Quality Management System for Drinking Water 2023 Annual Report

The Ministry of Environment, Conservation and Parks (MECP) Drinking Water Quality Management Standard (DWQMS) requires the City of Richmond Hill to establish and maintain a Quality Management System (QMS) that conforms to the Standard.

The City owns a stand-alone drinking water distribution system, QMS policies and procedures govern the activities and services performed by the City. The DWQMS also requires that Members of Council are made aware to the following areas within the QMS, as they are:

- Review and Provision of Infrastructure
- Infrastructure Maintenance, Rehabilitation and Renewal Summary
- Management Review Outcomes
- Third-Party Audit Outcomes and Accreditation Renewal
- Organizational Structure, Roles, Responsibilities and Authorities

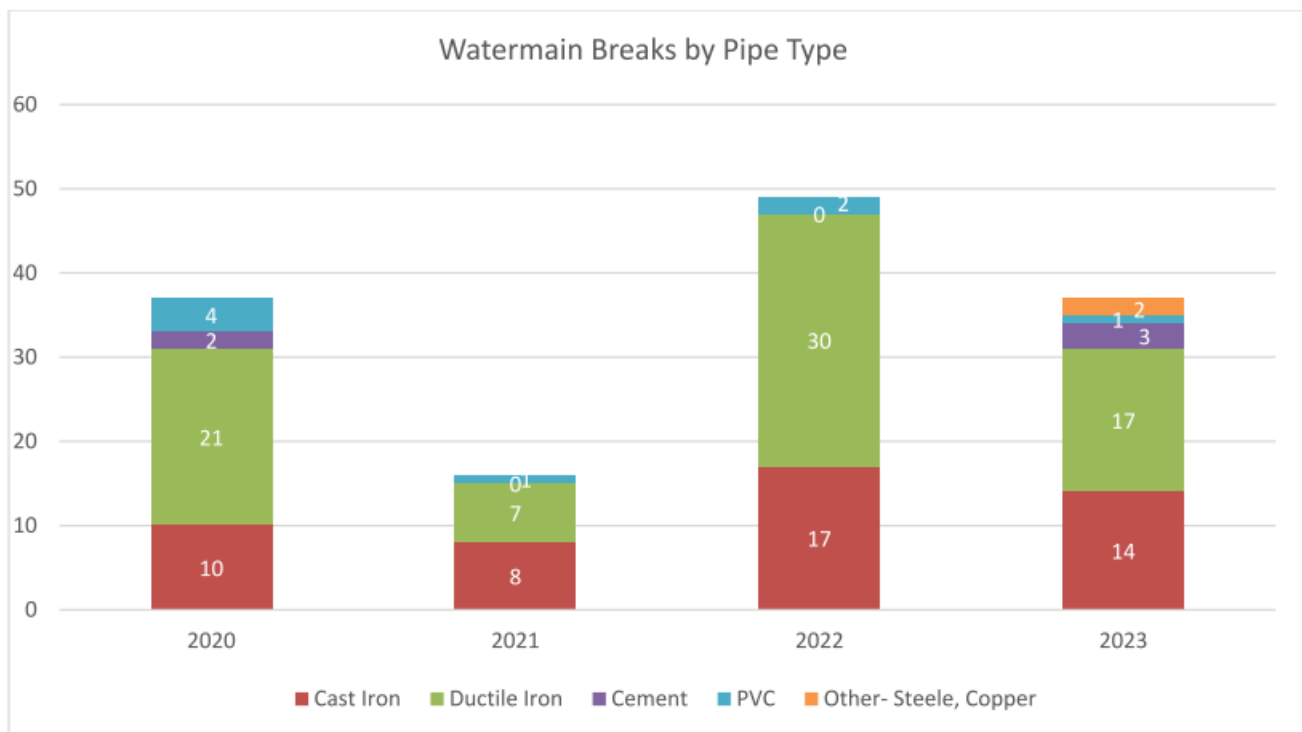## 1. Review and Provision of Infrastructure

Council is being communicated on the status of the programs in place to maintain, rehabilitate and renew the infrastructure of the drinking water system through the 10 Year Capital Forecast for Roads, Water and Wastewater.

