

Operational Plan

Vaughan Distribution System (011-401)

Prepared by:
The City of Vaughan



Environmental Services

Effective Date: April 2019

UNCONTROLLED WHEN PRINTED

DWQMS Operational Plan for Vaughan Drinking Water System

Operational Plan Elements	Revision Number	Revision Date
QMS-01: Overview of Operational Plan	4	March 29, 2019
QMS-02: Quality Management System Policy	2	March 29, 2019
QMS-03: Commitment and Endorsement	6	March 29, 2019
QMS-04: Quality Management System Representative	4	March 28, 2019
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Form 05-03 Document Change Form	1	March 25, 2019
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Schedule C – Director's Directions for Operational Plans	n/a	n/a
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Form 21-03 Best Management Practices Tracking Log	0	May 2, 2019

	Environmental Services	QMS-01: QUALITY MANAGEMENT SYSTEM
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1.0 Purpose

The Quality Management System is one portion of the mandated Drinking Water Quality Management Standard (DWQMS) that is a requirement of the Ministry of Environment, Conservation and Parks (MECP) Municipal Drinking Water Licencing Program for all Drinking Water Systems in the province of Ontario.

1.1 Procedure

This operational plan is a document created by Environmental Services to demonstrate the commitment to provide safe and reliable drinking water is provided to all citizens, businesses, and visitors of Vaughan. The operational plan documents twenty-one (21) elements of the DWQMS and provides 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. This will allow the City of Vaughan to plan, implement, check, and continually improve, helping to build confidence and security in the Drinking Water System they operate.

1.2 Associated Documents and Records

MECP - Drinking Water Quality Management Standard

2.0 Purpose

To document a quality management system policy which demonstrates the City's commitment to deliver safe and clean drinking water as well as enhance customer confidence in the quality of drinking water.

2.1 Procedure

The QMS Policy is listed below:

As the owners and operators of the City of Vaughan's drinking water system we are committed to:

- providing safe and clean drinking water to our residents and businesses
- complying with applicable legislation and regulations as related to the provision of safe drinking water
- implementing and continually improving the effectiveness of our Quality Management System

This policy has been developed in accordance with the objectives of the 2018-2022 Term of Council Service Excellence Strategic Plan specifically to meet the environmental stewardship and good governance objectives.

The QMS Policy is posted on the City's website as a communication tool to the Owner and the public and is posted at the Joint Operations Centre in order to inform all Operating Authority personnel.

2.2 Associated Documents and Records

MECP - Drinking Water Quality Management Standard

QMS-03 Commitment and Endorsement

	Environmental Services	QMS-03: COMMITMENT AND ENDORSEMENT
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3.0 Purpose

The Owner demonstrates commitment and endorsement of the Operational Plan through a Council Resolution. The signatures of the key members of Top Management below, demonstrate that groups level of commitment.

3.1 Procedure

The Corporation of the City of Vaughan (Owner) and Top Management of the Operating Authority (as defined in QMS-09) are committed to the implementation, maintenance and continual improvement of a Quality Management System that meets the requirements of the Drinking Water Quality Management Standard. The QMS for the drinking water system is documented in the Operational Plan. Endorsement by the Owner and Top Management acknowledges the need for and supports the provision of sufficient resources to maintain and continually improve the QMS.

Top Management demonstrate their endorsement of the Operational Plan through the Staff Report to Council on the results of Management Review and by the signatures of the DCM, Public Works and Director of Environmental Services. Staff will submit the Operational Plan to each new term of Council every four years for re-endorsement.

Top Management's commitment to an effective QMS is evidenced by:

- a) Ensuring that a QMS is in place that meets the requirements of the DWQMS,
- b) Ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,
- c) Communicating the QMS according to procedures (QMS-12), and
- d) Determining, obtaining or providing the resources needed to maintain and continually improve the QMS.

3.2 Associated Documents and Records

QMS-02 Quality Management System Policy
QMS-09 Organizational Structure, Roles, Responsibilities and Authorities
QMS-12 Communications
Council Resolution of Endorsement
Signatures of Top Management DCM and Director

4.0 Purpose

To identify a Quality Management System Representative and outline their specific responsibilities.

4.1 Procedure

Top Management appoints and provides authority to the Quality Management System Representative, irrespective of their other responsibilities. The authority, roles and responsibilities are provided in QMS-09.

A letter of appointment of the QMS Representative has been signed by Top Management and is included in Appendix 4-A.

4.2 Associated Documents and Records

QMS-09 Organizational Structure, Roles, Responsibilities and Authorities
Appendix 4-A Letter of Appointment of QMS Representative

NOTICE OF APPOINTMENT

QMS Representative

Top Management for the Operating Authority (Water Division of the Environmental Services Department) at the City of Vaughan has appointed the Quality Management System Representative to be:

Kewal Kharbanda, Supervisor of Water Operations

The Quality Management System (QMS) Representative is the liaison between Top Management and the Water Division of the Environmental Services Department. The QMS Representative, irrespective of other responsibilities shall:

- a) administer the QMS by ensuring that processes and procedures needed for the QMS are established and maintained,
- b) report to Top Management on the performance of the QMS and any need for improvement,
- c) ensure that current versions of documents required by the QMS are being used at all times,
- d) ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the City of Vaughan's drinking water system, and
- e) promote awareness of the QMS throughout the Water Division of the Environmental Services Department (the Operating Authority).

Interim Director of Environmental Services

Date

5.0 Purpose

To document a procedure that describes how: a) documents required by the QMS are kept current, legible, readily identifiable, retrievable; as well as stored, protected, retained and disposed of; and b) records are kept legible, readily identifiable, retrievable, as well as stored, protected, retained and disposed of.

5.1 Procedure

Documents

A controlled document is the Operational Plan and its associated policies, procedures, (including applicable Standard Operating Procedures), forms, exhibits, flowcharts or other documents that are subject to revision and are maintained on the Document Master List (Form 05-01).

Controlled documents (excluding drawings) of both internal (refers to documents created by the Operating Authority) or external origin are listed on the Document Master List. The QMS Representative is responsible for maintaining the electronic list.

All electronically controlled documents for the QMS are available on the network drive.

Documents have revision dates listed on them to identify the current version.

Once the document is printed, the document is considered uncontrolled and not subject to revision.

The QMS Representative and when applicable, members of Top Management determine the point of use that controlled documents are to be made available. These locations (along with the title and revision date) are recorded on the Document Master List.

All staff are responsible for ensuring that documents remain legible and readily identifiable. If a document has been damaged or made illegible, staff are to request a replacement copy from the QMS Representative.

Documents that are only available in hard copy are kept in a safe location that will ensure no damage or deterioration.

Document Changes

Any employee can make a request for the creation or a change to a QMS related document. Changes to documents can be a result of change in procedure, results of an audit or suggestion for improvement.

The request is recorded in Part A on a Document Change Form (Form 05-03).

Suggested changes can also be attached to the Document Change form.

The Document Change Form is sent to the QMS Representative who will either approve or deny the change request for the document.

Prior to processing document changes the QMS Representative will be responsible for ensuring that the changes will not affect the integrity of the QMS or the processes.

The QMS Representative notes the decision on the Document Change Form.

If the request is denied the QMS Representative will send notification to the requester advising of the decision and the reason why.

The QMS Representative then updates the Document Master List (Form 05-01). The QMS Representative will send an email explaining what has changed in the document to all management affected by the change. Management are responsible for advising any staff affected by the change.

The QMS Representative ensures that Part C of the Document Change Form is completed, dated, and filed.

Obsolete documents must be marked "Obsolete" if retained for legal and/or historical purposes, otherwise they are disposed of once a current version is made available. Only current versions of documents (electronic or hard copy) are maintained on the Document Master List by the QMS Representative. The user of the obsolete document is responsible for disposing of the document once they determine there is no further use for the document. The retention time for obsolete documents is not preset and is based on the user's requirements.

QMS documents are retained until they are replaced by a more current version (e.g., forms) or are determined to no longer be required. Documents that have been identified as obsolete or superseded by updated versions are replaced due to being damaged/illegible are disposed of by being thrown out.

Records

The Record Master List Form (Form 05-03) identifies all of the records that this procedure applies to.

The electronic documents and records associated with the QMS are maintained on the network drive.

The person completing the record must ensure the record is legible, accurate and complete with regard to recording requirements.

When records are removed from the active filing system, they are submitted by Compliance to the City's Records Management department in order to be stored as archived documents. They are identified, packed in suitable containers and stored in a safe, dry location that will ensure no damage or deterioration.

Record retention and disposing of official records shall be in accordance with the City's Record Retention Schedule of the City of Vaughan By-law #046-2017, or as updated from time to time.

Records may be electronic and/or printed copy.



Electronic records associated with the QMS are maintained on the network.

5.2 Associated Documents and Records

Form 05-01 Document Master List
Form 05-02 Record Master List
Form 05-03 Document Change Form
City of Vaughan By-Law #046-2017

DOCUMENT MASTER LIST

Document Title	Document Reference No.	Date and/or Revision Level	Distribution / File Path
<i>Internal Documents</i>			
<i>External Documents</i>			

RECORD MASTER LIST

RECORD NAME	ID	FILING METHOD	LOCATION	MINIMUM RETENTION TIME		MAINTAINED BY
				Active	Storage	

DOCUMENT CHANGE FORM

Part A Request for Change or Creation of Document (To be completed by requestor)

(Fill in the information below for the document you would like changed)

Document Title: _____

Doc. Reference Number _____

Detail change requested or attach document with changes marked and initialed._____
Name and Signature_____
Date****Forward to QMS Representative******Part B Approval** (To be completed by the QMS Representative)**Creation/change has been () DENIED - Reason:**_____
_____() **APPROVED****QMS Representative's Name & Signature:** _____**Date:** _____**Part C – QMS Representative**

- () Make changes to the electronic documents on network drive
- () Update the Document Master List (Form 05-01)
- () Provide a paper copy of the change for inclusion in the Operational Plan
- () Advise supervisors that are affected by the change
- () File Document Change Form as per Records Master List
- () Document change request originator is made aware of decision and changes made to document

Notes:

Form 05-03

Any employee can make a request for the creation or a change to a document or data form. Changes to documents can be a result of change in procedure, results of an audit or suggestion for improvement.

Employee

- The employee completes Part A of the Document Change Form 05-03. Suggested changes can also be attached to the Document Change form.
- After completing Part A of the Document Change Form submit it to the QMS Representative who directs the form to the appropriate management staff (Responder).

