample.
31-Oct-16	131699	Combined Chlorine (low)	0.21	Hydrant fronting 452 Glover Lane	01-Nov-16	Flush and resample.
01-Nov-16	131706	Combined Chlorine (low)	0.08	SS-28 Main St N @ Max Stiles Park	02-Nov-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
03-Nov-16	131749	Combined Chlorine (low)	0.17	Hydrant fronting 113 Willow Ln	04-Nov-16	Flush and resample.
04-Nov-16	131766	Combined Chlorine (low)	0.16	Hydrant fronting 388 Kelly Cres	07-Nov-16	Flush and resample.
07-Nov-16	131787	Combined Chlorine (low)	0.11	Hydrant fronting 452 Glover Lane	08-Nov-16	Flush and resample.
08-Nov-16	131796	Combined Chlorine (low)	0.06	SS-28 Main St N @ Max Stiles Park	09-Nov-16	Flush and resample.
09-Nov-16	131806	Combined Chlorine (low)	0.08	Hydrant fronting 24 Hillview Dr	10-Nov-16	Flush and resample.
11-Nov-16	131833	Combined Chlorine (low)	0.24	SS-08 adj 238 Lorne Ave	14-Nov-16	Flush and resample.
14-Nov-16	131846	Combined Chlorine (low)	0.17	Hydrant fronting 452 Glover Lane	17-Nov-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
15-Nov-16	131852	Combined Chlorine (low)	0.24	SS-28 Main St N @ Max Stiles Park	17-Nov-16	Flush and resample.
16-Nov-16	131861	Combined Chlorine (low)	0.20	SS-10 Lindsay Ave (adj. 175 Penn Ave)	17-Nov-16	Flush and resample.
21-Nov-16	131926	Total Coliform	P	SS-10 Lindsay Ave (adj. 175 Penn Ave)	05-Dec-16	Flush and resample.
21-Nov-16	131899	Combined Chlorine (low)	0.19	SS-28 Main St N @ Max Stiles Park	22-Nov-16	Flush and resample.
23-Nov-16	131916	Combined Chlorine (low)	0.23	Hydrant fronting 380 Traviss	24-Nov-16	Flush and resample.
24-Nov-16	131927	Combined Chlorine (low)	0.11	SS-10 Lindsay Ave (adj. 175 Penn Ave)	25-Nov-16	Flush and resample.
29-Nov-16	131942	Combined Chlorine (low)	0.22	SS-28 Main St N @ Max Stiles Park	30-Nov-16	Flush and resample.

DATE OF ADVERSE SAMPLE RESULT	AWQI NO.	PARAMETER	RESULT (mg/L)	LOCATION	RESOLUTION NOTICE PROVIDED	CORRECTIVE ACTIONS
30-Nov-16	131957	Combined Chlorine (low)	0.11	SS-28 Main St N @ Max Stiles Park	05-Dec-16	Flush and resample.
02-Dec-16	131977	Combined Chlorine (low)	0.19	Hydrant @ 655 Haines Rd	06-Dec-16	Flush and resample.
06-Dec-16	131994	Combined Chlorine (low)	0.14	SS-28 Main St N @ Max Stiles Park	08-Dec-16	Flush and resample.
19-Dec-16	132092	Combined Chlorine (low)	0.15	SS-10 Lindsay Ave (adj. 175 Penn Ave)	21-Dec-16	Flush and resample.

2016 Consumption Data

Table 7 (below – “2016 Consumption Data”) represents a summary of 2016 water billing from the Region of York to the Town of Newmarket for the supply of water.

Table 7: 2016 Consumption Data

DESCRIPTION	AMOUNT
Total water billed to Newmarket by York Region	8,194,733 m ³
Total water billed to consumers by Newmarket	6,940,811 m ³
m ³ Unbilled	1,253,922 m ³
% Loss*	15.3%

**% loss includes water used for flushing to maintain water quality, firefighting, new watermain commissioning / testing, routine maintenance activities, watermain breaks, meter reading inaccuracies, and system leakage*

Figure 4 (page 46) illustrates a detailed breakdown of monthly water flows from York Region Sources into the Town of Newmarket’s Water Distribution System.

