



Subject: Drinking Water Quality Management Standard – Management Review
Prepared by: Iustina Voinea, Program Coordinator Water Wastewater Stormwater
Department: Operational Services
Date: June 5, 2018

In accordance with the Procedure By-law, any Member of Council may request that this Information Report be placed on an upcoming General Committee or Council meeting agenda for discussion.

Executive Summary

The purpose of this report is to provide the minutes of the Annual Management Review of the Drinking Water Quality Management System and information on audits and inspections conducted in 2017.

The 2017 information audits and inspections highlights:

- The operation and management of the water system achieved full compliance for 2017
- Operational Plan Elements
- DWQMS Management Structure
- Role of Owner – Council
- Role of Top Management - CAO and Director of Operations
- Role of Finance - Director of Financial Services
- Role of Project Sponsor – Director of Operations
- Role of DWQMS Implementation Lead – Manager of Operations Services
- Role of DWQMS Representative – Supervisor of Water/Wastewater
- Certified Operators
- Internal Audit, System Audit, Inspections and Management Review

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

Ministry of the Environment and Climate Change developed the Drinking Water Quality Management Standard (“DWQMS”) that applies to owners and operating authorities for municipal drinking water systems. The implementation of the DWQMS is mandated by the provincial government through the Safe Drinking Water Act. The Operational Plan requirement was a portion of the mandated DWQMS that is required by the Ministry of the Environment and Climate Change (MOECC).

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.

Analysis

The operation and management of the water system achieved full compliance for 2017

Requirements of the DWQMS outlined in this report are critical components of the management framework under which staff and senior management are required to operate.

This report details the Town’s performance for 2017. Staff is proud to report that this was a successful year in fulfilling legislative requirements, resulting in confidence that the Town’s water system is operated and maintained to a high standard to the benefit of the community.

Operational Plan Elements

The Town of Aurora Drinking Water System Operational Plan was prepared to meet legislative requirements and was initially submitted to the Ministry on August 1, 2009 and the Municipal Drinking Water License (MDWL) was issued August 30, 2011. Every five years the licence needs to be renewed. The current licence expires in June 29, 2021.

To obtain a MDWL the operating authority must be accredited by a third party accreditation body. 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 Operational Plan is a document that outlines all 21 elements of the DWQMS, which set 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
- Emergency Management

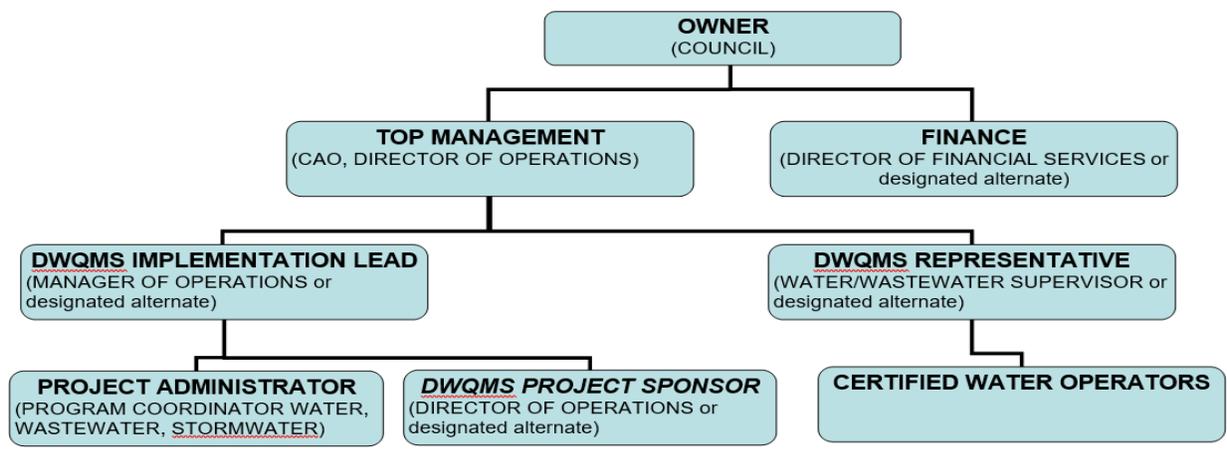
The elements for the commitment, endorsement and organization structure outlining the Corporation’s roles and authorities must be endorsed by Council as the owner of Aurora’s drinking water system.

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 organizational chart. An important aspect of this structure is the identification of Council as the Owner, the body with overall responsibility for providing the necessary resources to deliver safe and reliable drinking water to the community.