2. Infrastructure Maintenance, Rehabilitation and Renewal Summary

The following is a summary of the various infrastructure maintenance programs the City of Richmond Hill has in place to maintain, rehabilitate, and renew the infrastructure of the drinking water system.

Watermain Maintenance Program:

<u>Watermain Repairs</u> - Repair of watermains following pipe breakage. For the 2023 year we had a total of 37 watermain breaks, most of the breaks were from ductile iron and cast iron watermains.

Watermain Breaks by Pipe Type

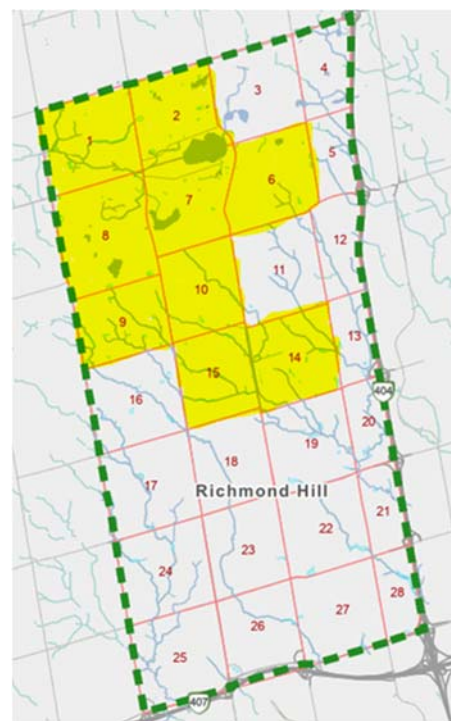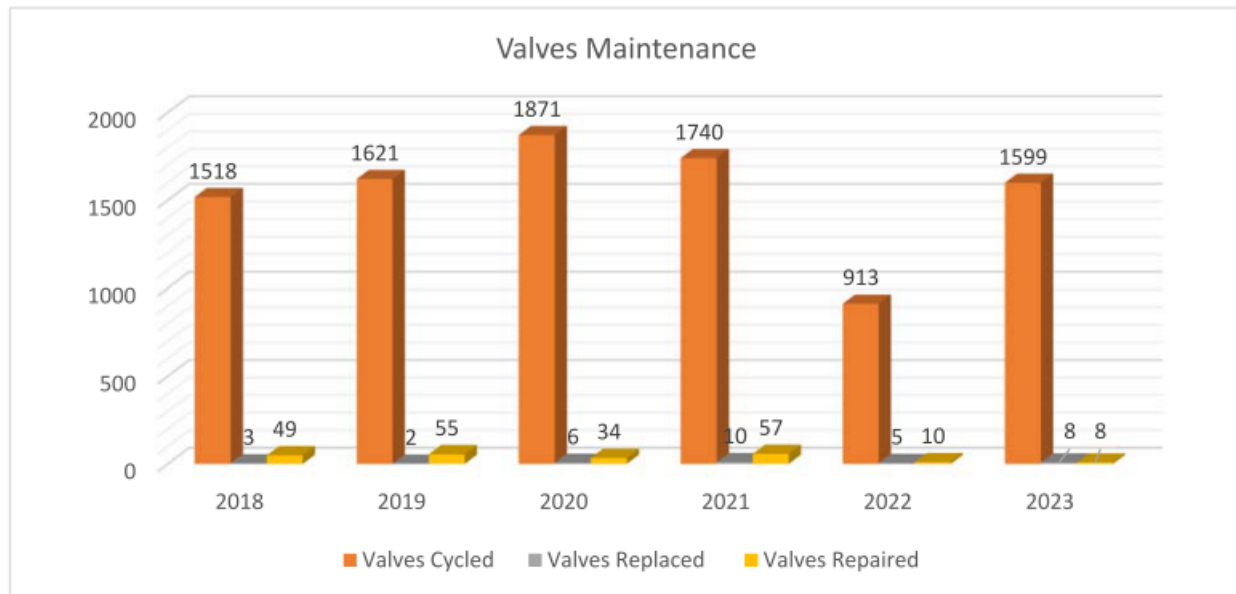| Year	Cast Iron	Ductile Iron	Cement	PVC	Other- Steele, Copper
2020	10	21	2	4	
2021	8	7		0	1
2022	17	30		0	2
2023	14	17	3	1	2