Figure 4: Town Of Newmarket Monthly Water Flows – York Region

Town of Newmarket
Monthly Water 2016
Date: 2/2/2017



Newmarket	January	February	March	April	May	June	July	August	September	October	November	December	Year to Date Total
Aurora Ballymore (Aurora) m3	0	0	0	0	0	0	0	0	0	0	0	0	0
Aurora Ballymore (Newmarket) m3	20,006	20,513	21,602	38,390	100,082	116,936	133,672	172,400	132,272	118,824	106,112	95,185	1,075,994
Aurora West 12" (Aurora) m3	-13	-10	-24	-4	-2	-54	-12	-7	-4	-5	-3	-3	-140
Aurora West 12" (Newmarket) m3	112,244	106,622	111,920	137,385	168,687	181,917	184,816	177,507	157,584	146,719	137,787	149,697	1,772,885
Aurora West 8" (Aurora) m3	-6	-6	-6	-6	-7	-8	-9	-9	-9	-8	-7	-6	-86
Aurora West 8" (Newmarket) m3	81	77	84	82	84	80	82	79	76	77	77	84	961
EG Leslie Street MC 12" Fwd to NW m3	141,498	122,259	125,191	117,058	111,302	108,968	88,875	70,795	57,119	74,573	87,203	72,506	1,177,347
EG Leslie Street MC 12" Rev to EG m3	-1,238	-220	-378	-6,178	-13,548	-1,263	-6,450	-9,004	-8,289	-7,189	-6,134	-6,021	-65,912
EG Leslie Street MC 22" Fwd to NW m3	0	0	0	0	0	0	0	0	0	0	0	0	0
EG Leslie Street MC 22" Rev to EG m3	0	0	0	0	0	0	0	0	0	0	0	0	0
Leslie/Broughton (Aurora) m3	0	0	0	0	0	0	-8	-17	-4	-10	-19	-16	-88
Leslie/Broughton (Newmarket) m3	214,421	205,434	220,301	179,873	204,257	236,030	238,275	236,337	225,347	180,212	173,797	200,293	2,514,576
Newmarket Well No. 1 m3	12,170	5,325	18,105	10,108	578	496	396	0	0	0	0	0	47,176
Newmarket Well No. 13 m3	31,315	35,010	22,900	8,943	0	1,454	1,087	0	0	1	0	0	100,709
Newmarket Well No. 15 m3	33,713	34,456	35,041	18,890	778	846	657	108	54	66	133	391	125,131
Newmarket Well No. 16 m3	39,004	40,155	49,382	20,958	2,366	1,055	1,087	189	71	181	239	823	155,511
Newmarket Well No. 2 m3	28,598	46,089	17,912	9,441	703	595	690	7	22	3	1	0	104,061
Newmarket/Aurora (Aurora) m3	-595	-203	-106	-6	0	0	0	0	0	0	0	-2	-913
Newmarket/Aurora (Newmarket) m3	3,136	3,095	4,737	101,239	167,822	197,757	188,626	181,545	189,768	171,355	157,045	138,948	1,505,073
Woodspring Avenue (East Gwillimbury) m3	-18,240	-21,516	-20,937	-18,204	-20,924	-22,637	-21,413	-20,468	-17,128	-14,927	-14,887	-15,509	-226,787
Woodspring Avenue (Newmarket) m3	8	9	8	8	6	3	3	3	5	26	93	12	183
Yonge/Aspenwood (East Gwillimbury) m3	-20	-28	-23	-31	-19	-16	-20	-22	-15	-15	-15	-16	-240
Yonge/Aspenwood (Newmarket) m3	44	46	52	56	44	44	50	54	46	45	42	43	566
Yonge/Bristol (East Gwillimbury) m3	-6,963	-5,783	-5,827	-5,591	-7,102	-7,304	-8,148	-7,555	-6,411	-6,432	-19,582	-5,520	-92,216
Yonge/Bristol (Newmarket) m3	95	87	101	113	72	43	24	28	51	107	86	135	942
Total Water Consumption m3	609,257	591,409	600,035	612,523	715,179	814,933	802,272	801,982	730,549	663,595	621,971	631,028	8,194,733