ORGANIZATIONAL CHART:



Role of Owner – Council

One of the critical elements is that the Operational Plan is endorsed in writing by Top Management and the Owner, which in this case, are senior staff and 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 doing the following:

- Ensure that a Quality Management System (QMS) is in place and meets the requirements of the DWQMS
- Ensure that the Operating Authority is aware of all applicable legislation and regulatory requirements
- Determine, obtain or provide 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 Operations

- 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 the 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 Finance - 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 Operations

- 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 Operational Services Crew Leaders as Operators-in-Charge as required in the absence of the Operational Services Supervisors
- Participate in management review meeting of the QMS

Role of DWQMS Implementation Lead – Manager of Operations 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
- Preparation of budgets and programs
- 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 CAO through management review meeting, on an annual basis, to evaluate the continuing suitability, adequacy, effectiveness and compliance of the Drinking Water Quality Management System

Role of DWQMS Representative – Supervisor of Water/Wastewater

- Carry out the activities and manage programs related to the water distribution system as outlined by approval policies, procedures and legislative requirements
- Communication/liaison for the Water Treatment Plants run by the York Region
- 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
- Recommends 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 Drinking Water Quality Management System
- Develops/reviews 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; files records
- 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
- Attends training and maintains operator's license
- Receives and communicates external complaints
- Regularly communicates to the Drinking Water Quality Management System Representative

Internal Audit, System Audit, Inspections and Management Review

As part of the supervising responsibilities, the management team is required to ensure that internal program audits, external third party system audits as well as an annual management review are conducted.

Aurora's annual internal audit was performed by BlueMetric Environmental, on November 22, 2017. All 21 Elements of Aurora's Operational Plan were audited to ensure "we do what we say we do". A copy of the Blue Metric Environmental Audit report, Appendix "A" is attached.

The external accreditation audit is required to be performed annually by a MOECC - approved auditor, NSF. An on-site system audit took place May 8-9, 2017. All 21 Elements of Aurora's Operational Plan were audited to ensure "we do what we say we do". A copy of the NSF Audit report, Appendix "B" is attached.

An unannounced inspection of the Town of Aurora's Drinking Water Distribution System was conducted by the Ministry of the Environment and Climate Change on November 17, 2017. The primary focus of this inspection is to confirm compliance with the Ministry of the Environment and Climate Change legislation as well as evaluate conformance with Ministry drinking water policies and guidelines during the inspection period. The MOECC System Inspection Report, Appendix "C" is attached.

The Operational Plan also requires that a Management Review meeting be held annually to review the drinking water system performance and identify necessary actions to ensure compliance with the regulations. The Management Review meeting was held on February 15, 2018, in which the audit results were reviewed. The Management Review minutes, Appendix "D" are attached.

Advisory Committee Review

Not Applicable.

Legal Considerations

None.

Financial Implications

A budget of \$35,000 is requested annually through the water operating budget to support the Drinking Water Quality Management System, external audit costs and training and development costs for staff. This amount will be carried into future budgets as a requirement for demonstrating financial support to the ongoing maintenance of the

Drinking Water Quality Management System and will be adjusted as required to ensure adequate funding is in place.

Communications Considerations

There is no external communication required.

Link to Strategic Plan

This process supports the Strategic Plan goal of Supporting an Exceptional Quality of Life for All through its accomplishment in satisfying requirements in the following key objective within this goal statement:

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 Recommendation

There are no alternatives to the recommendations presented in this report.

Conclusions

The Town has completed all the requirements to maintain its accreditation under the DWQMS for 2017. As the owner of the system, Council will receive periodic reports on the performance and financial aspects of the Town's water distribution system.

Attachments

- Attachment #1 - Minutes of Management Review Meeting (February 15, 2018)
- Attachment #2 - NSF System Audit Report (May 8-9, 2017)
- Attachment #3 - BlueMetric Environmental Internal Audit Report (November 22, 2017)
- Attachment #4 - MOECC System Inspection Report (November 17, 2017)

Previous Reports

None.

