

SUBJECT: *Drinking Water Quality Management Standard – Management Review*

FROM: *Ilmar Simanovskis, Director of Infrastructure & Environmental Services*

DATE: *June 21, 2016*

RECOMMENDATIONS

THAT Report No. IES16-060 be received; and

THAT the meeting minutes of the Annual Management Review by Top Management be received.

PURPOSE OF THE REPORT

To provide the minutes of the Annual Management Review of the Drinking Water Quality Management System and Operational Plan as part of the Safe Drinking Water Act, 2002 and Ontario Regulation 188/07- Licensing of Municipal Drinking Water Systems.

BACKGROUND

The Ontario Government implemented the Municipal Drinking Water Licensing Program in 2007 as recommended by Justice O’Conner as a result of the Walkerton Inquiry. The Operational Plan requirement was one portion of the mandated Drinking Water Quality Management System (DWQMS) that is required by the Ministry of Environment.

The 21 Elements of the DWQMS is based on a plan, do, check, and continuous improvement principle. The Operational Plan is a document that provides an understanding of the drinking water system, the roles and responsibilities of the owner and a commitment and endorsement by the owner to provide safe drinking water.

COMMENTS

The operation and management of the water system achieved full compliance for 2015

Full requirements of the DWQMS are outlined in this report and are a critical component of the management framework under which staff and senior management are required to operate. This report details our performance for 2015 and staff is proud to report that this was a very successful year in fulfilling all requirements resulting in a very high

this was a very successful year in fulfilling all requirements resulting in a very high confidence that our water system is operated and maintained to a high standard to the benefit of our community.

Operational Plan Elements

The Town of Aurora Water System Operational Plan was prepared to meet legislative requirements and was submitted to the Ministry on August 1, 2009. A Municipal Drinking Water Licence was issued August 30, 2011 to be renewed August 28th, 2016. The renewal process is in progress with staff fulfilling the necessary requirements prior to the renewal date. The status of the licence will be reported in the 2016 annual report.

A critical step in the accreditation process is the confirmation of an understanding and acceptance of the plan by Council and Senior Management. The following sections provide a summary of the document purpose and key roles and responsibilities.

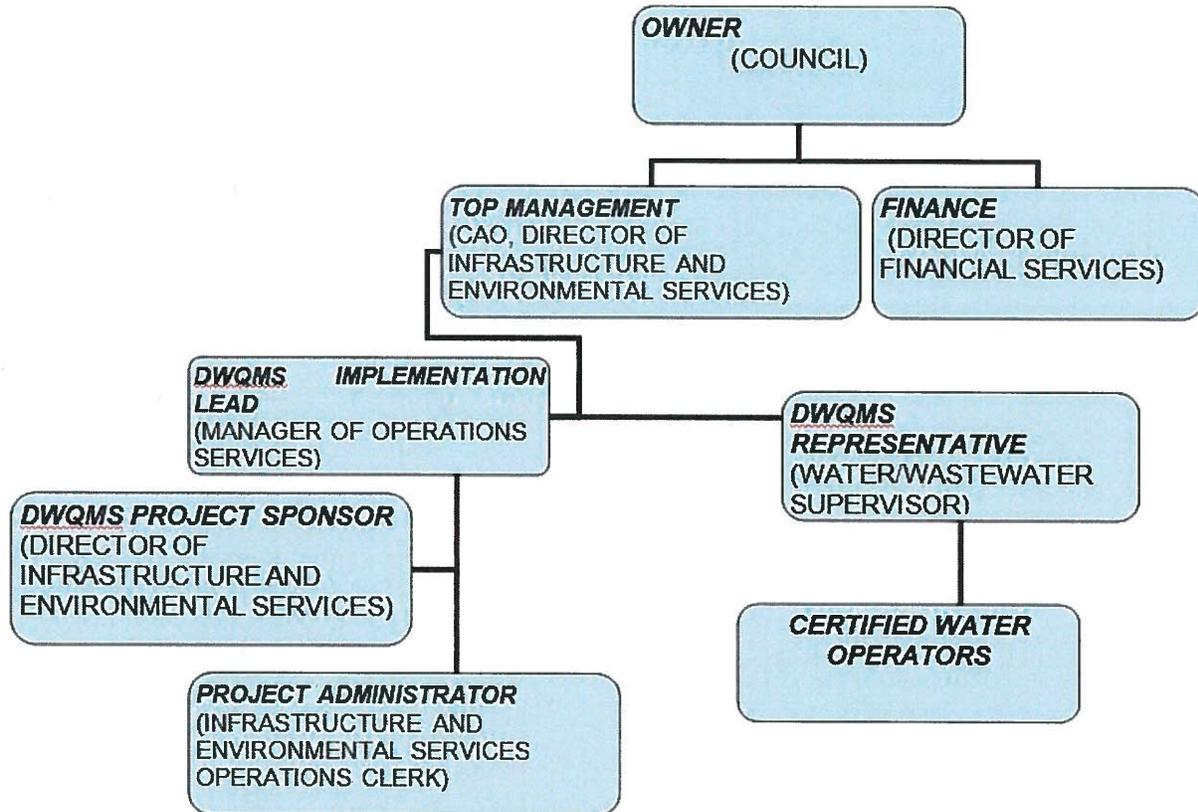
The DWQMS Operational Plan is a document that outlines all the 21 elements, which are the legislative requirements and guiding principles for each Operating Authority across the Province and that must be incorporated into its everyday operational and maintenance activities. Some of the key elements include:

- Commitment and Endorsement;
- Organizational Structure, Roles, Responsibilities and Authorities;
- Risk Assessment; and
- Emergency Management.

The elements for the commitment, endorsement and organization structure outlining the Corporation's roles and authorities must be endorsed by Council as the owner of Aurora's drinking water system.

DWQMS Management Structure

The legislation requires that proper authorities are established to ensure that the water system has qualified oversight, management support, identified ownership and financial resources. For the Town of Aurora, this structure is presented in the following organization chart. An important aspect of this structure is the identification of Council as the Owner and the body having overall responsibility for providing the necessary resources to deliver safe and reliable drinking water to the community.



Council’s Role

One of the critical elements is that the Operation Plan is endorsed in writing by Top Management and the Owner, which in this case, are senior staff and the Town Council. This element requires that Top Management demonstrates its commitment to the DWQMS by being aware of the requirements and providing direction and resources as required.

The element further describes that Top Management and Council shall provide evidence of its commitment to an effective quality management system by:

- ensuring that a Quality Management System is in place that meets the requirement of this Standard;
- ensuring that the Operating Authority is aware of all applicable legislation and regulatory requirements;
- communicating the Quality Management System according to the procedure for communications; and
- determining, obtaining or providing the resources necessary to maintain and continually improve the Quality Management System;

As described, Council and Top Management's commitment is a crucial part of the successful DWQMS implementation and must clearly be recognized in terms of acknowledgment of ownership and providing resources.

Role of Top Management - CAO and Director of IES

- Ensure QMS is in place and operational;
- Endorse and lead the development, implementation and maintenance of the QMS;
- Identify and obtain necessary resources to support the QMS and for the complete operation and maintenance of the drinking water system;
- Ensure the system is operating in accordance with all applicable legislation and regulations;
- Management review of the QMS;
- Communicate with Council about the QMS and the water distribution system communications lead during emergencies;

Role of Director of Financial Services

- Ensure appropriate funding is available for the QMS to deliver safe drinking water;
- Incorporate water delivery components of the budget within the overall budget presentation;
- Conduct financial audits on the QMS and the water delivery program;

Role of Project Sponsor – Director of IES

- Help orchestrate project team direction and flow;
- Assuring the systematic progression through the program's action and implementation plans;
- Ensures adequate funds are available;
- Communicate with the Mayor and Council about the QMS and the water distribution system;
- Is authorized to designate Infrastructure & Environmental Services Crew Leaders as Operators-in-Charge as required in the absence of the Infrastructure & Environmental Services Supervisors;

Role of DWQMS Implementation Lead – Manager of Operation Services

- Carry out the activities and manage programs related to the water distribution system as outlined by approval policies, procedures and legislative requirements;
- Appoints QMS Representative;
- QMS Implementation Lead;
- Preparation of budget and program;
- Assessment of supervisor's personnel performance (annual);

- Ensures adequate staffing is available at all times;
- Recommendation of system improvements;
- Emergency response planning and training;
- Reports on Operations and the QMS to Top Management and the CEO through management review meeting, on an annual basis, to evaluate the continuing suitability, adequacy, effectiveness and compliance of the DWQMS;