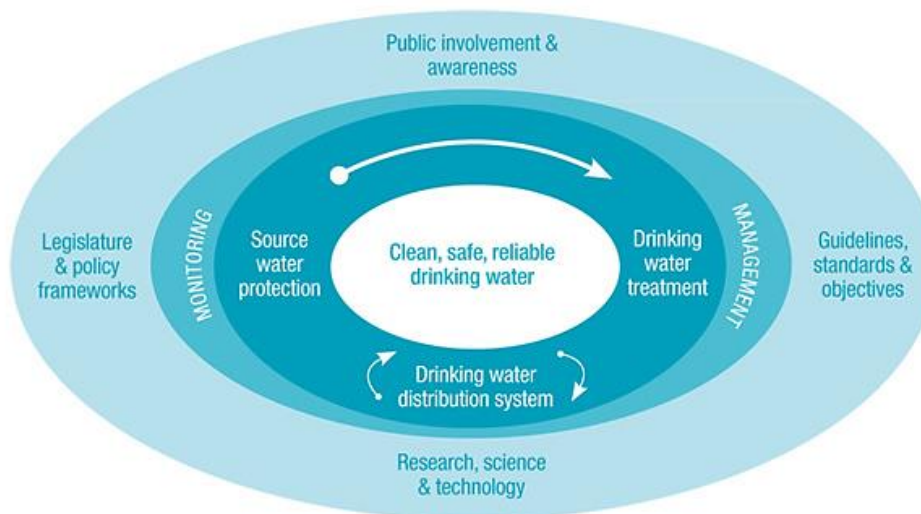
Maximum Daily Flow m3	22,429	24,980	22,981	23,280	29,892	32,841	31,774	29,776	28,048	27,153	26,421	23,576	32,841
Maximum Date	10-Jan-2016	07-Feb-2016	06-Mar-2016	16-Apr-2016	23-May-2016	26-Jun-2016	21-Jul-2016	19-Aug-2016	05-Sep-2016	05-Oct-2016	06-Nov-2016	04-Dec-2016	
Minimum Daily Flow m3	16,309	17,220	15,946	16,767	19,609	20,593	19,359	19,635	20,170	17,344	13,803	16,873	13,803
Minimum Date	13-Jan-2016	01-Feb-2016	10-Mar-2016	15-Apr-2016	13-May-2016	06-Jun-2016	09-Jul-2016	23-Aug-2016	17-Sep-2016	28-Oct-2016	09-Nov-2016	26-Dec-2016	
Average Daily Flow m3	19,653	20,393	19,356	20,417	23,070	27,164	25,880	25,870	24,352	21,406	20,732	20,356	22,388

Keeping Our Water Safe

Multiple-Barrier Approach

As a part of the 2002 Walkerton Inquiry, Justice Dennis O'Connor endorsed a "multi-barrier approach" to ensure drinking water safety. This multi-faceted system is a collection of "procedures, processes, and tools that collectively prevent or reduce the contamination of drinking water from source to consumer in order to reduce the risks to public health." (Source: Ontario Ministry of the Environment, 2007; *Implementing Quality Management: A Guide for Ontario's Drinking Water Systems*)

Figure 5: Multiple-Barrier Approach to Drinking Water Protection



The multiple barriers include:

- **Source Protection** to keep the raw water as clean as possible in order to lower the risks that hazards present
- **Treatment** to remove and/or neutralize hazards
- **Monitoring Program** to detect and act on system problems that could impair drinking water safety and to verify the performance of the system components and finished drinking water quality
- **Effective management systems** including automatic control systems, well-developed responses, and operating practices that are the ultimate means for protecting the safety of drinking water systems."