Pre-submission Review

Agenda Management Team review on April 26, 2018

Departmental Approval



Allan D. Downey
Director
Operational Services

Approved for Agenda



Doug Nadorozny
Chief Administrative Officer



Drinking Water Quality Management System Management Review - Meeting Minutes

Date: February 15, 2018	Prepared by: Iustina Voinea
Place: 229 Industrial Parkway, Boardroom	Reviewer: Lindsay Hayworth
Time: 1:30 pm – 3:30 pm	Page 1 of 6

ATTACHMENT #1

Attendees:

Doug Nadorozny	–CAO / Top Management
Allan Downey	–Director of Operations / DWQMS Project Sponsor
Jim Tree	–Manager of Operations Services (A) / DWQMS Implementation Lead
Lindsay Hayworth	–Water/Waste Supervisor / DWQMS Representative
Iustina Voinea	–Program Coordinator Water/Wastewater/Stormwater/ 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

- Lindsay reported nineteen (19) adverse incidences in 2017, possibly due to abnormal hot and humid weather. No trending pattern noticed. Chlorine residual levels were good for all instances. All adverse incidences, including report documents, re-sampling and summary of actions taken were reviewed and discussed.
- Proper procedures were followed for all occurrences: reporting to MOECC - SAC and resampling; results achieved and water quality adverse issue resolved.
- Allan requested information on number of adverse results for neighbouring municipalities.

Action Item: *Iustina to compile information on number of adverse results reported by other Municipalities.*

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.
- Risk assessment was conducted to include the MOECC DWQMS version 2 requirements.
- A complete redo of the risk assessment is due October 2018.

3. Internal and Third Party Audit Results and Incidents of Regulatory Non-Compliance: System Audits of May 8-9, 2017; Internal Audit of Nov 22, 2017 and MOE Inspection of Nov 17, 2017.

- The DWQM System Internal Audit was conducted on Nov 22, 2017 by BlueMetric Environmental, an external accredited auditor. Three minor non-conformities and seven opportunities for improvement were identified during the audit.



Drinking Water Quality Management System Management Review - Meeting Minutes

Date: February 15, 2018	Prepared by: Iustina Voinea
Place: 229 Industrial Parkway, Boardroom	Reviewer: Lindsay Hayworth
Time: 1:30 pm – 3:30 pm	Page 2 of 6

ATTACHMENT #1

Internal Audit - BlueMetric Environmental - Nov 22, 2017 – NCR and OFI		
ELEMENT #	NCR/OFI Details	Action Details
Minor NC 2	The most recently endorsed QMS Policy is not in a form that provides for ready communication to Operating authority personnel	All policies were replaced with new ones. New Plaques were made and posted.
Minor NC 17	A reagent that is potentially used for calibration is expired.	New 3M KCl solution, saturated with AgCl was purchased. Staff was reminded to check expiry dates for all chemicals prior use. Expired chemical was properly disposed.
Minor NC 18	The referenced Municipal Emergency Contact list is not up to date.	Updated version of the Emergency list dated Nov 20, 2017 was provided by the clerk. The list is updated regularly (3-4 months). The clerk to send the updated list when revised.
6	The newly installed bulk filling station is not in the description of the distribution system infrastructure	The Operational Plan Element # E6 was updated to include the bulk filling station
9	The procedure Pro-003 'Designation of ORO and OIC' is not referenced in the Operational Plan. Instead, it references Report No. PW06-003 (under Element 11).	Element E9 was updated to include reference to Pro -003
10	There is a potential gap in the training matrix. Oct 2016 Emergency table top exercise was completed, however the matrix does not include this.	Training matrix was updated to include the Emergency Table Top Exercise for 2016
13	The Essential Supplies and Services list does not include: the supplier of water, the afterhours call services, backflow preventing tester	The Essential Supplies and Services list was updated with Water supplier - Dec 14, 2017; After hours services - Jan 22, 2018. An RFQ will be done to hire a company to conduct backflow preventers testing. The Supplies list will be updated accordingly.
13	E 13 does not reference the Essential Supplies and Services Pro 023	E 13 was updated to reference the Essential Supplies and Services Pro 023
21	Consider on having one tracking log for NC and OFI. Document the process in in a Corrective Action procedure E 21	Tracking form for NC, OFI and action items was implemented.
21	QMS to be reviewed and updated to reflect MOECC version 2 of the DWQMS (E12, 14, 15, 21)	The QMS will be reviewed and updated before Dec 2018. Preventive and Corrective Action Procedure to be prepared with updates for version 2 of the DWQMS.



Drinking Water Quality Management System Management Review - Meeting Minutes

Date: February 15, 2018	Prepared by: Iustina Voinea
Place: 229 Industrial Parkway, Boardroom	Reviewer: Lindsay Hayworth
Time: 1:30 pm – 3:30 pm	Page 3 of 6

ATTACHMENT #1

- NSF an external Accreditation Body conducted the DWQM System third party Audit on May 8-9, 2017. Two Minor non-conformities were identified during the audit.