Role of DWQMS Representative – Water/Wastewater Supervisor

- Carry out the activities and manage programs related to the water distribution system as outlined by approval policies, procedures and legislative requirements;
- Communication/liaison with the Water Treatment Plants run by the Region of York;
- Act on and report incidents of non-compliance;
- Assessment of operator's personnel performance (annual);
- Reporting of distribution system performance to the Manager of Operations Services;
- Maintains regulatory compliance;
- Is the system overall responsible operator schedules work assignments;
- Monitors water quality and demand;
- Supervises operations and maintenance staff;
- Maintains provincial operator licensing at system certification level;
- Organizes work-safety program;
- Assists in the development of the facility budget;
- Maintain and update QMS as required;
- Identifies co-ordinates and communicates staff training programs to comply with appropriate legislation;
- Recommendation of system improvements;
- Emergency response planning and training;
- Reports on Operations and the QMS to Top Management and the CEO through management review meeting, on an annual basis, to evaluate the continuing suitability, adequacy, effectiveness and compliance of the DWQMS;
- Develop procedures and processes for assuring water quality;

Certified Operators

- Monitor, maintain and operate the distribution system in accordance with established standard operating procedures;
- Document all operating activities in accordance with provincial legislation and established operating procedures;
- Report on and act on incidents of non-compliance;
- Report any abnormal conditions to the Supervisor;
- Carry-out duties and tasks as assigned by the Supervisor and as per established water distribution policies and procedures;

- Is the designated operator-in-charge;
- Files records;
- Attends training;
- Receives and communicates external complaints;
- Regularly communicates to the Quality Manager;
- Maintains operator's license;

Internal Audit, System Audit, Inspections and Management Review

As part of the oversight responsibilities, the management team is required to conduct internal program audits, external third party system and inspection audits and an annual management team review.

Aurora's annual internal audit was performed by the AET Group on December 1, 2015. All 21 Elements of Aurora's Operational Plan were audited to ensure "we do what we say we do". A copy of the AET Group Audit report, Appendix "A" is attached.

The external accreditation audit is required to be performed annually by a Ministry approved auditor, NSF. An off-site system audit took place June 16, 2015. All 21 Elements of Aurora's Operational Plan were audited to ensure "we do what we say we do". A copy of NSF Audit report, Appendix "B" is attached.

An unannounced inspection of The Town of Aurora's Drinking Water Distribution System is conducted annually by The Ministry of Environment. The primary focus of this inspection is to conform compliance with the Ministry of Environment and the Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The MOE System Inspection Report, Appendix "C" is attached.

The Plan also requires that a Management Review meeting be held annually to review the system performance and identify necessary actions to ensure compliance with the regulations. The Management Review meeting was held on March 4, 2016, in which the audit results were reviewed. The Management Review minutes, Appendix "D" are attached.

LINK TO STRATEGIC PLAN

Objective 2: Invest in sustainable infrastructure

Maintain and expand infrastructure to support forecasted population growth through technology, waste management, roads, emergency services and accessibility.

ALTERNATIVE(S) TO THE RECOMMENDATIONS

There are no alternatives to this report. Council's commitment and endorsement for the

Aurora's Drinking Water Quality Management System (DWQMS) Operational Plan is a requirement under the Safe Water Drinking Act, 2002, and Ontario Regulation 188/07-Licensing of Municipal Drinking Water Systems.

FINANCIAL IMPLICATIONS

A budget of \$20,000 is requested annually through the water operating budget to support external audit costs and training and development costs of the DWQMS system as required. This amount will be carried into future budgets as a requirement for demonstrating financial support to the ongoing maintenance of the DWQMS and will be adjusted as required to ensure adequate funding is in place.

CONCLUSIONS

The Town has now completed all the requirements to maintain its accreditation under the Drinking Water Quality Management Standard for 2015. As Owner of the system, Council will receive periodic reports on the performance and financial aspects of the Town's water distribution system.

PREVIOUS REPORTS

N/A

ATTACHMENTS (Note: Attachments can be accessed at <http://www.aurora.ca/TownHall/Pages/Council-and-Committee-Meetings/Agendas-and-Minutes.aspx>)

- Appendix "A" AET Group Internal Audit Report (December 1, 2015)
- Appendix "B" NSF System Audit Report (June 16, 2015)
- Appendix "C" MOE System Inspection Report (August 6, 2015)
- Appendix "D" Minutes of Management Review Meeting (March 4, 2016)

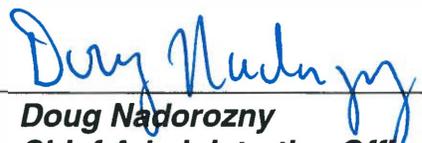
PRE-SUBMISSION REVIEW

Executive Leadership Team meeting of June 2, 2016

Prepared by: Lindsay Hayworth, Supervisor, Water/Wastewater - Ext. 3442



Ilmar S. Imanovskis
Director, Infrastructure & Environmental Services



Doug Nadorozny
Chief Administrative Officer

DWQMS INTERNAL AUDIT REPORT

Project #AUR_EA1415_050:

Town of Aurora

Operating Authority for:
Aurora Drinking Water System

Prepared by:

Janet McKenzie

AET Group Inc.

Audit Date:

December 1, 2015

Report Date:

December 20, 2015

1.0 AUDIT SUMMARY

An on-site internal DWQMS audit of the Town of Aurora Drinking Water System for the Town of Aurora was conducted by AET Group Inc. ("AET") on December 1, 2015.

A total of **three (3) minor non-conformances** and **eight (8) opportunities for improvement** were identified during this assessment, as noted in Section 4 of this report.

Audit Objectives

The objective of the audit was to determine whether the drinking water Quality Management System (QMS) for the Town of Aurora conforms to the requirements of the Ontario Ministry of the Environment and Climate Change's (MOECC) Drinking Water Quality Management Standard (DWQMS:2006).

Audit Scope

The facilities and processes associated with the operating authority's QMS were objectively evaluated to obtain audit evidence and to determine whether the quality management activities and related results conform with DWQMS requirements, and if they have been effectively implemented.

Audit Criteria

- The Drinking Water Quality Management Standard (October 2006)
- Current QMS manuals, procedures and records implemented by the Town of Aurora

Audit Dates

The DWQMS internal audit was held on December 1, 2015.

Audit Team Members

- Lead Auditor: Janet McKenzie, AET Group Inc.

2.0 SUMMARY OF FINDINGS

Requirement	Finding
1. Quality Management System	Mn
2. Quality Management System Policy	OFI
3. Commitment and Endorsement	C
4. Quality Management System Representative	C
5. Document and Records Control	Mn OFI
6. Drinking-Water System	C
7. Risk Assessment	C
8. Risk Assessment Outcomes	C
9. Organizational Structure, Roles, Responsibilities and Authorities	OFI
10. Competencies	C
11. Personnel Coverage	C
12. Communications	2 OFI
13. Essential Supplies and Services	
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	C
16. Sampling, Testing and Monitoring	C
17. Measurement & Recording Equipment Calibration and Maintenance	C
18. Emergency Management	C
19. Internal Audits	OFI
20. Management Review	Mn OFI
21. Continual Improvement	OFI
Mj	Major non-conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor non-conformities; or (c) a minor non-conformity identified in a corrective action request has not been remedied.
Mn	Minor non-conformity. In the opinion of the auditor, part of a required element of the DWQMS has not been incorporated satisfactorily into a QMS.
OFI	Opportunity for improvement. Conforms to requirement, but there is an opportunity for improvement.
C	Conforms to requirement. The element is operational, implemented and performed in accordance with the requirement.
N/A	Not applicable to this audit
*	Additional comment added by auditor in the body of the report.

3.0 FINDINGS/COMMENTS

DWQMS Reference:	1 Quality Management System
Requirement:	The Operating Authority shall establish and maintain the Quality Management System in accordance with the requirements of this Standard and the policies and procedures documented in the Operational Plan
Client Reference:	DWQMS Operational Plan, Section #5 Document and Records Control
Results:	Minor non-conformance
Details:	<i>Frozen watermains are not addressed in the Quality Management System.</i>
DWQMS Reference:	2 Quality Policy
Requirement:	The Operating Authority shall establish and maintain a Quality Management System that is consistent with the Policy.
Client Reference:	DWQMS Operational Plan, Section #2 Revision #3 November 13, 2015
Results:	Opportunity for Improvement
Details:	<i>Consider implementing a routine review of the Policy as part of the maintenance of the DWQMS.</i>
DWQMS Reference:	5 Document and Record Control
Requirement:	The Operating Authority shall implement and conform to the procedure for document and records control and shall ensure that the QMS documentation for the subject system includes: a) the Operational Plan and its associated policies and procedures
Client Reference:	QMS PRO-001, rev 4, Nov 30, 2015. Document Control Procedure, Section 4.7 Bayview/Vandorf Booster Station "Log in Sheets"
Results:	Minor non-conformance
Details:	<i>The procedure states that all internal and external documents shall be reviewed annually as a component of the annual internal audit and management review. This is</i>

not occurring as Management review minutes do not reflect procedures/OP Plan, forms, MSDSs, permits etc being reviewed and the internal audit process has been conducted for the past 3 years as a one day sampling process.