Requirements of the Ontario Safe Drinking Water Act, 2002

The Ontario *Safe Drinking Water Act, 2002 (SDWA)* enhances the level of drinking water protection across the province by providing a clear, consistent set of standards and rules to ensure the provision of safe, high-quality drinking water. This Act holds owners of drinking water systems to their responsibilities to protect drinking water consumers. It specifies the requirements for drinking water systems, testing services, and for the certification of operators, as well as setting quality standards and mechanisms for compliance and enforcement. The section of the SDWA that specifically applies to the owners and operating authority of the Newmarket WDS is “*Part III – General Requirements*”. This document outlines the minimum standards that owners/operating authorities must adhere to.

PART III GENERAL REQUIREMENTS

Potable water

10. Despite any other Act, a requirement that water be “potable” in any Act, regulation, order or other document issued under the authority of any Act or in a municipal by-law shall be deemed to be a requirement to meet, at a minimum, the requirements of the prescribed drinking water quality standards. 2002, c. 32, s. 10.

Duties of owners and operating authorities

11. (1) Every owner of a municipal drinking water system or a regulated non-municipal drinking water system and, if an operating authority is responsible for the operation of the system, the operating authority for the system shall ensure the following:
 1. That all water provided by the system to the point where the system is connected to a user’s plumbing system meets the requirements of the prescribed drinking water quality standards.
 2. That, at all times in which it is in service, the drinking water system,
 - i. is operated in accordance with the requirements under this Act,
 - ii. is maintained in a fit state of repair, and
 - iii. satisfies the requirements of the standards prescribed for the system or the class of systems to which the system belongs.
 3. That the drinking water system is operated by persons having the training or expertise for their operating functions that is required by the regulations and the licence or approval issued or granted for the system under this Act.
 4. That all sampling, testing and monitoring requirements under this Act that relate to the drinking water system are complied with.

5. That personnel at the drinking water system are under the supervision of persons having the prescribed qualifications.
6. That the persons who carry out functions in relation to the drinking water system comply with such reporting requirements as may be prescribed or that are required by the conditions in the licence or approval issued or granted for the system under this Act. 2002, c. 32, s. 11 (1).

Duty of owner to report to public

- (2) If an owner of a municipal drinking water system or regulated non-municipal drinking water system is required by the regulations to report on any matter to the public, the owner shall report in accordance with the regulations. 2002, c. 32, s. 11 (2).

Out-of-province drinking water testing service

- (3) No owner or operating authority of a municipal drinking water system or regulated non-municipal drinking water system shall obtain a drinking water testing service from a person who is not licensed under Part VII to offer or provide the service unless,
 - (a) the laboratory at which the testing is to be conducted is located outside Ontario and is an eligible laboratory in respect of the particular tests to be conducted;
 - (b) the person agrees in writing to comply with section 18 and any prescribed requirements; and
 - (c) the owner or operating authority provides to the Director appointed for the purposes of Part VII,
 - (i) written notice of the use of the testing service,
 - (ii) a copy of the accreditation referred to in clause (4) (a), if applicable, and
 - (iii) a copy of the agreement referred to in clause (b). 2002, c. 32, s. 11 (3).

Eligible laboratory

- (4) For the purposes of this section, a laboratory located outside Ontario is an eligible laboratory in respect of a particular test if the laboratory is on a list maintained by the Director appointed for the purposes of Part VII and,
 - (a) the laboratory is accredited for the conduct of the test and, in the Director's opinion, the accreditation is equivalent to the accreditation standard of an accreditation body for drinking water testing under Part VII; or
 - (b) in the Director's opinion,
 - (i) it is desirable for the purposes of this Act that the test be available,
 - (ii) there is no laboratory, or there are insufficient laboratories, in the area for the conduct of the test under a licence issued under Part VII, and

- (iii) the person who is to provide the drinking water testing service will be capable of conducting the test at the laboratory, or causing the test to be conducted there. 2002, c. 32, s. 11 (4).

List of out-of-province laboratories

- (5) For the purposes of subsection (4), a laboratory may be added to the list maintained by the Director, and may be retained on the list, only if,
 - (a) any fee required under this Act has been paid in respect of the laboratory; and
 - (b) the laboratory complies with the prescribed requirements. 2002, c. 32, s. 11 (5).