QMS Representative

- The QMS Representative evaluates the request and notes the decision on Part B of the Document Change Form.
- If the request is denied the QMS Representative will send notification to the requester advising of the decision and the reason why.
- Ensures updated form is provided to users and training (if applicable) is provided.

6.0 Purpose

To provide a description of the current Vaughan Distribution System.

6.1 Procedure

The City of Vaughan (Owner of the drinking water system) is responsible for the distribution of drinking water to the citizens of Vaughan. Environmental Services, Water Division (Operating Authority) is responsible for the operation, management, maintenance and/or alteration of the Vaughan Distribution System.

Description of System

Vaughan purchases its drinking water from the Region of York who is the wholesale supplier to the City of Vaughan. This water is sourced from Lake Ontario by the City of Toronto and the Region of Peel, and is already treated for domestic consumption by the time Vaughan has received it. Chloramination (chlorine together with ammonia) is used as the secondary disinfectant. The City of Vaughan owns and operates the Vaughan Water Distribution System making them strictly the retail supplier of water to consumers. The transmission lines and storage facilities are owned and operated by the Region of York.

Vaughan's Water Distribution System is classified as a "Large Municipal Year-Round Residential System: receiving water from a Large Municipal Year-Round Residential System".

A certificate of classification was issued to the City of Vaughan for the water distribution system under the Ontario Safe Drinking Water Act. The Vaughan Water Distribution System classification is a Class II.

Water Distribution and Treatment

York Region supplies the Vaughan Distribution System with treated drinking water. Vaughan owns and operates one booster (pumping) station, one pressure elevating system, watermains, fire hydrants and service connections to service the various pressure districts throughout the City.

Booster Stations and Pressure Elevating Station

In 1997, the Maplewood Booster Station was built to serve pressure district 9 located at the south-east corner of Keele Street and Kirby Road. The system has two duty pumps to meet domestic water demand and two standby fire pumps to meet emergency fire flow requirements. The system elevates water from the North Maple Reservoir in pressure district 7 to pressure district 9.

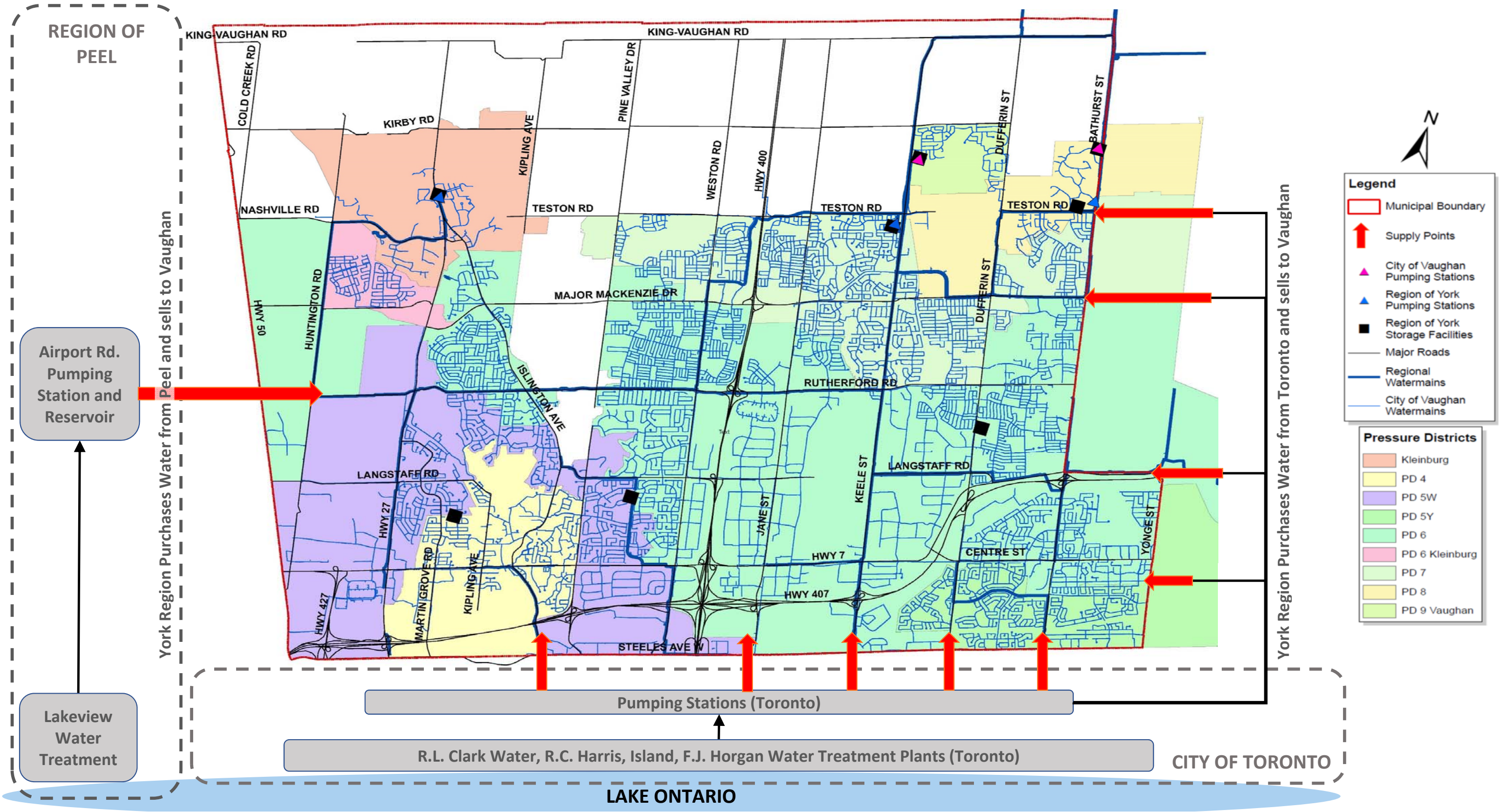
The Woodland Acres Pressure Elevating Station services a small residential area in the north east part of the City. In 2003, this station was installed to address fluctuations in water pressure in the immediate area during peak demand.

6.2 Associated Documents and Records

Appendix 6-A City of Vaughan Water Source and Distribution System Schematic

Schedule C – Director’s Directions for Operational Plans

City of Vaughan Water Source and Distribution System



NOTE: Facility Locations for illustration purposes only and are approximate.

7.0 Purpose

To document the procedure used to complete a risk assessment for the Vaughan drinking water system. The risk assessment process will:

- consider potential hazardous events and associated hazards, as identified in the Ministry of the Environment, Conservation and Parks document titled “Potential Hazardous Events for Municipal Residential Drinking Water Systems,” as amended,
- identify potential hazardous events and associated hazards,
- assess and rank the risks associated with the hazards,
- identify control measures to address the hazards,
- identify critical control points within the drinking water system,
- identify a method to verify the risk assessment validity and assumptions at least once every calendar year,
- ensure a risk assessment is conducted at least once every thirty-six (36) months, and
- consider the reliability and redundancy of the equipment.

7.1 Procedure

Annual Review of Risk Assessment

At least once every calendar year, the QMS Representative facilitates a review of the currency of the information and validity of the assumptions used in the risk assessment process for the drinking water system. This is undertaken by a team comprised of (at a minimum) the Manager and Supervisor's of Water Services and/or designates and Supervisor of Compliance and Business Services.

When reviewing the currency of the risk assessment information, the following may be considered:

- process changes
- reliability and redundancy of equipment
- emergency situations
- critical control point deviations
- QMS non-conformances related to standard operating procedures

Risk Assessment Methodology

The risk assessment is completed by filling out the Risk Assessment Form (Form 08-01) which lists the activity, hazard description, control measures and associated rank. The previous years' completed form is used as a template during the annual review: newly identified hazards are inserted into the previous year's form and the columns are filled out as described below and existing hazards are updated, remain unchanged, or are removed.

Column in Risk Assessment Form	Information in Column
Activity	Distribution system related activity is recorded in this column.
Hazard Description	Associated potential hazards are documented this column.
Control Measures	Measures currently in place to lower the possibility of the hazard occurring
Likelihood	The likelihood (L) and consequence (C) of the hazardous event occurring are assessed using the Risk Assessment Rating Table (Table 07-01) as a guide. Detectability, vulnerability and/or critical customers may also be considered when assigning the likelihood and/or consequence rating. Using this methodology, the higher number indicates a higher likelihood or consequence
Consequence	
Total Rank	The Total Rank (R) is then assigned for each hazard based on the calculation of the likelihood of the event occurring (L) plus the consequence of the event (C) or $L + C = R$. If the total rank is greater than six (6) then it is considered a Critical Control Point (CCP) and the control measures/corrective action
Considerations for Determining CCP's	Consider below when determining CCP's: 1) If the hazard is controlled by a preventative measure or training, then the program is noted in this column and the hazard may not be a "Critical Control Point (CCP)" 2) For a hazard to be identified as a CCP - 3) Must answer the question ("If control was lost could someone be hurt and could a control measure(s) be used by the operator to alleviate the issue?"), 4) "Control Point (CP)" are identified as hazards that are controlled by a prerequisite program
CCP #	The identified CCPs are numbered sequentially and highlighted

Comprehensive Thirty-Six (36) Month Review of Risk Assessment

Every thirty-six (36) months a more comprehensive review of the drinking water system risk assessment process is conducted. This is an opportunity to review the risk assessment process and outcomes as well as the "total rank" number. For example, the

reviewers could consider changes in microbial risks based on new research, or changes to the risk assessment process as a continual improvement feature. To undertake this more comprehensive review the QMS Representative facilitates a team comprised of (at a minimum) Manager of Water Services, Supervisors of Water Services, and/or designates and other potential internal departmental reviewers (e.g., other City Departments, consultants, other utilities) that the QMS Representative may decide to invite.

In the years where the thirty-six (36) month review process is completed, the annual risk assessment review will be completed at the same time.

Document and Records Management

The meeting minutes of the Risk Assessment and completed Risk Assessment Form (08-01) are shared with the Director of Environmental Services.

The QMS Representative is responsible for ensuring that minutes are taken during the review meetings taking place once every calendar year and once every thirty-six (36) months and that these are maintained as per Document and Records Control QMS-05 Procedure.

The QMS Representative is responsible for maintaining and making any necessary changes/updates to the Risk Assessment Form as per Document and Records Control QMS-05 Procedure.