NSF-MOE VERIFICATION Audit May 8-9, 2017 - NCR		
Element #	Minor NCR- Details	Action Details
2	Director of Infrastructure & Environmental Service signed the Endorsement but no longer employed with the Corporation for the Town of Aurora. Additionally the form is not dated	The Element 3 - Endorsement of the Operational Plan was updated and was signed and dated by the Acting Director of Infrastructure and Environmental Services as Top Management Representative.
16	The requirements for Testing of Lead as defined in QMS-PRO-004 does not coincide with the requirements as defined in the Operational Plan - Element-16; February 17, 2017	The procedure Pro 004 was updated to match requirements of the Policy E16, and makes reference to Town's MOECC licence and O.Reg. 170/03.

- MOECC Inspection November 17, 2017: - Final Inspection rating 100%.

4. Results of Emergency Response Testing October 27, 2017

- The emergency preparedness training – Table top exercise was conducted on October 27, 2017. The scenario was prepared and presented by Lindsay Hayworth.
- Two findings were identified as listed below:

Findings	Action Taken	Action Details
1. It was apparent through discussions that freezing rain will affect how staff travels to perform routine work. It is recommended that the Town will purchase more 4x4 trucks. Also it is recommended to purchase chains for all existing vehicles, to be used during winter time.	YES	Two sets of chains were purchased for trucks.
2. It was suggested that two way radio be purchased/used as a back-up communication tools (in case cellular towers are off).	YES	Two way radio – Motorola Radius 1225 – it is used by water and roads staff.



Drinking Water Quality Management System Management Review - Meeting Minutes

Date: February 15, 2018	Prepared by: Iustina Voinea
Place: 229 Industrial Parkway, Boardroom	Reviewer: Lindsay Hayworth
Time: 1:30 pm – 3:30 pm	Page 4 of 6

ATTACHMENT #1

- Town staff has conformed to the requirements of Element # 18 of the Ontario Ministry of the Environment's Drinking Water Quality Management Standard (DWQMS).
- Allan requested to be invited to future Emergency Table Top Exercises. Also he inquired about a wallet size emergency list for water operations.

Action Item: *Director of Operations to be invited to future Emergency Table Top Exercises. Prepare a wallet size emergency list for water operations.*

5. Operational Plan Currency, Content and Updates

- Some Operational Plan Policies and Procedures were reviewed and updated as part of responding to non-conformances from audits.
- The updates were discussed and agreed upon with Supervisor of Water/Wastewater and Manager of Operations.
- The following DWQMS SOPs and Procedures have been updated:
 - E2 – Quality Management System policy;
 - E6 – Description of Drinking Water System;
 - E 11 –Personnel Coverage Procedure;
 - E13 – Essential Supplies and Services;
 - Town's Emergency Contact list;
 - Essential Supplies and Services.
- In 2018 all policies and procedures will be revised to meet MOECC's DWQMS v2 requirements.

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

- Management Team reviewed Element # 2. The Quality Management System Policy statement was reaffirmed.
- Allan inquired if the Policy should be posted on Town's website.

Action Item: *Iustina to provide the DWQMS Policy to Communication Group for posting on Town's website.*

7. Drinking Water Quality Trends

- Number of samples collected in 2017: 935 of microbiological samples; 4 – Trihalomethanes (THM), 4 – Haloacetic acids (HAA), 4 - Nitrate and Nitrite, 1 - Sodium, 64 – lead in distribution system, 100 – lead samples in residential plumbing.
- To meet regulatory requirements, due to growth of Town's population, the number of microbiological samples collected weekly was increased from 17 to 18.
- Lindsay talked about the new installed bulk water filling station at the dead end on Eric T Smith Way. Due to high costs for hydro connection the electricity required for service is provided by solar panels. It was discussed to add money in the budget to complete the hydro connection and have the bulk water filling station operational during the winter seasons.
- The location of the new bulk water station is in a dead end where regular flushing is done in order to maintain appropriate levels of chlorine residuals. The water bulk station will help reduce flushing and reduce the amount of non-revenue water.
- The renewed Drinking Water Licence has new conditions for Relief from Regulatory

Date: February 15, 2018	Prepared by: Iustina Voinea
Place: 229 Industrial Parkway, Boardroom	Reviewer: Lindsay Hayworth
Time: 1:30 pm – 3:30 pm	Page 5 of 6

ATTACHMENT #1

Requirements regarding sampling in private residences for lead testing. The Town was required to take twenty drinking water samples on residential properties and eight distribution system samples to be tested for lead, as per O.Reg. 170/03. All samples complied with Ontario Drinking Water Standards.