Director's direction

- (6) The Director may issue a direction to one or more owners or operating authorities prohibiting them from obtaining drinking water testing services from a laboratory located outside Ontario if the Director has reason to believe that the laboratory has ceased to be an eligible laboratory or has failed to comply with section 18 or a prescribed requirement. 2002, c. 32, s. 11 (6).

Same

- (7) Every person who receives a direction under subsection (6) shall comply with the direction and advise the Director in writing of the alternative laboratory from which the person will obtain drinking water testing services. 2002, c. 32, s. 11 (7).

Revocation of direction

- (8) The Director may revoke a direction issued under subsection (6) if he or she is of the opinion that the reasons for issuing the direction no longer exist. 2002, c. 32, s. 11 (8).

Operator's certificate

- 12. (1) No person shall operate a municipal drinking water system or a regulated non-municipal drinking water system unless the person holds a valid operator's certificate issued in accordance with the regulations. 2002, c. 32, s. 12 (1).

Transitional

- (2) For the purposes of subsection (1), a valid operator's licence issued under section 6 of Ontario Regulation 435/93 under the Ontario Water Resources Act shall be deemed to be an operator's certificate until the day the operator's licence expires or is cancelled or suspended. 2002, c. 32, s. 12 (2).

Same

- (3) For the purposes of subsection (1), a valid operator's licence issued under section 7 or 8 of Ontario Regulation 435/93 under the Ontario Water Resources Act shall be deemed to be an operator's certificate until the earlier of,
- (a) the day the operator's licence is cancelled or suspended; and
 - (b) the day that is the second anniversary of the day of filing of a regulation made under this Act governing the application and issue of operator's certificates. 2002, c. 32, s. 12 (3).

Same

- (4) If an operator's licence mentioned in subsection (3) expires before the day described in clause (3) (b) and is not renewed, the licence ceases to be deemed to be an operator's certificate on the day it expires. 2002, c. 32, s. 12 (4).

Duty to have accredited operating authority

13. (1) Every owner of a municipal drinking water system shall ensure that an accredited operating authority is in charge of the system at all times on and after the day specified in the regulations for the municipality, the system or the owner of the system. 2002, c. 32, s. 13 (1).

Same

- (2) If the Minister makes a regulation requiring an accredited operating authority to be in charge of a non-municipal drinking water system, the owner of the system shall ensure that an accredited operating authority is in charge of the system at all times. 2002, c. 32, s. 13 (2).

Agreement with accredited operating authority

14. (1) if an accredited operating authority is in charge of a drinking water system and it is not the owner of the system, the accredited operating authority and the owner of the system shall enter into an agreement that contains the following:
- 1. A description of the system or the parts of the system for which the operating authority is responsible.
 - 2. A description of the respective responsibilities of the owner and the operating authority to ensure that the operation, maintenance, management and alteration of the system comply with this Act, the regulations, any order under this Act and the conditions in,
 - i. the drinking water works permit and the municipal drinking water licence for the system, in the case of a municipal drinking water system, or

- ii. the approval for the system, in the case of a non-municipal drinking water system.
3. A description of the respective responsibilities of the owner and the accredited operating authority in the event a deficiency is determined to exist or an emergency occurs.
4. A description of the respective responsibilities of the owner and the accredited operating authority to ensure that the operational plans for the system are reviewed and revised appropriately and that both parties are informed of all revisions.
5. Any other provisions required by the regulations. 2002, c. 32, s. 14 (1).

Delegation of duty

- (2) If an owner of a drinking water system enters into an agreement with an accredited operating authority, the owner may, in the agreement, delegate a duty imposed on the owner under this Act to the accredited operating authority. 2002, c. 32, s. 14 (2).

Exception

- (3) A delegation referred to in subsection (2) shall not relieve the owner of the drinking water system from the duty to comply with section 19 or the duty,
 - (a) to ensure that the accredited operating authority carries out its duties under this Act and the agreement in a competent and diligent manner while it is in charge of the system; and
 - (b) upon discovery that the accredited operating authority is failing to act in accordance with clause (a), to take all reasonable steps to ensure that the operation of the system complies with the requirements under this Act. 2002, c. 32, s. 14 (3).