The QMS Representative is responsible for ensuring that any necessary changes are made to the training requirements, standard operating procedures, system procedures or other parts of the QMS resulting from changes to the Risk Assessment.

7.2 Associated Documents and Records

Form 08-01 Risk Assessment Form

Table 07-01 Risk Assessment Rating

Table 08-01 Summary of Critical Control Points

QMS-05 Document and Records Control QMS System Procedure

Risk Assessment Rating

Risk = Likelihood + Consequence (if sum is >6, Risk is considered a Critical Control Point)

Description	Likelihood of Hazardous Event Occurring	Rating
Rare	May occur in exceptional circumstances	1
Unlikely	Could occur at some time	2
Possible	Has occurred or may occur once every 1 to 5 years	3
Likely	Has occurred or may occur on a yearly basis	4
Very Likely	One or more occurrences on a monthly or more frequent basis	5

Description	Consequence of Hazardous Event Occurring	Rating
Insignificant	Insignificant impact, little public exposure, little or no health risk	1
Minor	Limited public exposure, minor health risk	2
Moderate	Minor public exposure, health impact for smaller population	3
Major	Major public exposure, larger population at risk	4
Catastrophic	Major impact for large population, complete failure of systems	5

8.0 Purpose

To document the outcomes of the Risk Assessment for the drinking water system and identify the Critical Control Points (CCP).

8.1 Procedure

The Risk Assessment must be conducted as per the requirements of QMS-07 Risk Assessment and the outcomes will be documented on the Form 08-01 Risk Assessment Form.

The CCPs will be identified on Form 08-01 and will be detailed in Table 08-01 Summary of Critical Control Points.

As per QMS-07 Risk Assessment, the activities that comprise the Risk Assessment are reviewed for accuracy and validity and may be updated following the Annual Review or after a major process change. A more comprehensive review is conducted every thirty-six (36) months which provides the opportunity to review the risk assessment process, outcomes and risk ratings.

8.2 Associated Documents and Records

Form 08-01 Risk Assessment Form
Table 07-01 Risk Assessment Rating
Table 08-01 Summary of Critical Control Points
QMS-05 Document and Records Control QMS System Procedure

Drinking Water Risk Assessment

			RANKING (Likelihood + Consequence) CCP Threshold = 6			
Source of Hazard	Result of Hazardous Event/Consequence of Hazard	Control Measures to Address Potential Hazards & Hazardous Events	Likelihood	Consequence	Rank	CCP #
DISTRIBUTION SYSTEM						
Bulk Water Services						
Bulk Water Services						
Watermain Flushing						
Watermain Break						
Watermain Break						
Temporary Connections						
Exercising Valves						
Hydrant Connections						
Long Term Impacts of Climate Change (to be finalized in 2019 Risk Assessment)						

Drinking Water Risk Assessment

			RANKING (Likelihood + Consequence) CCP Threshold = 6			
Potential Hazard/Event	Hazardous Events and Associated Hazards	Control Measures to Address Potential Hazards & Hazardous Events	Likelihood	Consequence	Rank	CCP #
Source Water Supply Shortfall (to be finalized in 2019 Risk Assessment)						
Extreme Weather Events (to be finalized in 2019 Risk Assessment)						
Sustained Extreme Temperatures (to be finalized in 2019 Risk Assessment)						
Chemical Spill Impacting Source Water (to be finalized in 2019 Risk Assessment)						
Sustained Pressure Loss (to be finalized in 2019 Risk Assessment)						
Backflow (to be finalized in 2019 Risk Assessment)						
Terrorist Threat (to be finalized in 2019 Risk Assessment)						
Vandalism (to be finalized in 2019 Risk Assessment)						

Drinking Water Risk Assessment

			RANKING (Likelihood + Consequence) CCP Threshold = 6			
Potential Hazard/Event	Hazardous Events and Associated Hazards	Control Measures to Address Potential Hazards & Hazardous Events	Likelihood	Consequence	Rank	CCP #
BOOSTER/PRESSURE ELEVATING STATIONS						
Maplewood Booster Station						
Woodland Acres Pressure Elevating Station						

Rating System Key			
Likelihood	1	Rare	For full descriptions see Table 07-01 Risk Assessment Rating
	2	Unlikely	
	3	Possible	
	4	Likely	
	5	Very Likely	
Consequence	1	Insignificant	
	2	Minor	
	3	Moderate	
	4	Major	
	5	Catastrophic	

Critical Control Points		Control Limits	Control Measures
CCP #1			
CCP #2			

A Critical Control Point is an essential step or point in the City of Vaughan's distribution system where you apply some sort of control to prevent or eliminate a drinking-water hazard or to reduce it to an acceptable level.

9.0 Purpose

To document a procedure ensuring that the Owner, Operating Authority and Top Management are defined, the organizational structure of the Operating Authority is described and the roles, responsibilities and authorities of Top Management and key positions within the Operating Authority are identified.

9.1 Procedure

Organizational Structure

The organizational structure of the Operating Authority, as it reflects to DWQMS responsibilities, is outlined in Appendix 9-A: Organizational Chart.

The Owner is the Corporation of the City of Vaughan and is represented by Council.

Identifying Key QMS Roles

Top Management and the Operating Authority of the drinking water system are defined in Table 9-1.

Top Management is responsible for conducting the management review as outlined in procedure QMS-20 Management Review.

The QMS Representative is appointed by Top Management and irrespective of other responsibilities shall have specific QMS related responsibilities as outlined in Table 9-2.

The appointment letter for the QMS Representative is included in procedure QMS-04.

Organizational Roles, Responsibilities and Authorities

Specific responsibilities and authorities for positions with key roles in the Drinking Water Quality Management System are detailed in the various system procedures and standard operating procedures (including Activity Methods) that form the Operational Plan.

Table 9-2 provides a summary of the overall roles, responsibilities and authorities related to the provision of safe drinking water in the drinking water system. The specific responsibilities and authorities for the various roles are provided in the Job Descriptions maintained by the City's Human Resources Department.

9.2 Associated Documents and Records

Job Descriptions

QMS-04 QMS Representative

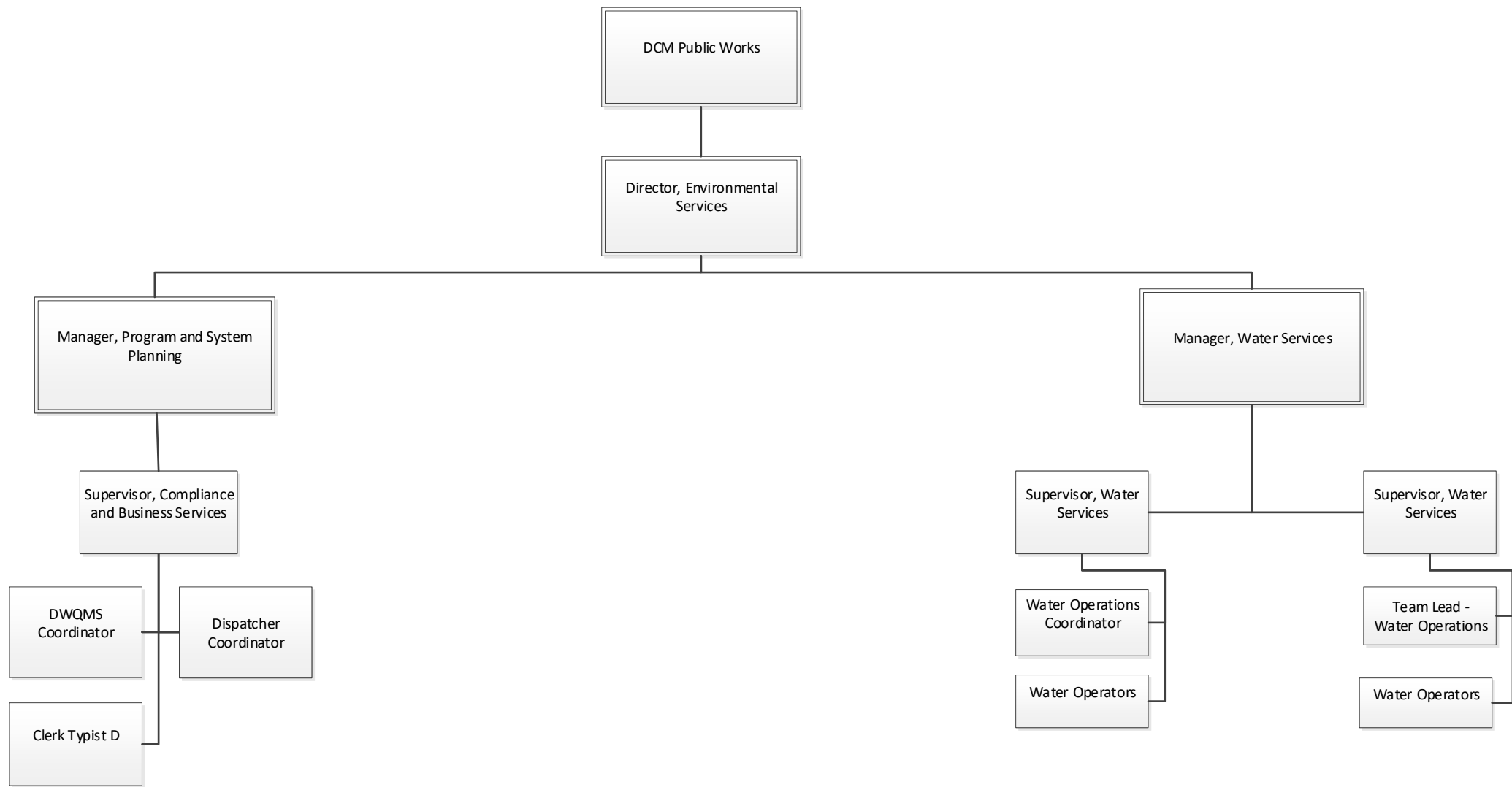
QMS-20 Management Review

Table 9-1 Operating Authority Key Roles

Table 9-2 QMS Roles, Responsibilities and Authorities

Appendix 9-A Organizational Chart

Public Works
Environmental Services Department



Owner – The Corporation of the City of Vaughan (Vaughan Council acts on its behalf)

Operating Authority – Environmental Services (Water Division)

QMS Representative – Supervisor of Compliance & Business Services

Top Management (within the Operating Authority):

- Deputy City Manager, Public Works*
- Director of Environmental Services*
- Manager of Water Services*
- Supervisor('s) of Water Operations*
- Supervisor of Compliance & Business Services*