Valve Maintenance and Inspection Programs:

Valve Cycling and Inspection - A preventative program that exercises all valves in the distribution system to locate and identify inoperable, defective, or broken valves.

Five-year valve cycling program was started in 2022. Year-to-date all valves within Block 1, 2, 6, 7 (2022), 8, 9, 10, 14 and 15 (2023) are completed.

The target will be to cycle between 1000-1200 valves per year.

Valve Repair and Replaced – Repair/replacement of inoperable, defective, or broken valves.

Valves Maintenance

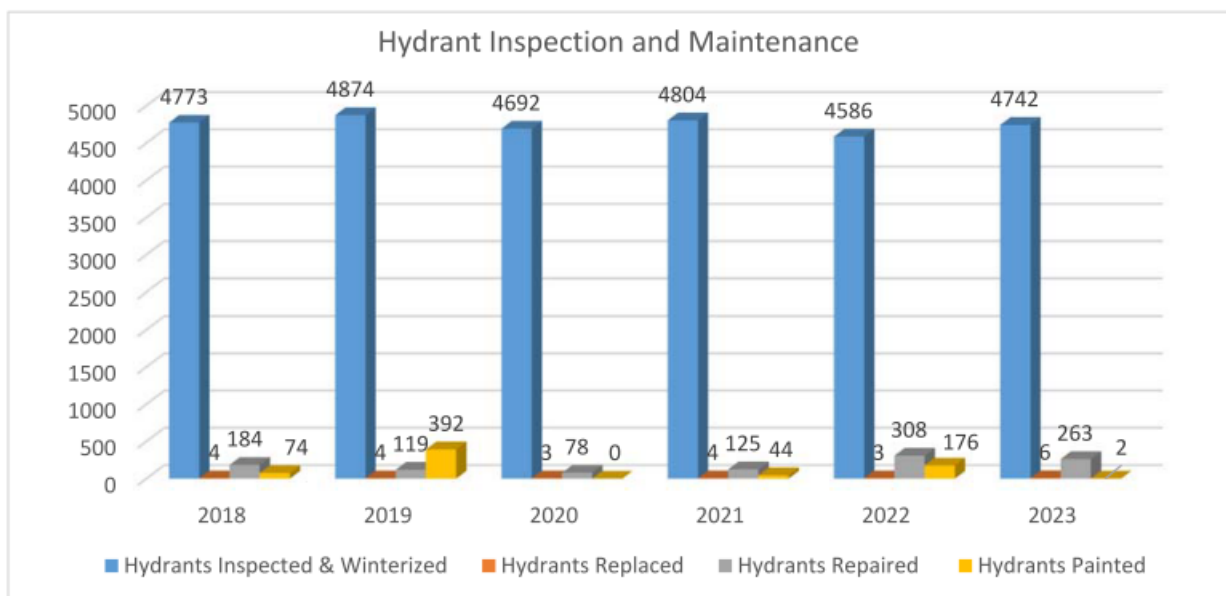| Year	Valves Cycled	Valves Replaced	Valves Repaired
2018	1518	3	49
2019	1621	2	55
2020	1871	6	34
2021	1740	10	57
2022	913	5	10
2023	1599	8	8

Hydrant Maintenance and Inspection Programs:

<u>Hydrant Inspection and Winterizing</u> - A preventative program to locate and identify inoperable, defective, or broken hydrants and maintain operability during winter months (annual).