Agreement to be made public

- (4) The contents of every agreement referred to in subsection (1) between an owner of a drinking water system and an accredited operating authority shall be made public by the owner of the system in accordance with the requirements prescribed by the Minister. 2002, c. 32, s. 14 (4).

Directions, operational plans

15. (1) The Director shall, on or before the prescribed date, issue directions governing the preparation and content of operational plans for municipal drinking water systems and may issue such additional directions as the Director considers necessary for the purposes of this section. 2002, c. 32, s. 15 (1).

Same

- (2) If the Minister makes a regulation requiring a non-municipal drinking water system or a class of non-municipal drinking water systems to have operational plans, the Director shall, on or before the date prescribed by the Minister, issue directions governing the preparation and content of operational plans for the system or systems. 2002, c. 32, s. 15 (2).

Same

- (3) The Director may amend, revoke or replace a direction issued under this section. 2002, c. 32, s. 15 (3).

Content of direction

- (4) The direction shall include,
- (a) minimum content requirements for operational plans;
 - (b) rules respecting the retention of copies of versions of operational plans;
 - (c) rules respecting the public disclosure of the contents of operational plans; and
 - (d) such other requirements as the Director considers necessary for the purposes of this Act and the regulations. 2002, c. 32, s. 15 (4).

Same

- (5) A direction issued under this section may,
- (a) be general or limited in its application;
 - (b) apply in respect of any class of drinking water systems;
 - (c) require the preparation of operational plans for a treatment system, a distribution system or any part of either or both of them. 2002, c. 32, s. 15 (5).

Publication

- (6) A direction, amendment to a direction or revocation of a direction takes effect when a notice of the direction, amendment or revocation, as the case may be, is given in the Registry. 2002, c. 32, s. 15 (6).

Legislation Act, 2006, Part III

- (7) Part III (Regulations) of the Legislation Act, 2006 does not apply to a direction issued under this section. 2002, c. 32, s. 15 (7); 2006, c. 21, Sched. F, s. 132 (1).

Operational plans

16. (1) If operational plans are required for a drinking water system under this Act, every owner and accredited operational authority of the system shall,
- (a) ensure that the plans comply with such directions issued under section 15 that apply in respect of the system; and
 - (b) make public the contents of the operating plans in accordance with the Director's directions. 2002, c. 32, s. 16 (1).

Submission of plans, municipal drinking water system

- (2) Every owner of a municipal drinking water system shall provide a copy of all operational plans for the system to the Director on or before the day prescribed by the regulations for the municipality, the system or the owner of the system. 2002, c. 32, s. 16 (2).

Review of plans

- (3) The Director shall review the operational plans for the municipal drinking water system and shall issue a notice,
- (a) accepting the plans if the Director is satisfied that the plans satisfy the directions; or
 - (b) rejecting the plans for the reasons set out in the notice, if the Director is not satisfied that the plans satisfy the directions. 2002, c. 32, s. 16 (3).

Resubmission of plans

- (4) The owner of a municipal drinking water system whose operational plans are rejected by the Director shall revise and resubmit the revised plans to the Director in accordance with the directions specified in the notice. 2002, c. 32, s. 16 (4).

Ownership of operational plans

17. (1) All operational plans for a drinking water system remain the property of the owner of the system, irrespective of who prepares or revises the plans. 2002, c. 32, s. 17 (1).

Retention of plans

- (2) Every accredited operating authority of a drinking water system for which operational plans are required under this Act shall retain copies of the operational plans for the system in accordance with the Director's directions under section 15. 2002, c. 32, s. 17 (2).

Same

- (3) Upon termination of an agreement between the owner and the accredited operating authority of a system, the accredited operating authority shall ensure that the owner has copies of the most recently prepared and revised operational plans for the system. 2002, c. 32, s. 17 (3).