*or appointed designate

Table 9-2

QMS Roles, Responsibilities and Authorities



Roles	Responsibilities	Authorities
Owner	- Demonstrates commitment to the QMS Policy - Ensures the resource needs to support the QMS are met - Endorses the contents of the Operational Plan	- Financial, administrative authority related to the provision of safe drinking water - Allocate necessary resources for the safe operation of the system based on recommendations from the Operating Authority
Top Management	- Performs Annual Management Review - Reports to Council on the performance of the QMS through highlights of Annual Management Review Minutes - Ensures compliance with the terms and conditions of the License and its components, and applicable acts and regulations related to the delivery of safe drinking water - Appoints QMS Representative - Makes recommendations related to necessary resources for QMS - Supports Operational Plan	- Makes recommendations to the Owner on the drinking water systems - Make decisions respecting corporate aspects of the QMS - Makes recommendations on improvements to QMS - Provides and obtains resources for the QMS and necessary infrastructure to operate and maintain the drinking water system safely and effectively - Makes decisions on system-specific aspects of the QMS
QMS Representative	- Administers the QMS by ensuring that processes and procedures needed for the QMS are established and maintained - Reports to Top Management on the performance of the QMS and any need for improvement - Ensures that current versions of documents required by the QMS are being used at all times - Ensures that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the drinking water system	- Makes necessary changes to the QMS and system procedures in the Operational Plan - Participates in inspections with MECF

Table 9-2

QMS Roles, Responsibilities and Authorities



Roles	Responsibilities	Authorities
	- Promotes awareness of the QMS throughout the Operating Authority - Liaison for internal and external auditing process	
Director of Environmental Services	- Owner's representative of the drinking water system - Plans, develops, recommends and implements strategies and goals to address service levels/standards of the City related to water distribution - Provides long-range operational and productivity objectives - Liaises with staff, public and external agencies - Authorizes Committee and council reports, and correspondence - Attends Council, general public, external agencies, other levels of government, etc. meetings as required - Approves the Overall Responsible Operator (ORO)	- Monitors expenditures and financial performance, ensuring cost effective service, maintenance management programs, technical studies - Supervises budget preparation and administration - Manages Operating Authority staff
Manager of Water Services	- May be required to act as Overall Responsible Operator when necessary if at least Class 2 WD licence is maintained - Managing activities for Environmental Services operations encompassing water - Administration of service contracts, equipment tenders, maintenance programming of water, budget preparation, preparing reports and recommendations - Participates on municipal committees and liaises with other levels of government - Assesses staffing needs and provides recommendations on	- Implementation of service procedures and planning and establishing project priorities - Responds to and/or addresses inquiries from the public, Council, Contractors and City Staff

Table 9-2

QMS Roles, Responsibilities and Authorities



Roles	Responsibilities	Authorities
Supervisor('s) of Water Operations	staff selection, including the ORO designation - Primary acting ORO Supervises water testing and corrective action in consultation with the Supervisor of Compliance and Business Services - Creation of preventative maintenance programs and repair activities for all parts of the water distribution - Prepares and maintain associated records, reports and paperwork	- Participates in inspections with MECP - Reviews and approves changes to Standard Operating Procedures and/or Activity Methods in consultation with the QMS Rep.
Water Operations Coordinator	- Support the primary ORO and may be required to act as ORO when necessary at least Class 2 WD licence is maintained - Coordinates proactive and preventative maintenance programs of water distribution infrastructure including distribution mains, valves, hydrants, meters, chambers, bulk water stations, booster stations, water pumping stations in accordance with all provincial regulations in order to maximize the performance of the asset and maintain regulatory compliance of the water distribution system - Collaborates with other divisions, departments and York Region to coordinate water distribution infrastructure projects/initiatives including planning, executing, monitoring, reporting and implementing continual improvement opportunities - Maintains associated records, reports and paperwork	
Team Lead	- Support the primary ORO and may be required to act as ORO when necessary; at least Class 2 WD licence is maintained	- Oversees field operations including assisting with prioritizing and implementing approved

Table 9-2

QMS Roles, Responsibilities and Authorities



Roles	Responsibilities	Authorities
	- Acts as Operator in Charge during applicable shift - In consultation with the Supervisor, provides technical direction as required and oversees day to day activities of Water Operations staff including scheduling of work; enforcement of departmental procedures and programs, City health and safety practices, policies, procedures, and provincial acts and regulations - Investigates and troubleshoots water infrastructure maintenance issues and customer service concerns brought forward by residents, internal departments and external agencies - Maintains associated records, reports and paperwork - Provides backup support to the Water Operations Coordinator and Supervisor of Water Operations	operational and preventative maintenance programs applied to the water distribution infrastructure
Water Operator OIT	- Assists with maintenance and repair of water works infrastructure including valves, pumps, hydrants, meters, chambers, and any other appurtenances - Performs water sampling activities and AWQI corrective actions with OIC oversight	
Water Operator I	- Operator in Charge during applicable shift - Maintenance and repair of water works infrastructure including basic inspection duties involving valves, hydrants, meters, chambers, mains, service connections, etc. - Provides assistance in maintenance and repairs of water works infrastructure	

Table 9-2

QMS Roles, Responsibilities and Authorities



Roles	Responsibilities	Authorities
	- Responds to SCADA alarms on site only - Performs water sampling activities and AWQI corrective actions	
Water Operator II	- Support the primary ORO and may be required to act as ORO when necessary - Operator in Charge during applicable shift - Maintenance and repair of water works infrastructure including inspection duties involving hydrants, meters, chambers, pumping/booster stations, etc. - Responds to SCADA alarms on site only - Completes associated paperwork - Provides backup support to Team Lead - Performs water sampling activities and AWQI corrective actions	
Supervisor of Compliance & Business Services	- QMS Representative - Coordinates and maintains QMS - Ensures compliance initiatives, systems and programs are maintained - Supervises, tracks and monitors water sample collection program and reporting of corrective action for the Water section - Facilitates and conducts training sessions and opportunities - Completes annual budgeting for training opportunities - Liaises with MECP compliance officer and QMS auditors during inspections of water system - Reviews MECP web site for regulatory changes and informs appropriate City staff of changes - Prepares Annual Report, Summary Report and other	- Recommends procedural changes to operating activities to ensure compliance with acts and regulations - Oversees Operator Certification tracking and license renewals to maintain operator licenses

Table 9-2

QMS Roles, Responsibilities and Authorities



Roles	Responsibilities	Authorities
DWQMS Coordinator	pertinent reports to ensure compliance - Schedules operator training and examinations - Maintains a data base to track status of operator licenses and associated records - Researches and compiles data for maintenance of QMS - Retrieve and compile records and information for MECP inspections and audits - Backup to clerk and technical staff responsible for scheduling, tracking and reporting of water samples	- Reports AWQIs to MECP and York Public Health
Clerk Typist D	- Development of chains of custody, data entry, organization of sampling including monthly, quarterly, yearly, lead, adverse, new main, complaints and main breaks - Assists with adverse reporting, written notices, and resolutions - Uploads information and runs reports related to water samples	- Reports AWQIs to MECP and York Public Health
Environmental Services Dispatch Coordinator	- Receives transferred calls (e.g., complaints) from Access Vaughan related to the drinking water system - Generates and closes out work orders based on calls received - Contacts Water Operations Supervisor to have work assigned based on calls	

10.0 Purpose

To document a procedure that identifies:

- a) competencies required for personnel performing duties directly affecting drinking water quality,
- b) activities to develop and maintain competencies for personnel performing duties directly affecting drinking water quality, and
- c) activities to ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water.

10.1 Procedure

Competencies

Supervisors and the Manager of Water Services are responsible for identifying required competencies for employees performing duties directly affecting drinking water quality. The minimum levels of competencies required for personnel with duties affecting drinking water quality are identified in Table 10-1 Competencies.

Table 10-01 indicates the skill level required for each position whose actions may have a direct impact on water quality. The following is a general description of the various competency levels:

- Competency Level 1 indicates a basic, theoretical level of understanding. Level 1 understanding is normally acquired through a combination of instruction, on-the-job training, and external training events.
- Level 2 indicates an intermediate, theoretical and working knowledge of a skill, typically acquired through theoretical/practical instruction, on-the-job experience, and/or participation in specialty workshops and training courses.
- Level 3 indicates advanced theoretical and working understanding of a particular subject area, particularly as it pertains to the person's responsibilities in the water distribution process. Level 3 is achieved through a combination of successful completion of a post-secondary degree or diploma (or equivalent in the water related field), at least 4 years of directly related on-the-job experience and/or participation in specialty workshops and training courses.

Job descriptions are managed by Human Resources and may be updated if determined as a requirement by either the employee, Supervisor, and/or Manager.

Competency is demonstrated by having appropriate education, training, skills and experience required for each relevant position.

There is a probationary period for new or transferred employees and at the end of the probationary period the Supervisor evaluates the employee's competency.

Competency for management positions is reviewed at least annually during performance reviews conducted by the immediate Supervisor.

Training Needs Identification

Supervisors identify training needs for employees performing duties directly affecting drinking water quality based on the identified competencies.

The need for training (to ensure competency is maintained) may also be determined based on the following:

- Training requirements identified in O. Reg 128/04
- Comparison of the person's skills and abilities with the requirements of the job description and qualifications, in particular for new, temporary and transferred employees;
- Corrective action (e.g., resulting from internal audits or non-conformances) if the need for training is found to be a root cause (Element 21);
- Changes due to updates to the risk assessment outcomes (Element 8); and
- Changes in legislative/regulatory requirements.

Training needs are continually being reviewed based on regulatory changes, evaluation of existing programs and operator suggestions.

Training needs may be identified through the Continual Improvement process (Element 21) and documented in a Corrective Action Report (CAR). For these training needs, the employee's Supervisor is responsible for ensuring the training is completed and competency is achieved and reporting it to the QMS Representative.

Training Plans

Using a Training Plan Template, the Supervisors of Water Operations work together with Water Operators to identify training goals for their current operator licensing cycle.

Once complete, the Supervisor of Compliance & Business Services will review the proposed training plans and develop the training budget based on training needs.

The Supervisor of Compliance & Business Services and the DWQMS Coordinator meet during each year to plan out the training requirements necessary for licensed operators working in the City's drinking water system. Required competencies, the completed training from previous years, and availability and relevancy of courses are considered.

The DWQMS Coordinator records the completed training hours in a database for each Water Operator. These are maintained as per Element 5 Document and Records Control.