<u>Hydrant Painting</u> - A preventative program to protect hydrants from corrosion, maintain visibility and flow parameter (annual).

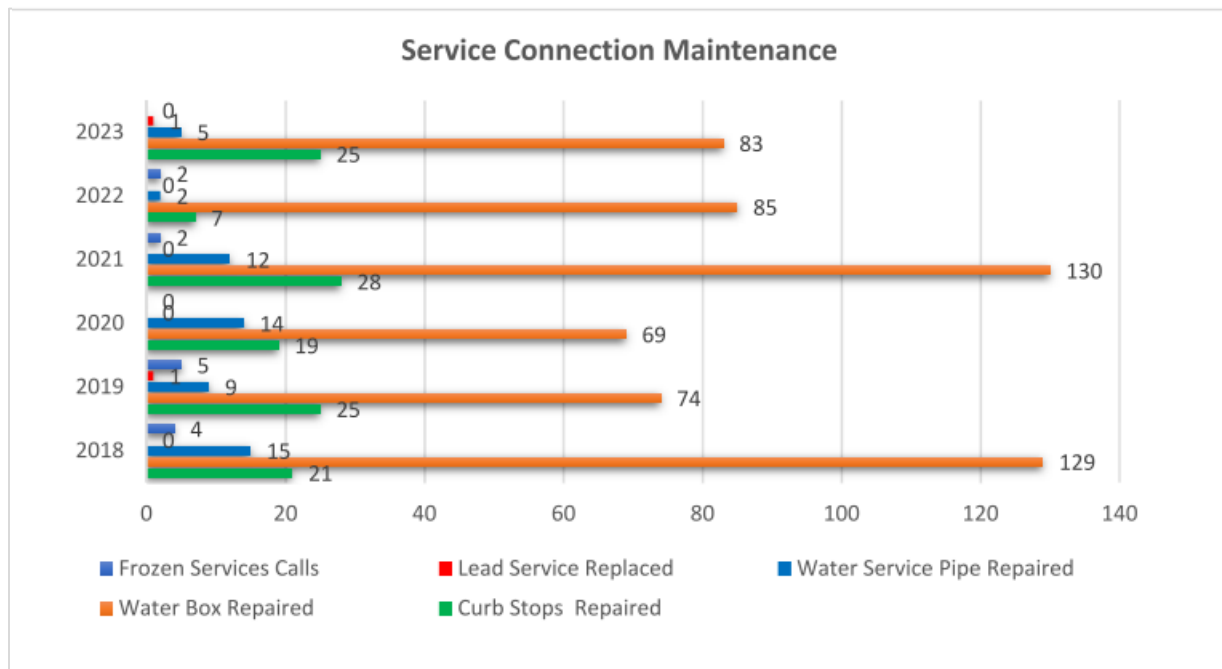<u>Hydrant Repair and Replacement</u> - Repair/replacement of inoperable, defective, or broken hydrants.

Hydrant Inspection and Maintenance

Year	Hydrants Inspected & Winterized	Hydrants Replaced	Hydrants Repaired	Hydrants Painted
2018	4773	4	184	74
2019	4874	4	119	392
2020	4692	3	78	0
2021	4804	4	125	44
2022	4586	3	308	176
2023	4742	6	263	2

Service Connection Maintenance Programs:

Curb stop Repairs - Repairs of inoperable, defective, or broken curb stops.

Water Service Pipe Repairs - Repairs and/or replacement of broken water service pipes. If the water service pipe is lead pipe this is, then replaced up to the property line.

Frozen Services - Thawing of frozen water service piping.