Results:

Opportunity for Improvement

Details:

Ensure only controlled forms are used for monitoring and inspection purposes in the booster stations.

DWQMS Reference:

9 Organizational

Requirement

The Operating Authority shall keep current the description of the organizational structure including respective roles, responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.

Client Reference:

DWQMS Operational Plan, Section #13 Communications
Extract from Council Meeting, March 31, 2015, Report No. IES15-020
Operational Plan, Element #9, rev#4, November 30, 2015, Organizational Chart

Results:

Opportunity for Improvement

Details:

The organizational reporting structure that was presented to Council differs from what appears in the Operational Plan.

DWQMS Reference:

12 Communication

Requirement:

The Operational Plan shall document a procedure for communications that describes how the relevant aspects of the QMS are communicated between Top Management and:

- a) the Owner
- b) Suppliers

Client Reference:

DWQMS Operational Plan, Section #5 Document and Records Control

Results:

Opportunity for Improvement

Details: *Ensure all essential suppliers and services are communicated with in terms of the relevant aspects of the QMS.*

Results: **Opportunity for Improvement**

Details: *New hire/temporary staff training/awareness is not well defined. Specifically, how long after hire should this awareness training be given.*

DWQMS Reference: **19 Internal Audit**

Requirement The Operational Plan shall document a procedure for internal audits that:

- b) identifies internal audit criteria, frequency, scope, methodology and record-keeping requirements

Client Reference: *DWQMS Operational Plan, Section #19 Plan for Internal Audit*

QMS-PRO-008 Internal Audit Procedure, rev 4, January 11/12

Results: **Opportunity for Improvement**

Details: *Consider clarifying the purpose of the table within Section 4.2 of this procedure, ie. The audit shall assess that the QMS Activity listed occurs at the specified frequency OR the audit shall assess the QMS Activity at the specified frequency.*

DWQMS Reference: **20 Management Review**

Requirement: The Operating Authority shall implement and conform to the procedure and shall:

- a) ensure that a management review is conducted at least once every twelve months
- b) consider the results of the management review and identify deficiencies and action items to address the deficiencies

Client Reference: *DWQMS Operational Plan, Section #20 Plan for Management Review*

QMS-PRO-009 Management Review Procedure, Rev 1, May 29/2009

Results: **Opportunity for Improvement**

Details: *The 2015 management review meeting was not conducted at least 12 months after the 2014 management review meeting.*

Results: **Minor non-conformance**

Details: *Section 7 of the 2015 Management Review minutes stated that Emergency Response testing occurred in 2015 but did not discuss the action items/recommendations that resulted from it.*

DWQMS Reference: **21 Continual Improvement**

Requirement The Operational Plan shall strive to continually improve the effectiveness of its QMS through the use of corrective actions.

Client Reference: Corrective Action Form SF-014.

Section 4.5 of Plan for Internal Audit, Element #19, Rev #2 January 11, 2012.

Results: **Opportunity for Improvement**

Details: *It is strongly recommended to develop a more defined/documented corrective action procedure, describing responsibilities, root cause analysis, target completion dates, documentation, record retention, and verification. Consideration should be given to documenting the various issues that could potentially be managed using the corrective action process as part of DWQMS.*

4.0. CONCLUSIONS

This audit report presents an overview of DWQMS conformance findings, reflecting AET's best judgment using information reasonably available to the auditors at the time of AET's audit. AET has prepared this audit report using information understood to be factual and correct and shall not be responsible for conditions arising from information or facts that were concealed or not fully disclosed to AET during the period of time for which the work was being conducted.

This DWQMS audit report, which was derived from a sampling of document/record reviews and site observations, aims to establish the current position of the Town of Aurora with respect to conformance to the DWQMS. While comments were made throughout the report, an in-depth inspection was not carried out.

Respectfully Submitted,

AET Group Inc.

Prepared by:



Janet McKenzie, B.Sc, EP(CEA), EP(EMSLA), EP Certified Trainer
Director, Environment



NSF International Strategic Registrations Audit Report

The Corporation of The Town of Aurora
100 John West Way P.O. Box 1000
Aurora, Ontario L4G 6J1 CAN

C0121304

Audit Type

DWQMS System Audit

Auditor

Subhash Chander

Standard

Ontario's Drinking Water Quality Management Standard

(Exp Date: 13-JUL-2017)

Recommendation

Ontario's Drinking Water Quality Management Standard : DWQMS System Audit Complete No Change to Certificate



Executive Summary

Ontario's Drinking Water Quality Management Standard	Support of City council in infrastructure improvements and pushing for Back flow preventing valve control program is a very positive step towards improvements.
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Opportunities

Ontario's Drinking Water Quality Management Standard	Infrastructure improvements help in catching the leaks; Changing of the residential meters is also a continuous improvement for the distribution system..
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Corrective Action Requests

There is NO Corrective Action Request in this audit.

Site Information

Industry Codes

IAF - QMS:27

Scope of Registration

Ontario's Drinking Water Quality Management Standard : Town of Aurora Distribution System, 115-OA1, Entire Full Scope Accreditation



Opportunities for Improvements

Ontario's Drinking Water Quality Management Standard

Opportunity	Observations / Auditor Notes
Opportunities for Improvements (DWQMS)-01	<p>Location of OFI 5. Document and Record Control;</p> <p>Discussed With All present;</p> <p>Description Could consider retention time to 6 years -Coordinate with re-certification time.;</p>
Opportunities for Improvements (DWQMS)-02	<p>Location of OFI 18.. Emergency Management;</p> <p>Discussed With All present;</p> <p>Description In Operations manual- could consider mention of how often Mock-up exercise is conducted and could also consider different scenerios- each year.;</p>
Opportunities for Improvements (DWQMS)-03	<p>Location of OFI . Drinking Water System;</p> <p>Discussed With All present;</p> <p>Description Mention of Emergency generator, its log for exercising at partial and full load could be mentioned in the Operations Manual.;</p>
Opportunities for Improvements (DWQMS)-04	<p>Location of OFI 15. Infrastructure Maintenance, Rehabilitation and Renewal;</p> <p>Discussed With All present;</p> <p>Description Scheduling of maintenance of all the equipment in the booster station, could be added in the list of equipment maintenance list.;</p>
Opportunities for Improvements (DWQMS)-05	<p>Location of OFI 12. Communication;</p> <p>Discussed With All Present;</p> <p>Description Could consider creating a flow chart for the communication within your organization, with the City of Aurora and York Region Personnel - in case of emergency situations.;</p>

General Information

Operating Authority: Legal Name & Address	The Corporation of the Town of Aurora; 100 John West Way; P.O. Box 1000, Aurora, Ont. L4G 6J1
Language Preference: Correspondence	English
Language Preference: Audit	English
Owner: Legal Name and Address	The Corporation of the Town of Aurora, 100 John West Way, P.O. Box 1000, Aurora, Ont. L4G 6J1
Owner Language Preference: Correspondence	English
Owner Language Preference: Audit	English
Applicant Representative Information; Include Name, Title, Phone, Fax, Email & Website	Angela Pucci, QMSR, 905-727-3123/3451,



	apucci@aurora, Ont. Ont. L4G6J1
Accreditation Option	Full Scope - Entire DWQMS
Date of Previous Systems Audit:	Aug. 14, 2013
Date of Previous On-Site Verification Audit:	June 18, 2014

Processes

Ontario's Drinking Water Quality Management Standard

Process Name	Observations / Auditor Notes
Processes or Activities (DWQMS)-01	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process:</p> <p>Process is effective- Personnel are dedicated.;</p>



Summary of Findings	
Requirement	Finding
1. Quality Management System	C
2. Quality Management System Policy	C
3. Commitment and Endorsement	C
4. Quality Management System Representative	C
5. Document and Record Control	OFI
6. Drinking-Water System	OFI
7. Risk Assessment	C
8. Risk Assessment Outcomes	C
9. Organizational Structure, Roles, Responsibilities, and Authorities	C
10. Competencies	C
11. Personnel Coverage	C
12. Communications	OFI
13. Essential Supplies and Services	C
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	OFI
16. Sampling, Testing & Monitoring	C
17. Measurement & Recording Equipment, Calibration & Maintenance	C
18. Emergency Management	C
19. Internal Audits	C
20. Management Review	C
21. Continual Improvement	C
Mj	Major Non-Conformity. The auditor has determined one of the following: (a) a required element of the DWQMS has not been incorporated into a QMS; (b) a systemic problem with a QMS is evidenced by two or more minor conformities; or (c) a minor non-conformity identified in a corrective action request has not been remedied.
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OFI	Opportunity for Improvement. Conforms to requirement, but there is opportunity for improvement.
C	Conforms to requirement.
	Not Applicable to this audit
*	Additional Comment added by auditor in the body of the report.