On-the-job training is provided to employees through courses and job shadowing and is determined to be effective when the Supervisor allows the employee to perform that

function unassisted.

Employee DWQMS Orientation

The Manager or Supervisor of Water Services ensures a Drinking Water Quality Management Standard (DWQMS) awareness session is provided to new or transferred employees who will be performing duties which relate to the City's drinking water system. The following types of information are included in the DWQMS awareness session:

- introduction to the Operational Plan and QMS Representative;
- review of pertinent procedures and Standard Operating Procedures; and
- review of QMS policy and ensuring that personnel are aware of the relevance of their duties and how they affect safe drinking water.

The DWQMS Coordinator records completion of the DWQMS awareness session in the individual's training matrix.

Training Methods

Competency requirements can be satisfied through the use of in-house, off-site, or on-line training, attendance at seminars/conferences, presentations by subject matter experts or on-the-job training.

On-the-job training may include using a "job shadowing system" to demonstrate and monitor how to perform various job duties using the appropriate documented procedures.

Effectiveness of Training

When external trainers conduct courses, the trainer may review/verify training effectiveness through various means (e.g., mini quiz or mini workshops are undertaken for CEU courses). If the employee is knowledgeable and able to demonstrate the skills, then the external trainer may issue a certificate to indicate the training outcome was realized by the recipient.

The DWQMS Coordinator may periodically review externally provided courses as a means of determining training effectiveness and applicability. This may include making contact with staff who participated in the course to determine the effectiveness of the training. In addition, they may ask the instructor to provide feedback on the trainee's understanding of the information.

10.2 Associated Documents and Records

QMS-05 Procedure Document and Records Control
QMS-08 Risk Assessment Outcomes
QMS-21 Continual Improvement
Form 21-01 Corrective Action Report
Table 10-01 Drinking Water Related Competencies
Training Matrix
Training Plan Template

Table 10-01

Drinking Water Related Competencies										
	Director of Environmental Services	Manager of Water Services	Supervisor of Water Operations	Supervisor of Compliance & Business Services	DWQMS Coordinator	Water Operator OIT	Water Operator I	Water Operator II	Water Operations Coordinator	Team Lead
- "0" indicates competency not required - "1" indicates basic level of competence - "2" indicates intermediate level of competence - "3" indicates advanced level of competence										
MECP WD Licensing (level of licence required)	N/A	N/A	III	N/A	N/A	OIT	I	II	III	III
Technical Competencies										
Emergency Procedures	3	3	3	3	2	2	2	2	2	2
Technical Mathematics	1	2	2	2	1	1	1	2	1	2
Regulatory Requirements	3	3	3	3	3	2	2	2	2	2
Interpreting technical drawings	1	3	3	1	1	2	2	3	3	3
Sampling	0	3	2	2	1	3	3	3	3	3
Pumps/valves/pumping maintenance	0	3	3	1	0	2	2	3	2	3
Electrical Instrumentation/controls	0	2	3	1	0	1	1	2	2	2
Motor Controls	0	2	3	1	0	2	2	3	2	2
Confined Space Entry	0	2	3	0	0	3	3	3	3	3
Standard First Aid with CPR-C	2	2	2	2	2	2	2	2	2	2
Behavioural Competencies										
Leadership Skills	3	3	3	3	1	0	1	2	2	2
Presentatation Skills	3	3	2	3	3	0	0	1	1	1
Word Processing (i.e. Microsoft Word, Microsoft Excel, etc.)	2	2	2	3	3	1	1	1	2	2
Verbal Communications	3	3	3	3	3	2	2	2	2	2
Written Communications	3	3	2	3	3	2	2	2	2	2
Other										
Budget Preparation/Analysis	3	3	3	3	2	0	0	0	1	1
Long Term Planning	3	3	3	3	2	0	1	1	2	2
Scheduling/Work Planning	3	3	3	3	2	1	1	2	3	3
Record Keeping (including operational logbooks and workorders)	2	2	3	3	3	1	1	2	3	3

11.0 Purpose

To document a procedure for ensuring that sufficient personnel, whom meet the competency requirements identified in QMS 10 as well as O. Reg 170/03 and O. Reg 128/04, are available for duties directly affecting drinking water quality.

11.1 Procedure

Overall Responsible Operator (ORO)

The Team Lead completes the Environmental Services Daily Work Schedule and On-call Notification Form which identifies the designated Overall Responsible Operator (ORO) for the week and the Operator in Charge (OIC) along with their appropriate contact numbers.

The OIC must hold a Class 1 licence or higher and 1 or more operators can be designated as OICs at any given time. An operator-in-training cannot be designated as OIC.

The ORO is approved by the Director of Environmental Services in consultation with the Manager of Water Services.

Standard Working Hours

Licensed Water Distribution Operators are available during the standard working hours, excluding statutory holidays (Monday to Friday from 7:00 am to 3:30 pm).

Environmental Services provides an answering service Monday to Friday 8:30 am to 4:30 pm in the Joint Operations Centre. Access Vaughan, the City's Corporate Call Centre, provides an answering service from 8:30 am to 7:30 pm Monday to Friday. There is also a contracted external answering service from 7:30 pm to 8:30 am, Monday to Friday, and all day on weekends and statutory holidays.

Non-Standard Working/On-call hours

Access Vaughan and/or the contracted external answering service receive all non-standard working hours phone calls and contacts the On-call Manager/Supervisor.

The On-call Manager/Supervisor contacts the designated On-call Water Operator to respond to the service request.

Response Times

Circumstances permitting, staff should be able to respond within a reasonable time frame upon receiving the call from Environmental Services staff and/or Access Vaughan.

When responding to customer calls, City staff will follow the Service Vaughan Program, Citizen Service Standards to ensure that staff deliver high-quality services with efficiency, integrity, and pride, and to communicate effectively with our citizens, businesses, and each other.

Labour Disruptions

Non-Union Management staff, who are MECP licensed, can rotate as ORO and designate the OIC('s).

Non-Union Management staff may contact contractors to undertake work, to deliver necessary supplies and/or make them available for pick-up.

Qualified contractors are available to assist with regulatory requirements and can be located off-site to a designated satellite location.

Some Non-Union Management staff are available for operational maintenance for emergency and/or routine situations.

Business continuity plans are created and facilitated by the City's Emergency Planning Department.

11.2 Associated Documents and Records

QMS-10 Competencies
Environmental Services – Water Division Daily Work Schedule Form
On Call Notice Form
Citizen Service Standards

12.0 Purpose

To document a procedure for communications that describes how relevant aspects of the Quality Management System are communicated between Top Management and:

- a) the Owner;
- b) the Operating Authority personnel;
- c) Suppliers that have been identified as essential under Element 13 of the Quality Management System; and
- d) the Public.

This procedure does not include communication procedures used in Emergency situations. These are described in QMS-18 Procedure Emergency Management.

12.1 Procedure

Communication of QMS Policy

The QMS Policy is made available:

- on the City of Vaughan website,
- posted in the Joint Operations Centre,
- is available to the public upon request,
- in procurement documents related to water services, and
- in development plans.

Communication Methodologies

Communication to and from Owner (Council)

Communication to Council from Top Management is through the use of Council reports, Schedule 22 and Section 11 Annual Reports on the distribution system and water quality, briefing notes, information memos or presentations to Council. New Terms of Council are asked to re-endorse the Operational Plan.

Council can communicate directly to Top Management through formal Council meeting minutes and/or Council resolutions and confirming through a by-law. Council may also communicate through emails sent to the DCM, Public Works or Director of Environmental Services.

Communication to and from Operating Authority Personnel

Top Management communicates to and from the Operating Authority personnel through: meetings (i.e. Top Management to Managers, Managers to Supervisors, Supervisors to Staff) written documentation, emails, verbal discussions, training sessions, and circulation of applicable procedures and other QMS documentation.

Communication to and from Suppliers

Communication to suppliers is done through the the issuance of tenders, contracts and/or purchase orders. Operating Authority personnel may deal directly with suppliers through the use of LDM's or P-Cards. The QMS Policy and copies of specific standard operating procedures may be provided to Suppliers along with the purchase orders, contracts or tender documents.

Communication from suppliers to Top Management (via City staff) can be through written correspondence, email, phone calls, and the procurement process.

Operating Authority personnel contact suppliers directly if problems occur with the supplier. A vendor performance record can be created and filed with Procurement if concerns with their performance are realized.

Communications to and from the Public

All non-emergency communication (related to QMS) to the public are achieved through one or more of the following:

- newspaper notification and/or media advisories;
- hand delivered letters;
- mobile signs;
- posting on the City of Vaughan website (e.g., annual reports,QMS Policy);
- coordination with York Region (i.e., outdoor water use restrictions); and
- outreach and educational activities through special events.

The public can communicate water related issues/queries through:

- calling the Access Vaughan call centre;
- calling Environmental Services Dispatch and/or contracted Answering Service (after business hours);
- e-mails sent to the City;
- e-mails and/or phone calls directly to Councillors and City staff; and
- letters.

Access Vaughan (after hours) and Environmental Services Dispatch (during business hours) receive the majority of the public water related queries. Queries that cannot be answered by Access Vaughan are directed to Environmental Services Dispatch. For larger scale or sensitive issues, Corporate Communications may be contacted to assist in dealing with public communications. Water quality inquiries are tracked for the purposes of QMS Element 20 Management Review. A summary of these calls are provided at the Top Management Review Meeting.

12.2 Associated Documents and Records

QMS-05	Document and Records Control
QMS-13	Essential Supplies and Services
QMS-18	Emergency Management
QMS-20	Management Review

13.0 Purpose

To document a procedure ensuring the quality of essential supplies and services, in as much as they may affect drinking water quality. The procedure shall include identification of these supplies and services and a means to ensure their procurement

13.1 Procedure

Procurement Process

The acquisition of goods and services related to the provision of drinking water is addressed by the Procurement Policy which is administered by the Procurement Department.

When required, specifications and/or certification of product requirements for supplies and services are requested by Environmental Services staff.

Procurement documents are created by the requestor in Environmental Services with the assistance of the Contract Coordinator.

The Procurement Policy has price thresholds and thus some supplies (below the threshold) may be purchased directly by Environmental Services from local sources.

Some supplies are kept in stock (e.g., repair clamps, odd-sized pipes, etc.) and are available at the Joint Operations Centre.

A copy of the relevant procedures/specifications, a copy of the QMS Policy and general information regarding the presence of a QMS are included in procurement documents related to services that will potentially affect drinking water quality.