3. Management Review Outcomes

Management Review meeting took placed on December 7, 2023. The following table presents the outcomes of the management review:

Summary of Deficiencies	• Parameter exceeded for the 3 adverse drinking water test result was: Total coliform (TC count). • Upon flushing, sample test results received for all locations passed the Ontario Drinking Water Quality Standard. (Please see 2023 Drinking Water Annual Report)
Summary of Decisions	Effectiveness of the risk assessment process – Consider watermain leakage and cybersecurity as potential risk to water quality at the next Risk Assessment. Resources needed to maintain QMS – In addition to drinking water's QMS and Environmental Management System, Stormwater and Wastewater may require a management system; thus, the QMS software tool could be utilize by all the business units in the City. Potential exists for the different business units to fund the software tool and discussions to take place towards the creation of an Integrated Quality Management System for the City. IT Dept. needs to remodel themselves to not having to write sole sourcing report after.

	Risk Assessment - Water fountains throughout the city can be contributing factor to vandalism and public safety. Operational Performance –To ensure no operational issues during construction, valves and curb boxes are to be checked ahead of Capital Projects. Watermain breaks will be tracked in terms of depth of service in addition to pipe material. Communication – How do we integrate with York Region? How are non-compliance, non-conformance and opportunities for improvement flagged or communicated between the municipalities? Intermunicipal quarterly meetings. Competencies – Operators and Municipal inspectors need training hours to maintain their licences. Mohammad Kashani has offer to provide "Watermain Design" training session (6hr) for all personnel holding a licence.	
Update on Previous Action Items	Operational Performance Managers (from Top Management) to discuss program creation to utilize hydraulic model for chlorine dissipation and water age within distribution system.	In progress • Currently modeler working with Water and Wastewater Section, focusing on the wastewater as it relates to the ECA (Environmental Compliance Approvals). • Model for chlorine dissipation and water age within distribution system will be prioritized next.
	Resources needed to maintain the Quality Management System Drinking Water Quality Management System requires a software tool that will keep track of all the 21 Elements within the DWQMS (Standard). PNF submitted as part of the 2023 Capital Budget Request.	In progress – Finalizing Request for Proposal documentations with the Procurement Dept. IT is aiming to post RFP by January with the aim to award the contract by end of March 2024.

4. Third-Party Audit Outcomes and Accreditation Renewal

The Surveillance Audit took placed on October 24-25, 2023. No non-conformances were identified and 6 opportunities for improvement:

Element	Opportunity for improvement
Element 5 WI-DW-4.1 Table 1	Opportunity is available to include additional records that are currently not included such as, but not limited to, Top Management and council endorsement, QMR Appointment letter, Calibration and others. QMR may scan through the entire documented system to identify all the records committed/identified and include them in table 1 so that the table is comprehensive.
Element 13 EP-DW-4 Attachment 1 and 2	1) Attachment #1: Opportunity is available to ensure that water meters, being a water contact component, conform to ANSI/NSF std. 61. 2) Attachment #2: Opportunity is available to ensure all water main and service pipes conform to ANSI/NSF std. 61.