Process Matrix	
Audit	Audited Processes
DWQMS System Audit (J0495534) Jun 16, 2015	Processes or Activities (DWQMS)-01
Audit	Audited Processes
DWQMS Verification Audit (J0495536) Jun 18, 2014	Processes or Activities (DWQMS)-01



Verification of CARs For Ontario's Drinking Water Quality Management Standard

Have you verified the effectiveness of all previous CARs? (List all new CAR's that you initiated in this report because you did not verify effective implementation of a previous CAR)

N/A.

Discuss your evaluation in detail.

Not Applicable.

Ministry of the Environment and
Climate Change

Safe Drinking Water
Branch

York Durham District Office
230 Westney Road South, 5 Floor
Ajax, ON L1S 7J5
Tel. (905) 427-5600
Fax (905) 427-5602

Ministère de l'Environnement et de
L'Action en matière de changement
climatique

Direction du contrôle de la qualité de l'eau
potable

Bureau de district de York Durham
230, chemin Westney sud, 5e étage
Ajax, ON L1S 7J5
Tel. (905) 427-5600
Fax (905) 427-4502



September 16, 2015

The Town of Aurora
100 John West Way
Aurora, Ontario L4G 6J1

Attention: Luigi Colangelo, Manager of Operations Services

RE: Aurora Distribution System (260003227)
Drinking Water Inspection Report 1-C16UV
File: SI YO AU SC 540

Please find attached the Ministry of the Environment and Climate Change's inspection report for the above facility. The report details the findings of the inspection that began on August 6, 2015.

The Appendix section of the inspection includes the Stakeholder Appendix A with links to key reference and guidance materials available on the Ministry of the Environment's (MOE) website. Appendix B contains the inspection rating record and an updated risk methodology memo.

Please note the attached IRR methodology memo describing how the risk rating model has improved to better reflect the health related and administrative non-compliance found in an inspection report. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspectors' Annual Report.

In the inspection report, any "*Actions Required*" are linked to incidents of non-compliance with regulatory requirements contained within the Act, a regulation, or site-specific approvals, licenses, permits, orders or instructions. Such violations could result in the issuance of mandatory abatement instruments including Orders, tickets, penalties, or referrals to the ministry's Investigations and Enforcement Branch.

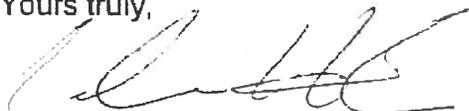
"*Recommended Actions*" convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the availability of information to consumers, and conformance with existing and emerging industrial standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations.

Please note, you will find in the report that bullets are shown in bold print and are the consistent and standard responses to the information gathered during the inspection. Statements shown in regular font provide additional site-specific details.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "*Taking Care of Your Drinking Water: A guide for members of municipal council*" found under "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

I would like to thank the Region of Durham staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns please contact myself or Demetra Koros, Water Supervisor, Central Region at 905-427-5630.

Yours truly,



Melissa Hills
Water Inspector
Ministry of the Environment and Climate Change
Phone: (905) 427-5622

c:

Lindsay Hayworth, Water & Wastewater Supervisor
Bernard Mayer, Manager of Environmental Health, York Region Health Department
Joe La Marca, Director of Health Protection, York Region Health Department
Marion Young, Administrative Clerk, York Region Health Department
Ben Longstaff, Director, Watershed Management, Lake Simcoe Region Conservation Authority
Demetra Koros, Water Supervisor, York Durham District Office



Ontario

Ministry of the Environment

TOWN OF AURORA DISTRIBUTION SYSTEM

Drinking Water System Inspection Report

DWS Number:	260003227
Inspection Number:	1-C16UV
Date of Inspection:	Aug 06, 2015
Inspected By:	Melissa Hills



TABLE OF CONTENTS

1. Drinking Water System Owners Information
2. Drinking Water System Inspection Report

Appendix:

- A. Stakeholders Appendix
- B. Inspection Rating Record

OWNER INFORMATION:

Company Name: AURORA, THE CORPORATION OF THE TOWN OF
Street Number: 100 **Unit Identifier:**
Street Name: JOHN WEST Way
City: AURORA
Province: ON **Postal Code:** L4G 6J1

CONTACT INFORMATION

Type: Manager **Name:** Luigi Colangelo
Phone: (905) 727-3123 x3446 **Fax:** (905) 727-7616
Email: lcolangelo@aurora.ca
Title: Manager of Operations Services

Type: Supervisor **Name:** Lindsay Hayworth
Phone: (905) 727-3123 x3442 **Fax:** (905) 727-7616
Email: lhayworth@aurora.ca
Title: Water and Wastewater Supervisor

INSPECTION DETAILS:

DWS Name: TOWN OF AURORA DISTRIBUTION SYSTEM
DWS Address: 100 JOHN WEST WAY AURORA L4G 6J1
County/District: Aurora
MOE District/Area Office: York-Durham District
Health Unit: YORK REGION HEALTH SERVICES DEPARTMENT
Conservation Authority: N/A
MNR Office: N/A
DWS Category: Large Municipal Residential
DWS Number: 260003227
Inspection Type: Announced
Inspection Number: 1-C16UV
Date of Inspection: Aug 06, 2015
Date of Previous Inspection: Dec 02, 2014

DRINKING WATER SYSTEM COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point **Sub Type:**
Comments:
Not Applicable

Site (Name): Aurora Distribution System

Type: Other

Sub Type:

Comments:

The Aurora Distribution System (The System) is owned and operated by the Town of Aurora (The Town) and serves a population of approximately 57,000. The Town is responsible for the operation and maintenance of approximately 220 kilometers of watermain, a booster pumping station, watermain valves, fire hydrants, service connections, and water meters.

The System receives a mix of treated surface water and groundwater from six production wells that are owned and operated by the Region of York (The Region) and surface water that is treated by the City of Toronto and the Region of Peel. Chloramination is used in the treatment process. The transmission lines and storage facilities are owned and operated by the Region of York.

Site (Name): Vandorf Booster Pumping Station

Type: Other

Sub Type:

Comments:

The Vandorf Booster Pumping Station (The Pumping Station) located at the south-east corner of Vandorf Side Road and Industrial Parkway South is equipped with two booster pumps each rated at 65 L/s, one fire booster pump rated at 131 L/s, and a 125 kW standby diesel generator.

INSPECTION SUMMARY

INTRODUCTION

- * The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period.

This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O. Reg.170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

This report is based on an inspection of a "stand alone connected distribution system". This type of system receives treated water from a separately owned "donor" system. This report contains the elements required to assess key compliance and conformance issues associated with a "receiver" system. This report does not contain items associated with the inspection of the donor system, such as source waters, intakes/wells and treatment facilities.

This report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

Drinking Water Inspector Melissa Hills began an announced inspection of the Aurora Distribution System on August 6, 2015.

Documents reviewed in association with this report included, but were not limited to:

1. Ministry of the Environment and Climate Change Municipal Drinking Water Licence (MDWL), number 115-101, issue number 2, dated January 5, 2012.
2. Ministry of the Environment and Climate Change Drinking Water Works Permit (DWWP), number 115-201, issue number 1, dated August 29, 2011.
3. Other documents maintained by the owner/operating authority for the period of December 2014 through to August 2015, were also reviewed in conjunction with this inspection.

TREATMENT PROCESSES

- * The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.

The Drinking Water Works Permit references an emergency standby booster pumping station located at the south-east corner of Vandorf Side Road and Industrial Parkway South. This pumping station includes two booster pumps and one fire booster pump along with a standby diesel generator.

TREATMENT PROCESSES

- * **The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.**

The Town of Aurora had five (5) Form 1 documents for the inspection period. The documents were reviewed on site and appeared to be in compliance with the Drinking Water Works Permit.