A vendor's list of approved contractors is contained in the Essential Supplies and Services Handbook. The QMS Representative is responsible for updating the handbook as changes are identified by Water Operations Staff. All chemicals and materials used in the alteration or operations of the drinking water system that come into contact with the water within the system shall meet all applicable standards (i.e. AWWA, NSF standards).

A list of contractors available during after hours and emergency situations is kept in the Essential Supplies and Services List. For the provision of supplies and/or services during emergency situations the ORO can contact these contractors and if they are unavailable contractors on the vendor's list may be contacted.

Identification of Supplies & Services and Requirements

Form 13-01 Essential Supplies and Services for drinking water identifies the essential supplies and services critical to the provision of safe drinking water.

The form provides a description of the Procurement of Supplies or Services including:

- how do you ensure it is available, when required
- how do you ensure it is made available, when required (daily operations & emergencies)

The form also includes identification of the Quality Requirements:

- what requirements are needed related to quality of supply or service (e.g., product/service quality; performance of supplier/service provider; method of delivery; on-site activities)
- definition of how they make sure they are met

Monitoring Supplies and Services

Environmental Services ensures that the supplies and services meet the requirements and/or specifications identified in the documentation.

Any problems are documented that are encountered regarding the supplies and/or services and forwarded to Procurement Department. Performance evaluation forms are provided by Procurement for suppliers and are required to be completed by Environmental Services prior to the issuance of the next contract.

An inventory of water meters is tracked by the Water Account Analysts. Staff in water operations maintain an inventory of clamps, valves, and other materials on a tracking spreadsheet.

13.2 Associated Documents and Records

Form 13-01 Essential Supplies and Services
Essential Supplies and Services List

Essential Supplies and Services

Item Number	Essential Supply or Service	Procurement of Supplies or Services - how do you ensure it is available, when required - how do you ensure it is made available, when required (daily operations & emergencies)	Quality Requirements - what requirements are needed related to quality of supply or service - define how you make sure they are met

14.0 Purpose

To ensure the adequacy of the infrastructure necessary to operate and maintain the Vaughan Distribution System is reviewed at least once every calendar year.

14.1 Procedure

Review and provision of the City of Vaughan's drinking water infrastructure needs is achieved through reviewing existing infrastructure and planning for new infrastructure.

Existing Infrastructure

Planning for watermain construction/replacement/upgrades is addressed by the Infrastructure Planning & Asset Management (IPCAM) and Environmental Services (ES) groups as they develop the capital plan.

IPCAM identifies roads that require construction and the schedule for their construction. It is advantageous to combine activities related to water related infrastructure at the same time as road construction. Once every calendar year, IPCAM forwards the list of roads to the Manager of Water Services in the following year and requests input on the state of the water services in the area.

Environmental Services undergoes a comparison of the number of watermain breaks and the list of road projects to provide a priority listing of watermain construction and provides a response to IPCAM for further action.

IPCAM then prioritizes the projects and develops the project list that is forwarded to Council for approval as part of the annual budget process.

New Infrastructure

The review process for new infrastructure is primarily driven by Development Engineering & Infrastructure Planning Services (DEIPS).

The following plans document growth-related drinking water infrastructure needs:

- Official Plan (OP)
- Master Servicing Studies (MSS)

The OP focuses on population projections, land use and infrastructure development policies.

MSS are completed by DEIPS in order to determine the specific needs and timing for drinking water infrastructure to support growth in the project area.

Water Operations staff review drawings for compliance with their needs (e.g., valves at boundaries, hydrants).

Any road reconstruction projects being completed by York Region are also reviewed to

help identify priority projects.

The Manager of Water Services is notified of the projects that were determined to not be a priority for the year. Projects that were removed can be rescheduled for the following year.

14.2 Associated Documents and Records

Capital Planning Documents

15.0 Purpose

To document a procedure for infrastructure maintenance, rehabilitation and renewal programs for the drinking water systems and a long term forecast of major infrastructure maintenance, rehabilitation and renewal activities.

15.1 Procedure

Booster and Pressure Elevating Stations - Preventative Maintenance

Both stations are checked by Certified Water Operators and maintenance activities are undertaken by City staff or a Contractor. If required, contractors are asked to submit their Drinking Water Licence under O. Reg 128/04.

Using the work order system, Environmental Services Administrative Staff and the Team Lead schedule maintenance activities based on manufacturer recommendations, industry best practices, and legislation.

Booster and Pressure Elevating Stations - Unplanned Maintenance

Unplanned maintenance activities may be identified by the Contractor if noticed during preventative maintenance work. The City may also identify the need for maintenance during regular station inspections.

The Contractor and/or City Operator communicate the maintenance needs (including minor and major repairs) to the Supervisor(s) of Water Operations.

The Supervisor(s) of Water Operations determines how to complete the work and informs the Contractor.

Other Infrastructure - Preventative Maintenance

Hydrant Maintenance and Valve Turning

The Supervisor of Water Operations sets up overall programs for hydrant maintenance/flushing and valve turning to meet AWWA standards and/or industry best practices.

Hydrant maintenance and valve turning are completed by a Contractor.

Water Operations develops a spreadsheet for the hydrant maintenance and valve turning schedules. The spreadsheets are provided to the Contractor on an annual basis and they update the spreadsheet as the maintenance is completed.

As part of the hydrant maintenance program, pressure tests are performed and are reported back to Water Operations for tracking and analysis.

Other Infrastructure - Unplanned Maintenance

The Environmental Services Division Water Procedures Manual contains Standard Operating Procedures to guide City Operators when completing maintenance activities.

Hydrant Repairs

The Environmental Services Dispatch Coordinator receives requests for hydrant repairs and creates a work order that is assigned to Water Operations. The Fire Department is notified of the requested repair and when the hydrant will be out of service.

The Environmental Services Dispatch Coordinator notifies the Fire Department when the hydrant is back in service or if further repairs are required.

Completed work orders are recorded in the Department's Work Order Management System.

Watermain Repairs

The Environmental Services Dispatch Coordinator receives calls from Access Vaughan regarding suspected watermain breaks. Water Operations is notified, and a work order is created to repair the watermain break.

Watermain breaks are repaired by contractors. An Operator contacts the contractor and fills out Appendix C: Watermain Shutdown Report for a main break repair.

Completed work orders are recorded in the Department's Work Order Management System. A log of watermain breaks is maintained by Water Operations and this information is shared at the annual Top Management meeting.

Effectiveness of Maintenance

The effectiveness of maintenance is reviewed annually by the Supervisor(s) of Water Services. The following are reviewed:

- The number of watermain breaks that occurred within the year.
- The number of valves requiring repairs on an annual basis.

Renewal

The renewal infrastructure needs are based on repair history and pipe material and age.

For renewal projects, projected growth is factored in through water modelling to determine if upsizing of watermain is required in the area. If upsizing of the watermain is recommended, then Development Engineering & Infrastructure Planning Services (DEIPS), & Infrastructure Delivery (ID) work with Program and System Planning to complete modelling to determine the demand basis.

DEIPS & ID identify new roads projects and discussions are held with Environmental Services to determine if the watermain in these roads requires renewal.

If the road is not being replaced then Environmental Services could undertake the project as stand-alone otherwise, this work could be done through the DEIPS and ID.

If road work associated with the watermain renewal is not completed during the year then the project is automatically carried forward to the following year but Environmental

Services is given the responsibility to determine if that watermain renewal is still a priority.

Rehabilitation

Rehabilitation needs are assessed by the review of watermain break history, Capital projects prioritization as outlined in QMS-14, field observations by Water Operations staff, and best management practices where applicable.

Environmental Services and ID will determine if the project will be completed as a stand-alone project or with ID as part of a road project.

Long-Term Forecast Review

Once every calendar year, the 3-year Capital Plan will be reviewed as part of the annual budgeting process. During this time, priority capital projects for the Vaughan Distribution System are identified for the next three years.

The Finance Department coordinates budget meetings with City staff to discuss this process.

15.2 Associated Documents and Records

Environmental Services Division Water Procedures Manual
Work Order Management System
Appendix C: Watermain Shutdown Report
QMS-14 Review and Provision of Infrastructure

16.0 Purpose

To document a procedure for sampling, testing and monitoring activities completed for drinking water quality. The procedure describes how the sampling, testing and monitoring results are recorded and shared with the Owner, where applicable.

16.1 Procedure

Sampling & Testing

Sampling, testing and monitoring is completed on the City's water distribution system to:

- Ensure compliance with applicable Ontario Drinking Water Regulations,
- Ensure water quality is maintained as water travels through the distribution system,
- Identify trends in water quality and emerging issues, and
- Provide Water Operators with knowledge required to proactively operate the drinking water system.

For the purposes of this procedure, "sampling" is defined as the process of collecting drinking water samples for laboratory analysis, and "testing" is considered to be the laboratory analysis.

To further ensure disinfection throughout the distribution network, Operators collect water samples at various points for microbiological analyses, chlorine residuals on site, turbidity, Haloacetic Acids (HAA), Trihalomethanes (THM), lead, sodium, and inorganic parameters per O. Reg. 170/03.

These samples are taken at various locations throughout the system to ensure all areas of the distribution system are represented.

The sampling points and corresponding analyses are listed on the chain of custody form (which track the sample from the point of collection to the lab for analysis). The operator who obtained the sample is also recorded on the form.

The number of samples taken per month is determined by O. Reg. 170/03.

The Clerk Typist is responsible for the organization of the monthly, quarterly, yearly and lead sampling and for generating the chain of custody forms.

The sampling frequency (monthly, quarterly, yearly) for the various parameters is determined by the regulation requirements of O. Reg. 170/03.

The protocols for collecting and handling water samples are provided in the Standard Operating Procedures/Activity Method.

The Supervisor of Compliance & Business Services is responsible for reviewing the water quality sampling program for changes required to the water quality parameters, sampling frequency and sampling locations.

The Supervisor of Compliance & Business Services is responsible for updating the sampling schedule based on this review.

Sampling & Testing Results

A MECP accredited laboratory receives all drinking water samples and conducts the sample analysis. Analytical results are compared to the MECP's Ontario Drinking Water Standards (ODWS, O. Reg. 169/03). The Supervisor of Compliance and Business Services reviews the analytical results as they are released. The results are compiled annually and listed along with the Maximum Acceptable Concentration (MAC), (based on the ODWS) and City limits (min, max, average) for each parameter that is tested. In abiding with regulation, this information is posted on the City's website each year.