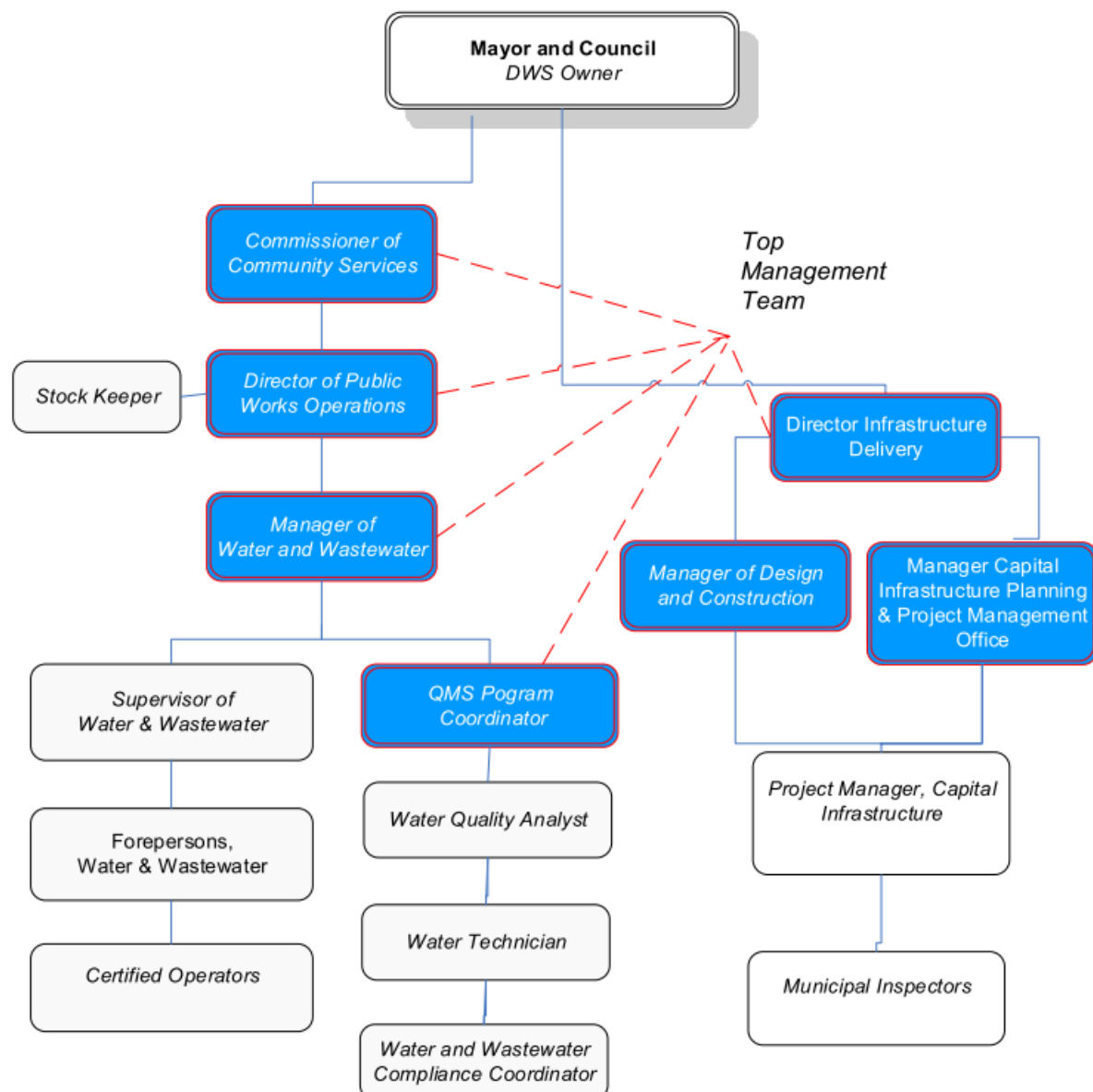| Element 18 EP-DW-6 section 3.3 (a) and (b) and WI-DW-4.9	(a) Scenario described in the 4th bullet point (an after-action review following an event): Opportunity is available to remove this as event as it is not a test (for emergency) or an approach to perform a test. As a best practice post event evaluation should be performed for all three event types identified in the first three (3) bullet points. (b) WI-DW-4.9, Section 1.0 a): Opportunity is available to require after action review activity for all actual events, mock tests, and tabletop exercise.
Element 19 WI-DW-4.4	Opportunity is available to include use of external resource to perform internal audit(s). Document various requirements including minimum competence requirements.
Element 20 Management Review - Consumer Feedback	Opportunity is available to report analysis of consumer feedback and the resolutions reached.
Element 21 EP-DW-8 section 3.5 (a)	Opportunity is available to require recording of objective evidence gathered to judge corrective action to be considered completed/closed.