- * **The Operator-in-Charge had ensured that all equipment used in the processes was monitored, inspected, and evaluated.**

TREATMENT PROCESS MONITORING

- * **The secondary disinfectant residual was measured as required for the distribution system.**

As per Ontario Regulation 170/03, Schedule 7-2, chlorine residuals are to be measured either daily or on two different days of the week. For sampling on two days, there must be at least 48 hours between the last sample of one day and the first sample of the next sampling day. Four samples are to be taken one day and three on the other. Each sample collected on one day must be from a separate location.

The System met this requirement.

DISTRIBUTION SYSTEM

- * **Existing parts of the distribution system that were taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that came in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

The Drinking Water Works Permit, Schedule B, 2.3, requires that all parts of the drinking water system in contact with drinking water which are added, modified, replaced, extended or taken out of service for inspection, repair or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with the provisions of the AWWA C651 - Standard for Disinfecting Water Mains or an equivalent procedure.

The Town of Aurora has updated their procedures to reflect the current AWWA Standard C651 as recommended in the 2014-2015 drinking water inspection report.

- * **Based on the records available the owner was able to maintain proper pressures in the distribution system.**

OPERATIONS MANUALS

- * **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**
- * **The operations and maintenance manuals did meet the requirements of the Permit and Licence or Approval issued under Part V of the SDWA.**

LOGBOOKS

- * **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

SECURITY

SECURITY

- * **The owner had provided security measures to protect components of the drinking-water system.**

CERTIFICATION AND TRAINING

- * **The overall responsible operator had been designated for each subsystem.**

Subsection 23(1)23 of Ontario Regulation 128/04 states that the owner or operating authority of a municipal residential subsystem shall designate an overall responsible operator (ORO). The ORO shall be an operator who holds a certificate for that type of subsystem and that is of the same class as or higher than the class of that subsystem.

The Town of Aurora is in compliance with this legislative requirement.

- * **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

Subsection 25(1) of Ontario Regulation 128/04 states that the owner or operating authority of a subsystem shall designate one or more operators as operators-in-charge (OIC) of the subsystem. Subsection 25(5) states that a person who holds an operator-in-training certificate shall not be designated as an OIC. Duties of the OIC are listed in Section 26 of O. Reg. 128/04.

The Town of Aurora is in compliance with this legislative requirement.

- * **Only certified operators made adjustments to the treatment equipment.**

WATER QUALITY MONITORING

- * **All microbiological water quality monitoring requirements for distribution samples were being met.**

The Town of Aurora exceeded the requirement for bacteriological sampling in the distribution system for this inspection period.

- * **All trihalomethanes water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

O. Reg. 170/03, Schedule 13-6, requires the owner of a drinking water system to ensure that at least one distribution sample is taken every 3 months, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of trihalomethanes.

The Town of Aurora is in compliance with this legislative requirement.

- * **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

The Town of Aurora is required to take 8 samples for lead in the distribution system in the periods between December 15, 2014 to April 15, 2015 and again between June 15, 2015 to October 15, 2015. Records were available for review on site for samples collected on April 15 2015.

At the time of the inspection the Town of Aurora was in compliance with this requirement for the first period of sampling required.

- * **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

WATER QUALITY ASSESSMENT

WATER QUALITY ASSESSMENT

- * Records show that all water sample results taken during the review period met the Ontario Drinking Water Quality Standards (O. Reg. 169/03).

Two (2) AWQIs were reported to SAC for the presence of TC on June 2, 2015 and July 18, 2015. Both were resolved.

REPORTING & CORRECTIVE ACTIONS

- * Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.
- * Corrective actions as directed by the Medical Officer of Health had been taken by the owner and operating authority to address exceedances of the lead standard.
- * All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.
- * All changes to the system registration information were provided within ten (10) days of the change.

The Drinking Water System Profile was up to date at the time of the inspection.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

Not Applicable

SUMMARY OF BEST PRACTICE ISSUES AND RECOMMENDATIONS

This section provides a summary of all best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. Best Management Practices are recommendations and not mandatory requirements, but may lead to safe drinking water for the consumer.

In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following practices and consider measures to implement them so that all drinking water systems continuously improve their processes.

Not Applicable

SIGNATURES

Inspected By:

Melissa Hills

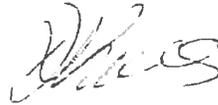
Signature: (Provincial Officer):



Reviewed & Approved By:

Demetra Koros

Signature: (Supervisor):



Review & Approval Date:



Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.



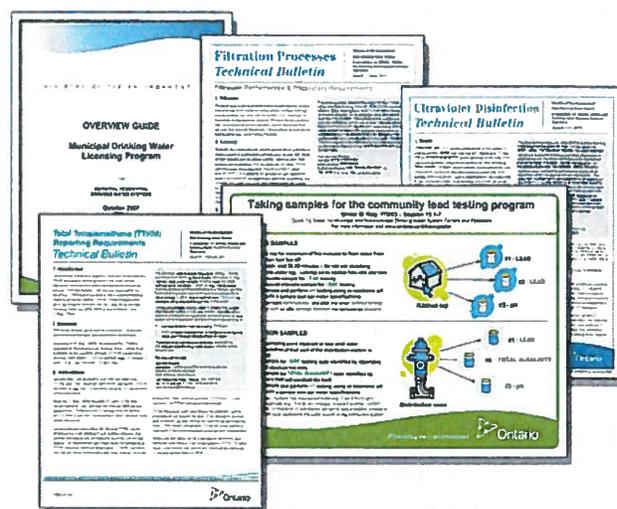
APPENDIX A
STAKEHOLDER APPENDIX

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are posted on the Ministry of the Environment's **Drinking Water Ontario** website at www.ontario.ca/drinkingwater to help in the operation of your drinking water system.

Below is a list of key materials frequently used by owners and operators of municipal drinking water systems. To read or download these materials, go to **Drinking Water Ontario** and search in the **Resources** section by **Publication Number**.

Visit **Drinking Water Ontario** for more useful materials. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or picemail.moe@ontario.ca.



PUBLICATION NUMBER	PUBLICATION TITLE
4448e01	Procedure for Disinfection of Drinking Water in Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids
7467	Filtration Processes Technical Bulletin
7685	Ultraviolet Disinfection Technical Bulletin
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)
2601e	Overview Guide: Municipal Drinking Water Licensing Program
0000	Municipal Drinking Water Licensing Program Bulletin, Issue 1, January 2011
0000	Certification Guide for Operators and Water Quality Analysts
6560e	Taking Samples for the Community Lead Testing Program
7423e	Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption
7128e	Drinking Water System Contact List
4449e01	Technical Support Document for Ontario Drinking Water Quality Standards

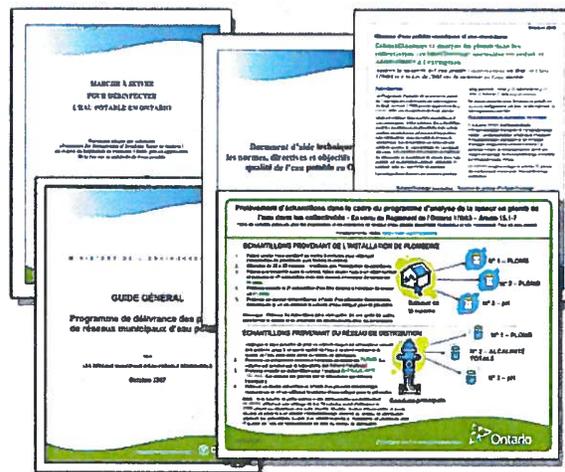
ontario.ca/drinkingwater

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

Beaucoup de documentation sur le fonctionnement d'un réseau d'eau potable se trouve sur le site Web du **ministère de l'Environnement**.

Vous trouverez ci-dessous la liste des principaux documents que les propriétaires et les exploitants de réseaux municipaux d'eau potable utilisent fréquemment. Pour lire ou télécharger ces documents, allez sur le site Web du Ministère, et effectuez une recherche par numéro de publication dans la section RESSOURCES.

Consultez le site d'**Eau potable Ontario** pour obtenir d'autre documentation. Communiquez avec le Centre d'information du public au 1 800 565-4923



ou au 416 325-4000, ou encore à picemail.moe@ontario.ca si vous avez des questions ou besoin d'aide.