All results are uploaded into an external database by the lab and the Clerk Typist manually enters chlorine residuals into the external database.

AWQI's related to microbiological or lead are identified through lab notification. Low chlorine events can be identified by Water Operations staff. Should the analytical results indicate an adverse condition, the AWQI Procedure in the Environmental Services Division Water Procedures Manual will be followed.

Sampling and testing records are managed in accordance with QMS-05 (Document and Record Control System Procedure).

Monitoring

The Maplewood Booster Station and the Woodland Acres Pressure Elevating Station are directly linked to a City owned and operated SCADA (Supervisory, Control and Data Acquisition) system. The system will instantaneously notify the SCADA Technician during regular business hours of any occurrences requiring attention. The SCADA Technician will work with Water Services and/or Wastewater Supervisors to send out Operators to take corrective action. For after hours, the SCADA system notifies the On-call Supervisor/Manager directly.

As a backup, the Maplewood Booster Station and the Woodland Acres Pressure Elevating Station are directly linked to alarm dialers that instantaneously contact Access Vaughan when triggered to immediately send out licensed operators to take corrective action for maintenance and/or repair. No additional monitoring is done on the distribution system by the City.

Reporting to the Owner

The Supervisor of Compliance and Business Services ensures that required information submitted in an Annual Summary Report showing any adverse incidents and sample results.

In accordance with relevant legislation, the summary reports are provided to Council and posted on the City of Vaughan's website on an annual basis.

16.2 Associated Documents and Records

QMS-05 Document and Records Control
Environmental Services Division Water Procedures Manual
Ontario Regulation 169/03
Ontario Regulation 170/03

17.0 Purpose

To document the calibration and maintenance of measurement and recording equipment used for to ensure drinking water quality.

17.1 Procedure

Calibration and Maintenance Frequency and Schedule

Measurement and recording equipment (i.e. chlorine residual test kits, pH meters, etc.) are recorded on Form 17-01 and are maintained and calibrated as per equipment manufacturer's specifications or as required by O. Reg. 170/03; whichever is more frequent.

The frequency and responsibility for calibration and maintenance of each equipment type is summarized on Form 17-01.

The Team Lead is responsible for ensuring that the calibration is undertaken and the applicable forms are completed for in-house calibration and maintenance or the designated outside contractor.

Contractors who are allocated to adjust settings (i.e. on generators, sump pump alarms) and/or calibrate flow and magnetic flow meters, can only do so when approved by the City and when witnessed by a City Water Operator.

Calibration/Maintenance Verification

The equipment calibrated in-house is identified and tracked by the Team Lead on the applicable forms identified in section 17.2.

The Team Lead files a copy of the logs of the maintenance and calibration as per QMS-05 Document and Records Control Procedure.

The Team Lead reviews the calibration and maintenance schedules to ensure the information is updated.

17.2 Associated Documents and Records

QMS-05 Document and Records Control

Form 17-01 Measurement & Recording Equipment Maintenance & Calibration Schedule

Schedule for Calibration of Pocket Colorimeters (chlorine kits) form

pH Meter Calibration Schedule form

Water Operations Calibration Inventory- Equipment/Solutions

MEASUREMENT & RECORDING EQUIPMENT MAINTENANCE & CALIBRATION SCHEDULE

[illegible]

18.0 Purpose

The purpose of this procedure is to document how we maintain a state of emergency preparedness, including:

- a) a list of potential emergency situations or service interruptions,
- b) processes for emergency response & recovery,
- c) emergency response training & testing requirements,
- d) Owner & Operating Authority responsibilities during emergency situations,
- e) references to municipal emergency planning measures, and
- f) emergency communication protocol and up-to-date list of emergency contacts.

18.1 Procedure

Identification of Emergency Situations or Service Interruptions

During the Management Review Meeting, a list of emergency situations or service interruptions are discussed to determine if staff require further training for a particular emergency.

In addition, during the risk assessment process outcomes are identified which may include some emergency situations or service interruptions. This is another opportunity where the review process may identify emergency situations or service interruptions that can be added to the list from the above meeting.

The QMS Representative is responsible for maintaining and updating the potential emergency situations or service interruptions.

Process for Emergency Response and Recovery

Specific instructions for responding to emergencies, including emergency situations that have the potential to result in acute drinking water health risks, are included in the Environmental Services Division Water Procedures Manual which each Operator possesses.

The QMS Representative is responsible for ensuring that the Standard Operating Procedures (SOPs) are evaluated and modified based on recommendations from training, mock scenarios, or incident debriefings. The following are considered emergency response SOPs:

- 2340621 - Watermain Repair
- 2340663 - Booster Station Repair
- Operational - After Hours Adverse Procedure

The SOPs, outline the roles and responsibilities for various staff and the activities related to the response and recovery from the emergency situation or service interruption.

Water Operations is an on-call, 24-hour service to ensure that a qualified staff member will attend and assess any water emergency.

The ORO is designated to be responsible for overall management, decision-making, and communications at the entail level of emergency. In the event the ORO is unavailable, the Director of Environmental Services or designate shall assume this role/responsibility.

The Director is responsible for contacting the Corporate and Strategic Communications Department for emergencies that have escalated to a corporate level of response.

In the event of a problem occurring greater than an AWQI or typical watermain break, the City of Vaughan Corporate Emergency Plan will be implemented. The Manager of Emergency Planning in the Fire and Rescue Services Department is the owner of the City's Emergency Plan.

The Corporate Emergency Plan outlines communication procedures during emergency situations and the roles and responsibilities of the Owner and appropriate Water Division staff depending upon the level of emergency. Annual testing of the City's Corporate Emergency Plan is coordinated by the Manager of Emergency Planning and involves a water-related emergency.

Emergency Response Training and Testing Requirements

All Water Operations personnel shall receive general emergency response training every two (2) years. Testing of Operator's awareness of emergency response SOPs may be in the form of desktop exercises and/or mock scenarios. The training is tracked by the DWQMS Coordinator on each operator's training matrix.

This training shall include, but is not limited to, a review of emergency response SOPs and a discussion of emergencies that have occurred since the previous training.

The Compliance and Business Services Supervisor, Supervisor of Water Services, and/or DWQMS Coordinator are responsible for ensuring that emergency response training is undertaken by appropriate staff.

In addition, a debriefing after larger scale emergencies may be undertaken by the Manager of Water Services and may include the Director of Environmental Services, Supervisors of Water Services, QMS Representative and other applicable staff.

18.2 Associated Documents and Records

QMS-7 Risk Assessment

QMS-10 Competencies

QMS-20 Management Review

Environmental Services Division Water Procedures Manual

City of Vaughan Corporate Emergency Plan

19.0 Purpose

This System Procedure documents the procedure for internal audits that:

- Evaluates conformity of the QMS with the requirements of the DWQMS,
- Identifies internal audit criteria, frequency, scope, methodology and record keeping requirements,
- Considers previous internal and external audit results, and
- Describes how the QMS corrective actions are identified and initiated.

19.1 Procedure

Audit Team Structure and Roles

The audit team contains:

- The **QMS Representative** acts as a liaison between the auditors and the auditees.
- The **Auditors** who are responsible for performing the internal audit of a specified element or process and computing the audit report.

Auditor Qualifications and Selection

The Auditors must meet the following criteria:

- knowledge of the DWQMS and Vaughan's drinking water QMS;
- independent of the work that is going to be audited;
- ability to make objective observations and record the results;
- successful completion of auditor training

Audit Process

Schedule

Each element of the QMS for the drinking water system must be audited a minimum of once every calendar year. Additional audits can be scheduled based on the importance of the process or area, or in response to previous audits results (internal and external). Typically, the internal audit focuses on the previous calendar year.

The QMS Representative creates an Internal Audit Schedule using Form 19-01, with assistance from the Auditors. The QMS Representative forwards the Audit Schedule to the Manager and Supervisors of the areas being audited.

Checklist

The QMS Representative and Auditors prepare the Internal Audit Checklist (Form 19-02) or other similar document that records questions asked and elements verified. The checklist defines the scope (i.e., applicable area of the QMS, time period to be audited, organizational unit and/or facility) and audit criteria (i.e., applicable manuals and standards).

The checklist reflects the current policies and procedures of the area that are being audited. A copy of the procedures with the points highlighted that are going to be checked can be attached to the checklist and referenced for the audit.

Opening Meeting

An opening meeting may be held before the audit is conducted. The people present would be the Audit Team and the personnel responsible for the area to be audited. Other employees to be interviewed during the audit can be included in the meeting.

The opening meeting includes the following agenda:

- audit team introductions
- review the objective and scope of the audit
- discuss method of conducting and communicating the audit
- clarify schedule and availability of staff for the audit.

Audit

The audit is performed by the Auditors using the Internal Audit Checklist Form 19-02 or applicable document. Observations that provide evidence of conformance or nonconformance are noted on the Internal Audit Checklist.

Audit Findings

The results of the audit are reviewed by the Audit Team. Agreement is reached under the leadership of the QMS Representative. The Audit Team completes the summary of findings on the Audit Report Form 19-03 or similar document.

The Auditors record nonconformances from the internal audits on Nonconformance Report (NCR) Form 19-04 which records:

- Audit report number
- Report date
- Brief description of nonconformance

The QMS Representative tracks the internal audit nonconformances by recording the NCR number in the Non-conformance Report Log Form 19-05. The QMS Representative can choose to not agree with a Non-conformance.

Closing Meeting

The results of the audit are presented at the closing meeting, if one is held. At a minimum the Supervisor responsible for the area audited and the Audit Team would attend.

The closing meeting will include the following:

- thank the staff for their cooperation,
- review the commendable features,
- review documented observations – what is effective, what needs improvement and what is unsatisfactory,

- Ensure the issue is understood and get agreement on a response date for the Corrective Action for each finding or NCR with the person responsible for the area audited, and
- Record the NCR number on the Audit Report to ensure audit results are understood.

Audit Report

The Auditors complete the Internal Audit Report Form 19-03 and fills out any Corrective Actions that may be required from the audit. The report has to be signed by an Audit Team Member and the person responsible for the audited area.

A copy of the report is given to the Environmental Services Director, Manager and Supervisors of Water Services, and the QMS Representative; the original is kept by the Audit Team and used for follow-up. The report is filed according to QMS-05 Procedure Document and Records Control.