Current certification is valid until November 30, 2024.

Certificate of Registration

This certifies that the Quality Management System of

The Corporation Of The City Of Richmond Hill
1200 Elgin Mills Road East
Richmond Hill, Ontario, L4S 1M4, Canada

has been assessed by NSF-ISR and found to be in conformance to the following standard(s):

Ontario's Drinking Water Quality Management Standard Version 2

Scope of Registration:
Richmond Hill Distribution System, 022-OA1, Entire Full Scope Accreditation

Certificate Number: C0123074-DWQS
Certificate Issue Date: 03-DEC-2021
Registration Date: 01-DEC-2021
Expiration Date *: 30-NOV-2024

Tom Chestnut,
Sr Vice President - ISR,
NSF-ISR, Ltd.

5. Organizational Structure, Roles, Responsibilities and Authorities

Members of Council as the "Owner" of the drinking water distribution system are responsible for ensuring their drinking water system meets all prescribed drinking water quality standards, operate in accordance with the *Safe Drinking Water Act* and its regulations, keep a fit state of repair, comply with all sampling, testing, and monitoring requirements and meet all reporting requirements.

QMS Top Management consist of: Commissioner of Community Services, Director Public Works Operations, Director Infrastructure Delivery, Manager of Water and Wastewater, Manager of Design and Construction, Manager Capital Infrastructure Planning & Project Management Office and QMS Program Coordinator.

Roles and Responsibilities in accordance with the Safe Drinking Water Act:

Section 11 – Duties of Owner and Operating Authorities	• Ensure that drinking water meets prescribed standards. • Ensure that the system is operated by qualified persons • Ensure that all sampling, testing and monitoring requirements are complied with • Use licensed (accredited) labs.
Section 14 – Agreement with accredited operating authority	• Municipal officials with decision-making authority remain personally liable, even when the system is run by a corporate entity • System owners are not relieved of duty to comply, even if operations are delegated • Owners must ensure the Operating Authority is carrying out its responsibilities

Section 19 – Standard of Care, Municipal Drinking Water System	• Those with decision-making authority:
	    o Exercise care to ensure the protection and safety of the users of the system
	    o Act honestly, competently and with integrity
	• May rely in good faith on a report of an engineer, lawyer, accountant, or other qualified professional.
	• Enforcement of the Standard of Care
	    o A provincial officer can lay a charge against a person to whom the standard applies
	    o Maximum penalties - $4 million fine and potential imprisonment for up to five years
	    o Penalties are decided by the courts based on the severity and consequences of the offence

	In the City of Richmond Hill Council assumes "Owner" responsibilities and authorities outlined in the *Safe Drinking Water Act* and the DWQMS which include attending the "Responsibilities Under the Statutory Standard of Care: Safe Drinking Water Act" training session at minimum once per Council term (four years).

Roles and Responsibilities during an Emergency Response:

Level 1	Minor Operational Impact or Interruption of Service/System	Certified Operator Supervisor Overall Responsible Operator (ORO) /Manager	Verbal notification of Level 1 emergency Escalation
Level 2	Water Quality and/or Large Volume Consumer Affected	Certified Operator Supervisor Overall Responsible Operator (ORO) /Manager	Verbal notification of Level 2 emergency Escalation Public Health and MECP Notification
Level 3	Immediate Danger to Health or Property	Certifies Operator Supervisor Overall Responsible Operator (ORO) /Manager Director Public Works Top Management Communication Services	Verbal notification of Level 3 emergency Escalation Public Health and MECP Notification Top Management in consultation with the Communication Services shall decide upon the public communication process.
Level 4	City-wide Emergency	Certified Operator Supervisor Overall Responsible Operator (ORO) /Manager Director Public Works Top Management Communication Services Fire Chief Mayor and Council	Verbal notification of Level 4 emergency Escalation Public Health and MECP Notification City-wide emergency communication coordinated by the Communications Services Department