NUMÉRO DE PUBLICATION	TITRE DE LA PUBLICATION
4448f01	Marche à suivre pour désinfecter l'eau potable en Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)
7467	Filtration Processes Technical Bulletin (en anglais seulement)
7685	Ultraviolet Disinfection Technical Bulletin (en anglais seulement)
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (février 2011) (en anglais seulement)
2601f	Guide général - Programme de délivrance des permis de réseaux municipaux d'eau potable
0000	Bulletin du Programme des permis de réseaux municipaux d'eau potable, numéro 1, janvier 2011
0000	Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable
6560f	Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités
7423f	Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption
7128f	Liste des personnes-ressources du réseau d'eau potable
4449f01	Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario

ontario.ca/drinkingwater



APPENDIX B
INSPECTION RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2015-2016)

DWS Name:	TOWN OF AURORA DISTRIBUTION SYSTEM
DWS Number:	260003227
DWS Owner:	Aurora, The Corporation Of The Town Of
Municipal Location:	Aurora

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Adhoc
Inspection Date: August 6, 2015
Ministry Office: York-Durham District

Maximum Question Rating: 265

Inspection Module	Non-Compliance Rating
Treatment Processes	0 / 39
Distribution System	0 / 21
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 28
Water Quality Monitoring	0 / 51
Reporting & Corrective Actions	0 / 63
Treatment Process Monitoring	0 / 21
TOTAL	0 / 265

Inspection Risk Rating	0.00%
-------------------------------	--------------

FINAL INSPECTION RATING:	100.00%
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Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2015-2016)

DWS Name: TOWN OF AURORA DISTRIBUTION SYSTEM
DWS Number: 260003227
DWS Owner: Aurora, The Corporation Of The Town Of
Municipal Location: Aurora

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Adhoc
Inspection Date: August 6, 2015
Ministry Office: York-Durham District

Maximum Question Rating: 265

Inspection Risk Rating | **0.00%**

FINAL INSPECTION RATING: | **100.00%**

APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS



The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection results since fiscal year 2008-09. The primary goals of this assessment

are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains up to 14 inspection modules and consists of approximately 120 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections. The questions address a wide range of regulatory issues, from administrative procedures

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to drinking water quality monitoring. Additionally, the inspection protocol contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry have assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. It shows areas where a system's operation can improve. To that end, the ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry's annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario's Risk Management Framework. Risk management is a systematic approach to identifying potential hazards; understanding the likelihood and consequences of the hazards; and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

$$\text{RISK} = \text{LIKELIHOOD} \times \text{CONSEQUENCE}$$

(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

TABLE 1:

Likelihood of Consequence Occurring	Likelihood Value
0% - 0.99% (Possible but Highly Unlikely)	L = 0
1 - 10% (Unlikely)	L = 1
11 - 49% (Possible)	L = 2
50 - 89% (Likely)	L = 3
90 - 100% (Almost Certain)	L = 4

TABLE 2:

Consequence	Consequence Value
Medium Administrative Consequence	C = 1
Major Administrative Consequence	C = 2
Minor Environmental Consequence	C = 3
Minor Health Consequence	C = 4
Medium Environmental Consequence	C = 5
Major Environmental Consequence	C = 6
Medium Health Consequence	C = 7
Major Health Consequence	C = 8

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2**.

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

Table 3 presents a sample question showing the risk rating determination process.

TABLE 3:							
Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?							
Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely)	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely)	L=3 (Likely)	L=2 (Possible)
R=4	R=2	R=6	R=12	R=15	R=6	R=21	R=16

Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions that relate to regulatory compliance and input their responses as “yes”, “no” or “not applicable” into the Ministry’s Laboratory and Waterworks Inspection System (LWIS) database. A “no” response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone), type of inspection (i.e., focused, detailed), and source type (i.e., groundwater, surface water).

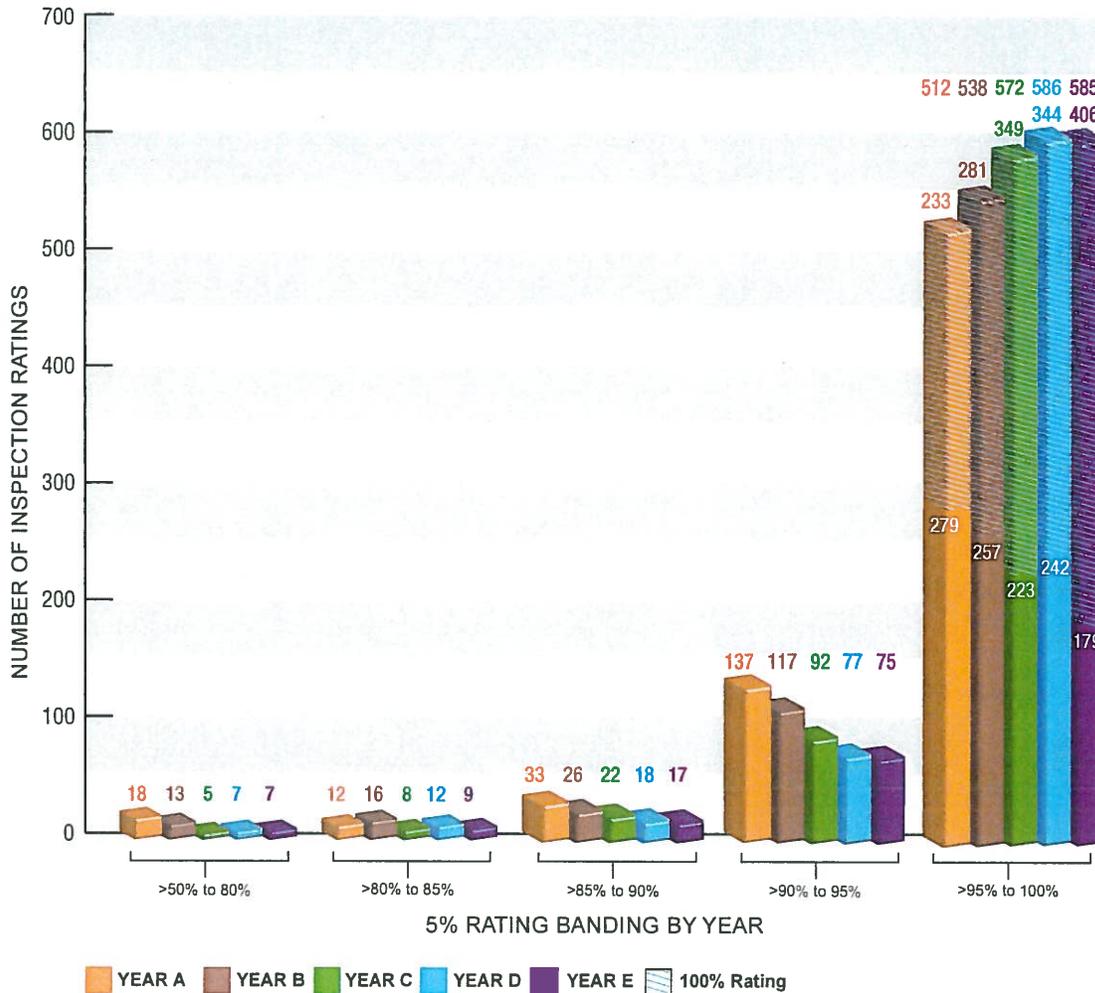
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

Figure 1 presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 14 possible modules of the inspection protocol,

which would provide the system owner/operator with information on the areas where they need to improve. The 14 modules are:

- | | | | |
|-------------------------|------------------------|---------------------------------------|--|
| 1. Source | 5. Process Wastewater | 9. Contingency and Emergency Planning | 12. Water Quality Monitoring |
| 2. Permit to Take Water | 6. Distribution System | 10. Consumer Relations | 13. Reporting, Notification and Corrective Actions |
| 3. Capacity Assessment | 7. Operations Manuals | 11. Certification and Training | 14. Other Inspection Findings |
| 4. Treatment Processes | 8. Logbooks | | |

For further information, please visit www.ontario.ca/drinkingwater

 Drinking Water Quality Management System... AURORA Management Review - Meeting Minutes	
Date: Friday March 4 th , 2016	Prepared by: Angela Pucci
Place: 9 Scanlon Court, <i>Boardroom</i>	Reviewer: Lindsay Hayworth
Time: 2 pm to 4 pm	Page 1 of 9

Attendees:

Phillip Galin - Manager of Operations Services / DWQMS Implementation Lead
 Doug Nadorozny - CAO / Top Management
 Ilmar Simanovskis - Director of Public Works / DWQMS Project Sponsor/ Top Management
 Lindsay Hayworth - Water/Wastewater Supervisor / DWQMS Representative / ORO
 Angela Pucci - Operations Clerk / DWQMS Project Administrator

Introduction to DWQMS Management Review

Top Management reviewed all DWQMS data presented as summarized below. All deficiencies identified by Top Management have been documented on the Management Review Action Items Form (SF-015) attached.