Audit Follow-up and Review

For all accepted NCR's, the Auditors verify that the action has been taken and that it is effective. The results of the follow-up are recorded in the original Internal Audit Report Form 19-03 and by the QMS Representative on the NCR Log (including the date closed).

The results of the internal audits and the follow up audits are reviewed by management at the Management Review Meeting as per QMS-20 (Management Review) or more frequently, if required.

19.2 Associated Documents and Records

Form 19-01 Annual Internal Audit Schedule
Form 19-02 Internal Audit Checklist
Form 19-03 Internal Audit Report
Form 19-04 Nonconformance Report
Form 19-05 Nonconformance Report Log
QMS-05 Document and Records Control
QMS-20 Management Review

City of Vaughan - Environmental Services Internal Audit of the QMS

[illegible]

INTERNAL AUDIT CHECKLIST

Process / DWQMS Element:	Page of
Scope & Audit Criteria:	
Date of Audit:	
Person Responsible for the Area:	
Audit Team Member(s):	

OK = Satisfactory Response

U = Unsatisfactory Response (may result in nonconformance report or corrective action)

NI = Needs improvement – observation or suggestion

Ref.#	Procedure/Question	OK	U	NI	Comments

INTERNAL AUDIT REPORT

Procedure Section:	Audit Report #	Date of Audit:
Audit Scope & Objectives:		
Person Responsible for Area Audited:		
Auditor Team Member(s):		
Attended Opening Meeting (if applicable):	Attended Closing Meeting:	

Commendations – summary of activity that is in conformance or other points that are well done.
Summary of Audit Findings
Corrective Action Reports Issued:
Suggestion for next audit
Result of Audit () OK () Not OK - if not OK state date of follow up audit:
Result of Follow-Up Audit (if applicable) () OK () Not OK – state action to be taken

 Audit Team Member(s)

 Date

Distributed to: _____

PART A – To be completed by Employee / Audit Team Member

PART B - To be completed by QMS Representative

Describe the action taken in response to Part A	
Is corrective or preventive action required? () No () Yes If No, explain If yes, specify and include time lines, responsibility for action	
Nonconformance Report Form Complete () Yes QMS Representative Signature _____	Date:
() Copy of Form to Initiator	

NON-CONFORMANCE REPORT LOG

NCR#	Description of Situation	Action Taken	Date Issued	Date Closed	Time to Resolve	CAR#/PAR# if applies

NCR = Nonconformance Report

CAR = Corrective Action Report

PAR = Preventive Action Report

20.0 Purpose

To document the procedure for describing how the QMS will ensure its continuing suitability, adequacy and effectiveness. To ensure the necessary information is collected for Top Management to review and to provide review output of any decisions and actions related to the QMS and maintain records of the reviews.

20.1 Procedure

Management Review

A Management Review will be held at least once every calendar year by Top Management to review the overall suitability, adequacy and effectiveness of the QMS. At a minimum, the Deputy City Manager, Director of Environmental Services and one additional representative from the Top Management Team must be in attendance to hold the meeting.

The QMS Representative is responsible for:

- establishing the date for the Management Review meeting,
- forwarding notification of the meeting to participants, and
- forwarding the agenda for the meeting to the participants.

Management Review Input

Top Management will review information in the agenda on Form 20-01, where applicable on:

- a) Previous Meeting(s) Action Items
- b) Annual review of the QMS 02- Quality Management System Policy
- c) Incidents of regulatory non-compliance
- d) Incidents of adverse drinking water tests
- e) Deviations from critical control point limits and response actions
- f) Efficacy of the risk assessment process
- g) Results of audits (internal and external)
- h) Results of relevant emergency response testing
- i) Operational performance
- j) Raw water supply and drinking water quality trends
- k) Follow-up action items from previous management reviews
- l) Status of management action items identified between reviews
- m) Changes that could affect the QMS
- n) Summary of consumer feedback
- o) Resources needed to maintain the QMS
- p) Results of the infrastructure review
- q) Operational Plan currency, content and updates
- r) Summary of staff suggestions

Management Review Output

Management review outputs will include identification of specific actions items to address deficiencies, personnel responsible for delivering those action items and proposed implementation timelines. During Management Review, Top Management will provide a record of any decisions and actions related to:

- Improvement of the QMS and related procedures,
- Improvement of the Operating Authority's ability to implement consistently the QMS, and
- Human and financial resource needs.

A summary of the highlights of the meeting will be included in a Council Report each year as a means of reporting to the Owner (Committee / Council).

Recording of Management Review

Minutes of the meeting will be recorded on Form 20-01 and maintained as per QMS-05 Document and Records Control. These minutes will reflect the review inputs for the meetings. Copies of the minutes are distributed to all attendees, the City Manager, Director of Infrastructure Delivery and Director of Development Engineering by the DWQMS Coordinator.

20.2 Associated Documents and Records

Form 20-01 Management Review Agenda & Meeting Minutes
QMS-05 Document and Records Control

Top Management Review Agenda & Meeting Minutes

Date of last meeting (This meeting must be held once per calendar year at a minimum): _____

Today's Date: _____

Attendance: _____

Meeting Time: _____

Agenda Item	Decision/Action	Responsible	Date Due
a) Previous Meeting(s) Action Items			
b) Annual Review of QMS 02 – Quality Management System Policy			
c) Incidents of regulatory non-compliance			

Top Management Review Agenda & Meeting Minutes

Agenda Item	Decision/Action	Responsible	Date Due
d) Incidents of adverse drinking water tests			
e) Deviations from critical control point limits and response actions			
f) Efficacy of the risk assessment process			
g) Results of audits (internal and external)			
h) Results of relevant emergency response testing			
i) Operational performance			

Top Management Review Agenda & Meeting Minutes

Agenda Item	Decision/Action	Responsible	Date Due
j) Raw water supply and drinking water quality trends			
k) Follow-up action items from previous Management Reviews			
l) Status of management action items identified between reviews			
m) Changes that could affect the QMS			
n) Summary of consumer feedback			
o) Resources needed to maintain the QMS			

Top Management Review Agenda & Meeting Minutes

Agenda Item	Decision/Action	Responsible	Date Due
p) Results of the infrastructure review			
q) Operational Plan currency, content and updates			
r) Summary of staff suggestions			
s) New Business - Other issues that impact on the QMS. Specify for agenda.			
t) Date of Next Meeting			

Minutes distributed to attendees and the following people:

21.0 Purpose

To document the procedure established for the Operating Authority to strive to continually improve the effectiveness of its Quality Management System by reviewing and considering best management practices, identifying corrective actions and identifying and implementing preventive actions to eliminate the occurrence of non-conformities.

21.1 Procedure

Best Management Practices

Best Management Practices (BMPs) will be reviewed and considered at least once every thirty-six (36) months. This could include:

- BMPs published by the Ministry of the Environment, Conservation and Parks (MECP). These can be available at the following website: www.ontario.ca/drinkingwater
- Attending the annual DWQMS workshop facilitated by the Walkerton Clean Water Centre (WCWC)
- Communicating with Local Area Municipalities (LAMs) of York Region
- Attending the quarterly MWWRC meeting, when feasible
- Internal Audits
- External Audits
- MECP inspections
- Any other means (i.e. manufacturer recommendations, staff suggestions, etc.)

Form 21-03, the Best Management Practices Tracking Log, will be maintained by the Compliance and Business Services Division. It will be used to track the date the BMP was considered, the source of the BMP (i.e. LAM discussion), the outcome of the considered BMP, and the date to implement the BMP, if applicable.

Corrective Action

Corrective action involves taking measures to eliminate causes of identified nonconformances of the QMS with the requirements of the DWQMS or other undesirable situation.

Corrective action may be initiated as a result of the following indicators:

- Internal audits
- Management Review
- External audits
- Customer complaints
- Staff suggestions
- Trends identified in management reports

Any employee can initiate corrective action by issuing a Continual Improvement Analysis Form 21-01.

Preventive Action

Preventive actions are taken to eliminate or prevent the cause of a potential nonconformance.

Preventive actions may be initiated as a result of the following indicators:

- Internal audits
- Management Review
- External audits
- Customer complaints
- Staff suggestions
- Trends identified in management reports

Any employee can initiate a preventive action by issuing a Continual Improvement Analysis Form 21-01.

Continual Improvement Analysis Form

The Issuer completes Part A of the Continual Improvement Analysis Form 21-01 and forwards the form to the QMS Representative.

The QMS Representative will issue the Corrective Action Report (CAR) or Preventive Action Report (PAR) number and determine who is assigned as to address the issue. The QMS Representative records the CAR or PAR in the CAR/PAR Log Form 21-02.

To determine the root cause of the problem, the assigned individual should determine why the issue or potential issue.

The assigned individual will determine and implement the corrective action and change documentation as applicable as per QMS-05 Procedure Document and Records Control. They are responsible for investigating who is involved, what is the root cause of the problem or potential problem, what action is required and what are the necessary steps to be taken in an appropriate timeframe.

The QMS Representative will determine a follow-up date to review the effectiveness of the implemented changes in Part C of Form 21-01.

The QMS Representative reviews the CAR/PAR Log during Management Review and records if any further action is required.

Continual Improvement Analysis Form 21-01 and the CAR/PAR Log are maintained as per QMS-05 Procedure Document and Records Control.

21.2 Associated Documents and Records

Form 21-01	Corrective Action Report
Form 21-02	Corrective Action Report/ Preventive Action Report Log
Form 21-03	Best Management Practices Tracking Log
QMS-05	Document and Records Control

CAR # (if applicable) _____

PAR # (if applicable) _____

Part A

Date:	Issued by:
☐ Corrective Action ☐ Preventive Action	
Source:	
☐ Internal Audit ☐ Management Review Meeting Date: _____ ☐ External Audit ☐ Customer Complaint ☐ Staff Suggestion ☐ NCR #: _____ ☐ Other: _____	
Description of the issue/concern:	

Part B

Assigned to: _____ Date Due: _____

What is the root cause of the problem or potential problem?

Why?

Why?

Why?

Why?

Why?

Describe the action to be taken:**Can the effectiveness of action be measured, and if so how?**

Follow up date:

Assigned to:

Which documents need to be changed?**Part C****Was action taken effective?**

Document Change Complete:

☐ Yes☐ Not applicable**Verification of Effectiveness:**_____
Signature – QMS Representative_____
Date

CORRECTIVE ACTION REPORT/ PREVENTIVE ACTION REPORT (CAR/PAR) LOG



CAR#/ PAR#	Description	Responsible	Date Due	Follow Up Date	Date Closed

[illegible]