Duty to report adverse test result

18. (1) Each of the following persons shall report every prescribed adverse result of a drinking water test conducted on any waters from a municipal drinking water system or a regulated non-municipal drinking water system to the Ministry and the medical officer of health immediately after the adverse result is obtained:
 1. The operating authority responsible for the system or, if there is no operating authority responsible for the system, the owner of the system.
 2. The person operating the laboratory at which the adverse result was obtained. 2002, c. 32, s. 18 (1); 2007, c. 10, Sched. D, s. 3 (6).

Same

- (2) A report under subsection (1) shall be made in accordance with the regulations. 2002, c. 32, s. 18 (2).

Duty to report to the owner

- (3) If an operating authority is required to report an adverse test result under subsection (1), the operating authority shall also immediately report the adverse test result to the owner of the system for which the operating authority is responsible. 2007, c. 10, Sched. D, s. 3 (7).

Duty of laboratory to report

- (4) Every person operating a laboratory who is required to report an adverse test result under subsection (1) shall also notify the operating authority responsible for the system or, if there is no operating authority responsible for the system, the owner of the system, of every adverse test result relating to the system, immediately after the adverse result is obtained. 2007, c. 10, Sched. D, s. 3 (7).

Duty to report adverse test result

- 18.1 (1) The person operating the laboratory at which an adverse result was obtained shall report every prescribed adverse result of a drinking water test conducted on any waters from a small drinking water system within the meaning of the Health Protection and Promotion Act to the Ministry of Health and Long-Term Care and the

medical officer of health immediately after the adverse result is obtained. 2007, c. 10, Sched. D, s. 3 (8).

Same

- (2) A report under subsection (1) shall be made in accordance with the regulations. 2007, c. 10, Sched. D, s. 3 (8).

Duty of laboratory to report

- (3) Every person operating a laboratory who is required to report an adverse test result under subsection (1) shall also notify the operator responsible for the system or, if there is no operator responsible for the system, the owner of the system, of every adverse test result relating to the system, immediately after the adverse result is obtained. 2007, c. 10, Sched. D, s. 3 (8).

Standard of care, municipal drinking water system

19. (1) Each of the persons listed in subsection (2) shall,
- (a) exercise the level of care, diligence and skill in respect of a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation; and
 - (b) act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the municipal drinking water system. 2002, c. 32, s. 19 (1).

Same

- (2) The following are the persons listed for the purposes of subsection (1):
1. The owner of the municipal drinking water system.
 2. If the municipal drinking water system is owned by a corporation other than a municipality, every officer and director of the corporation.
 3. If the system is owned by a municipality, every person who, on behalf of the municipality, oversees the accredited operating authority of the system or exercises decision-making authority over the system. 2002, c. 32, s. 19 (2).

Offence

- (3) Every person under a duty described in subsection (1) who fails to carry out that duty is guilty of an offence. 2002, c. 32, s. 19 (3).

Same

- (4) A person may be convicted of an offence under this section in respect of a municipal drinking water system whether or not the owner of the system is prosecuted or convicted. 2002, c. 32, s. 19 (4).

Reliance on experts

- (5) A person shall not be considered to have failed to carry out a duty described in subsection (1) in any circumstance in which the person relies in good faith on a report of an engineer, lawyer, accountant or other person whose professional qualifications lend credibility to the report. 2002, c. 32, s. 19 (5).

Prohibition

20. (1) No person shall cause or permit any thing to enter a drinking water system if it could result in,
- (a) a drinking water health hazard;
 - (b) a contravention of a prescribed standard; or
 - (c) interference with the normal operation of the system. 2002, c. 32, s. 20 (1).

Exception

- (2) Subsection (1) does not apply to prohibit activities that are carried out,
- (a) in the course of the proper operation, maintenance, repair or alteration of a drinking water system; or
 - (b) under a statutory authority or for the purposes of complying with a statutory requirement. 2002, c. 32, s. 20 (2).

Dilution no defence

- (3) For the purposes of prosecuting the offence of contravening subsection (1), it is not necessary to prove that the thing, if it was diluted when or after it entered the system, continued to result in or could have resulted in a drinking water health hazard. 2002, c. 32, s. 20 (3).

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The Public Works Services Department is pleased to present this report for 2016 to members of Council and our residents.