Agenda Items Reviewed

1. Incidents of Adverse Drinking Water Tests

- Water Quality Report reviewed by Top Management. Report will be presented to council in March. Lindsay utilized the MOE Annual Report template form for this year's Water Quality report, this template is used by most municipalities.
- It was suggested by Ilmar to have a link from Aurora's Water Quality Report on the Town's web site to York Regions Water Quality Report.
- 929 Water Samples taken in 2015, increase compared to 2014 due to the additional sampling after watermain breaks and when turning water mains off due to repairs.
- Lindsay reported three adverse incidences in 2015. All adverse incidences listed below, including report documents, re-sampling and summary of actions taken was reviewed and discussed.
 1. June 18, 2015, 186 Heathwood Heights
 2. July 2, 2015, 4 Hollidge Blvd.
 3. September 9, 2015, 122 Brookview
- Proper procedures were followed for all incidences, results achieved and water quality adverse issue resolved.
- Ilmar updated Doug on the Towns Water Meter Replacement program. Program started in 2014, 2000 have been replaced. 1000 water meters a year will be replaced till the entire town is completed.

2. The Efficiency of the Risk assessment, Deviations from Critical Control Points Limits and Response Actions

- As part of Element 7 & 8, Risk Assessment and Risk Assessment Outcomes, the currency of the information and the validity of the information used are verified once a year. The risk assessment is redone every three years at a minimum. A complete redo of the risk assessment was conducted on October 22, 2015.
- Top Management verified the Risk Assessment complete Redo meeting minutes of October 22, 2015. Fifteen hazards and hazardous events were identified and the level of risk for each assessed.
- Ilmar suggested that staff see if they can identify additional potential hazards at the next Risk Assessment review. Staff are to reach out to other municipalities to help identify more hazards.



Drinking Water Quality Management System Management Review - Meeting Minutes

Date: Friday March 4 th , 2016	Prepared by: Angela Pucci
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- Next review is scheduled for October 22, 2016 and a redo October 22, 2018.

3. Internal and Third party Audit Results and Incidents of Regulatory Non-Compliance, System Audits of June 16, 2015 & Internal Audit of December 1, 2015

- Top Management reviewed, DWQMS System audit conducted by NSF on June 16, 2015. Report # C0121304.
- No corrective action and five opportunities for improvement were identified during the audit. Top Management reviewed all OFI and resulting action details listed below:

NSF-MOE VERIFICATION AUDIT JUNE 16, 2015 - OFI		
ELEMENT #	Opportunity for Improvement Details	Action Details
5	Document and Record Control: Could consider retention time to 6 years – Coordinate with re-certification time	Updated Element #5 Record Control Procedure, QMS-PRO-002, section 4.41 and 4.6 as per Town of Aurora Record Classification Structure & Retention By-Law 5611-14.
6	Drinking Water System: Mention of emergency generator, its log for exercising at partial and full load could be mentioned in the Operations Manual	The Town contractor has many inspections to preform weekly and monthly, exercising is one of them, there are too many to add to Element #6.
12	Communication: Could consider creating a flow chart for the communication within your organization, with the Town of Aurora and York Region Personnel – in case of emergency situations	An Emergency contact list is updated annually and is part of the Town's Internal Audit procedure, QMS-PRO-008, it is specific to Emergency Contacts for York Region and York Region Municipalities
15	Infrastructure Maintenance, Rehabilitation and Renewal: Scheduling of maintenance of all the equipment in the booster station, could be added in the list of equipment maintenance list	Updated Element # 15, Booster Station Maintenance Records was added.
18	Emergency Management: In Operations manual – could consider mention of how often Mock-up exercise is conducted and could also consider different scenarios-each year	Emergency Procedures are tested with staff once per year and is referenced in QMS-PRO-008, section 4.2 The departments practice is not to concurrently duplicate the scenarios. The previous year scenario is reviewed prior to testing to insure that a different scenario is being tested.



Drinking Water Quality Management System

Management Review - Meeting Minutes

Date: Friday March 4 th , 2016	Prepared by: Angela Pucci
Place: 9 Scanlon Court, <i>Boardroom</i>	Reviewer: Lindsay Hayworth
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- Top Management reviewed, DWQM System Internal Audit report conducted on December 1, 2015 by AET Consultants, an external accredited auditor. Three minor non-conformities and eight opportunities for improvement were identified during the audit. Top Management reviewed all Non-Conformities and OFI and resulting action details listed below:

AET Internal Audit December 1, 2015 Mn		
Element #	Mn - Non-Conformity- Details	Action Details
1 - Quality Management System	DWQMS Operational Plan, Section #5 Document and Records Control, Frozen Watermains are not addressed in the Quality Management System	Lindsay will create a new procedure to address frozen watermains.
5 – Document and Records Control	Bayview/Vandorf Booster Station “Log in Sheets”. The procedure states that all internal and external documents shall be reviewed annually as a component of the annual Internal Audit and Management Review. This is not occurring as Management review minutes do not reflect procedures/OP Plan, forms, MSDSs, permits etc. being reviewed and the internal audit process has been conducted for the past 3 years as a one day sampling process	All internal and external documents shall be reviewed annually, as a component of all future annual internal audits, # QMS-PRO-001 Document Control Procedure was revised.
20 – Management Review	Management review minutes stated that Emergency Response Testing occurred in 2015 but did not discuss the action items/recommendations that resulted from it	Management Review of March 4, 2016, Top Management reviewed and discussed the finding of the Emergency Preparedness training of January 14, 2015 and December 18, 2015.

AET Internal Audit December 1, 2015 OFI		
Element #	OFI Details	Action Taken/Details
2	Quality Management System Policy: Consider implementing a routine review of the Policy as part of the maintenance of the DWQMS	Will be reviewed during the Management Review Process. Updated SOP, QMS-PRO-009, 4.3 Updated SF-016, Management Review Agenda to Include the Review of QMS Policy, Element # 2 to insure a review will occur annually.
5	Document and Records Control: Ensure only controlled forms are used for monitoring and inspection purposes in the booster stations	Lindsay requested that the contractor send him all completed SF-023 at the end of each year starting 2016. This will enable Lindsay to ensure the contractor is using the correct forms. A file has been created in the Town’s archival network drive, as part of DWQMS records control “Standard Form Records”. All completed records will be filled electronically by year and saved as identified in the Town of Aurora Record Classification Structure & Retention By-Law # 5611-14 Schedule “A”.
9	Organizational Structure, Roles, Responsibilities and Authorities: The organizational reporting structure that was presented to Council differs from what appears in the Operational Plan	Will be reviewed during the Management Review On March 4, 2016.

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12	Communications: Ensure all essential suppliers and services are communicated with in terms of the relevant aspects of the QMS	The Water Quality Management System is communicated during the procurement process, and specifies the legislated requirements and location of QMS documents. The QMS Representative is responsible to ensure that all operating personnel and suppliers are made aware of the hard copy locations and are apprised of any changes or updates to the QMS through regular meetings when necessary, as described in Element #12.
12	Communications: New hire/temporary staff training/awareness is not well defined. Specifically, how long after hire should this awareness training be given	Element # 12 was revised to include how long after hire new staff are trained and made aware of the QMS.
19	Internal Audits: Consider clarifying the purpose of the table within section 4.2 of this procedure, i.e. The audit shall assess that the QMS Activity listed occurs at the specified frequency or the audit shall assess the QMS Activity at the specified frequency	Standard Operating Procedure QMS-PRO-008, Section 4.2 has been updated to clarify the purpose of the table.
20	Management Review: The 2015 management review meeting was not conducted at least 12 months after the 2014 management review meeting	Every effort is made by the Administrator to arrange meetings within 12 months of the previous meeting, unfortunately due to Top Managements scheduling conflicts, occasionally meetings may exceed the 12 month frequency specified in the Audit Schedule.
21	Continual Improvement: It is strongly recommended to develop a more defined/documented corrective action procedure, describing responsibilities, root cause analysis, target completion dates, documentation, record retention, and verification. Consideration should be given to documenting the various issues that could potentially be managed using the corrective action process as part of DWQMS	Standard Form #014, Corrective Action Form has been revised QMS-PRO-008, section 4.5 has been updated to reflect the usage of the form.

- Ilmar suggested that staff review the Management Review procedure and the Internal Audit procedure and update the frequency specified for all activities.

4. Results of Emergency Response Testing and Findings of January 14, 2015 and December 18, 2015

- Lianne Sinclair of Wesa delivered the emergency preparedness training to all Water Operators on January 14, 2015.
- Top Management reviewed the Emergency Scenario Table top Exercise report, Wesa Project Number, W-B12941-00-00. Seven findings were identified, each findings listed below, was reviewed and discuss with Top Management:



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Findings of January 14, 2015	Action Taken	Action Details
1. Although Earthquakes are listed on the potential lists of emergencies, there were no work instructions for staff on how to manage their safety during an Earthquake	NO	Management review identified this as a low risk emergency.
2. Review the Municipal Emergency procedures to determine if there is an evacuation procedure that can be referenced in the case of an emergency requiring evacuation of the public works building. i.e. Fire, Earthquake. The staff determined that they would leave the building and meet at the regular meeting space at the back of the building	NO	Existing fire drills occurs once a year with staff and reviewed with new staff when hired.
3. It was discussed that CB radios located in the trucks could be used for communication in case cellular systems are unavailable. Test the CB radios to ensure that they are a suitable communication replacement during an emergency	YES	Staff are not confident with the current two way radios, As part of 2017 capital project management identified an opportunity to upgrade the current radio system to hand held radios.
4. During an earthquake that would impact infrastructure and could be a "Catastrophic" Emergency the major activities are managed by York Region. Contact York Region to determine if they have reviewed this scenario and if they have an action plan	NO	The response to this emergency will be managed using the Towns of Aurora's Emergency Response Plan in conjunction with the Regional Emergency Plan.
5. Input #4 was not a realistic option as the tank would not drain into the booster station	NO	Unclear, cannot identify risk.
6. The containment for the diesel tank at the booster station can fill up with water during a rain storm, if a leak were to occur when the containment is full of water the fuel will spill into the ditch. Look into placing a roof over the diesel tank	NO	Staff are required to visit the booster station weekly and drain the containment when needed.
7. Section V. Environmental Spills, on QMS-PRO-019 Waterworks Emergency Procedure, needs to be modified to state that the Spills Action Centre be called if the spill exceeds 100L	YES	Staff update Procedure QMS-PRO-019 to reflect 100L.

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- Lindsay Hayworth delivered the emergency preparedness training to all Water Operators on December 18, 2015.
- Top Management reviewed the Emergency Scenario Table top Exercise report dated December 18, 2015, three findings were identified, each findings listed below, was reviewed and discuss with Top Management:

Findings of December 18, 2015	Action Taken	Action Details
1. It was apparent through discussions that not all staff was fully aware of the exact location of the wells within Aurora that the Region operates. New operators were fully informed of all 6 Aurora well locations	YES	All staff including new staff reviewed the location of all 6 Aurora wells. The locations were reaffirmed with existing staff and locations were confirmed and verified with new staff.
2. It was suggested that arrangements be made with the Region for a tour of the Aurora well houses for all Operators	YES	Tours to be arranged with York Region by Lindsay, end of March.
3. There was a discussion on the location and types of spills response clean up material located at the operations yard. It was suggested that a dedicated enclosed trailer for responding to spills, fully stocked and ready to go would be the ideal. A recommendation will be made to purchase a suitable trailer for this role	YES	Will be part of 2017 Capital Plan. A suggestion was made to purchase a pop up tent to be used as a temporary command centre in the interim.

- Ilmar suggested the opportunity for staff to learn more about the pumping stations through job swapping with the Region. It would be mutually beneficial.
- Staff identified the need of supplies during the emergency training that has been purchased, generators, LAD Flood lighting,
- Town staff has conformed to the requirements of Element # 18 of the Ontario Ministry of the Environment's Drinking Water Quality Management Standard (DWQMS).

5. Operational Plan Currency, Content and Updates

- Lindsay will update Procedure QMS-PRO-010 Emergency Watermain Break Repairs and 012 Water Service Repair to reflect the new requirements outlined in the MOE Watermain Disinfection Procedure of November 2015, major areas to be implemented listed below:

1. *Categorizing Watermain Breaks,*

Watermain breaks with no evident or suspected contamination are classified as Category 1, watermain breaks with evident or suspected contamination and repairs involving more than 6 metres of replaced pipe are classified as Category 2.

2. *Only the Operator In Charge or Overall Responsible Operator can classify the category of the break.*



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3. *Public Agency Notification,*

Category 1 watermain breaks are not required to be reported to the Spills Action Centre.

Category 2 watermain breaks are required to be reported to the Spills Action Centre.

- Staff reformatted Element # 7 Risk Assessment and Element # 17 Measurement and Recording Equipment Calibration and Maintenance. Ilmar and Lindsay reviewed and approved Elements 7 & 17.

6. Review of the Quality Management System Policy, Element # 2

- Management Team reviewed Element # 2, The Quality Management System Policy statement was reaffirmed.
- Doug pointed out the discrepancy in the headings, Quality Management System Policy, staff agreed to change the heading to reflect the element requirements as stated in the MOE Ontario's Drinking Water Quality Management Standard.
- Ilmar's designation requires updating.
- Angela will update Element #2 to reflect the changes.

7. Drinking Water Quality Trends

- In 2015, The Region installed a chlorine booster facility on Bathurst, since the installation the water pressure has been better in the centre of town.
- All Swabbing contracted out in the past has not been done for a few years.
- Last year directional flushing done by staff was successful, is planned this year again.
- Ilmar would like to implement a GIS mapping strategy to document all flushing cycles and other activities performed and planned.
- Lindsay is proposing to install a new bulk water filling station at the dead end on Eric T Smith Way, pending council approval.
- Current bulk water station will be given up with the sale of the Operations Centre at 9 Scanlon Crt.
- Lindsay estimated the sale in 2015 of commercial water from the existing station was \$24,000.00, our cost for the water was \$14,000.00. The new station will pay for itself in a few years.
- Lindsay reported two major watermain breaks on Hartwell way in 2015, hit twice by the developer. Water loss was estimated at maximum, contractor was invoiced for the water loss.
- Due to all of the construction Lindsay is expecting a higher than normal water loss projection for 2015.
- Over the next three years, Ilmar would like to develop a multi-year projection maintenance plan, pending resources.

8. Changes That Could Affect the QMS

- In 2015 Aurora lost three staff members with a Class 2 Drinking Water Certificate.
- Currently there is only three qualified staff with a, level 2 Drinking Water Certificate that can be designated ORO or OIC. If two are unexpectedly, away there is no one qualified to fill in and Aurora would not be in compliance.

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- Current staff are working towards their certification upgrade to a Class 2 and will meet the experience requirement to upgrade in the fall.
- Procedure requirements for a Drinking water system ORO and OIC is, a minimum Level 2 Drinking Water Certificate. Presently Aurora does not have enough personnel who meet the requirements.
- Water Operators have done over 1000 locates in 2015.
- Streetlight Locates are contracted out to Mead Electric, staff estimated that \$145,000.00 was spent in 2015 on Streetlight Locates.
- In December Water Operators were trained to do streetlight locates and have done the majority, the ones that need panel entry or can't be done by staff are given to the contractor. Cost savings estimated at about \$70,000.00.
- Streetlight locate requests will increase in the spring and staff will monitor to see if Water Operators can handle the volume.

9. The Resources Needed to Maintain the QMS

- Back Flow Prevention By-law #5645-14 enacted but not enforced.
- Lindsay would like a new Compliance Officer position in the Water/Wastewater department with a minimum Class 2 Drinking Water Certificate.
- This role would be responsible for enacting the Back Flow Prevention Program and other preventative programs, fill in as OIC or ORO when required and ensuring that Aurora complies with its regulatory requirements and internal policies and/or procedures.
- Ilmar will put a case together to identify all of the points and will further discuss the request of this new role with Doug.

10. The Results of the Infrastructure Review

- Top Management reviewed the Infrastructure Review report dated May 28, 2015, no action items identified.
- All action items from meeting of April 30, 2014 have been addressed, Back Flow Prevention By-Law enacted, no additional action items identified.

11. Operational Performance

- 30 Frozen Services reported in 2015, fewer frozen services for the 2015/2016 season, all were on private side.
- A recorded 12 watermain breaks in 2015. Staff has identified three failures on Algonquin Cr., two in 2014 and one in 2015, watermain relining on Algonquin Cr., is projected for 2016.

12. Consumer Feedback

- Top Management reviewed the 2015 Water Quality Complaints report.
- 25 water quality complaints recorded in 2015, all of the complaints were private side issues.
- Ilmar suggested staff look into the use of CRM to track calls.

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13. Staff Suggestions

- To comply with the Municipal Act, Lindsay is in the process of purchasing door hangers to use in addition to personal notification when notifying residents of water disruption during an emergency repair.

Summary

All action items are identified on the Management Review Action Item form # SF-015 attached. All records are maintained and stored electronically in the Town's record management system filing location:

K:\Infrastructure & Environmental Services\ENV\PlanProtect\DWQMS\Records\Management Review

Next Meeting TBD