- The Town applied for and obtained a regulatory relief for lead sampling and testing in residential plumbing until December 2019.
- The Town added sampling and testing for HAA to the ongoing quarterly schedule.
- MOECC updated the mandatory course for Drinking Water operators to reflect changes in the legislation and to include info on the climate change effects on Drinking Water Systems.
- Regulation 169/03 Ontario Drinking Water Standards was updated: new chemicals were added (toluene – 0.06 mg/L and ethylbenzene – 0.14 mg/L); revoked Nitrate+Nitrite; revised MAC for selenium from 0.01 mg/L to 0.05 mg/L, tetrachloroethylene from 0.03 mg/L to 0.01 mg/L and arsenic from 0.025 mg/L to 0.01 mg/L.
- O. Reg. 128/04: Certification Of Drinking Water System Operators And Water Quality Analysts was updated: OIT Drinking Water certificates are valid for 36 months (used to be 16 months).

8. Changes That Could Affect the QMS

- Currently there is four qualified staff with a level 2 Drinking Water Certificate that can be designated ORO or OIC.
- Two water staff upgraded their certification from OIT to Class 1.
- MOECC Drinking Water Management Standard version 2 was released in 2017. Policies and procedure will be reviewed, updated and implemented before the internal audit in 2018. Staff will be trained on changes.

9. The Resources Needed to Maintain the QMS

- Requested budget to maintain QMS \$20,000.00 will be presented to Council in March 2018 for approval.
- 2017 Annual Water Quality Report will be completed and posted on Town's website by the end of the month and presented to Council in March.
- Back Flow Prevention By-law #5645-14 enacted but not enforced. Allan is waiting on recommendations from legal.
- An inventory of existing Backflow prevention devices installed at TOA facilities was conducted. Testing of existing backflow prevention devices needs to be done annually.

Action Item: Allan to provide advice on Backflow Prevention program's next steps.

10. The Results of the Infrastructure Review

- Watermain re-lining on Tamarac Trail was completed in 2017.
- The auto-flusher on Forest Grove was replaced with sample station.

11. Operational Performance

- Lindsay reported seven watermain breaks in 2017. Compared with neighbouring municipalities is a very low number. Lindsay believes that relining of the watermains is the



Drinking Water Quality Management System Management Review - Meeting Minutes

Date: February 15, 2018	Prepared by: Iustina Voinea
Place: 229 Industrial Parkway, Boardroom	Reviewer: Lindsay Hayworth
Time: 1:30 pm – 3:30 pm	Page 6 of 6

ATTACHMENT #1

major contributor to such good results.

- No frozen services reported in 2017.
- In the past, the valve maintenance services were contracted out. In 2017 Water And Wastewater Operations purchased a Valve Maintenance Trailer and conducted the work in house. All valves will be maintained/exercised over a four (4) year period.
- Fifteen hydrants were repaired last year. Allan inquired about a replacement program for the fire hydrants. Lindsay specified that fire hydrants are replaced, as needed, by the contractor that does the maintenance.
- 98 water boxes were repaired last year.

12. Consumer Feedback

- Top Management reviewed the 2017 Water Quality Complaints report.
- 19 water quality complaints recorded in 2017, all of the complaints were private side issues. Complaints and low water pressure logs are maintained.
- Lindsay talked about a resident's inquiry regarding pink stains found in the bathroom and on the dehumidifier filter. The discoloration is produced by an airborne bacteria that grow in moist environment.

13. Staff Suggestions

Jim – water operators asked if they can be removed from snow removal schedule. Lindsay confirmed that the snow removal activities do not interfere with the water activities. Occasionally the operators have to monitor their working hours.

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:\operational Services\ENV\PlanProtect\DWQMS\Records\Management Review>

Next Meeting TBD



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 Verification Audit

Auditor

Robert Howarth

Standard

Ontario's Drinking Water Quality Management Standard
(Exp Date: 13-JUL-2017)

Recommendation

Ontario's Drinking Water Quality Management Standard : Cont. Cert. Pending offsite Verification of minors

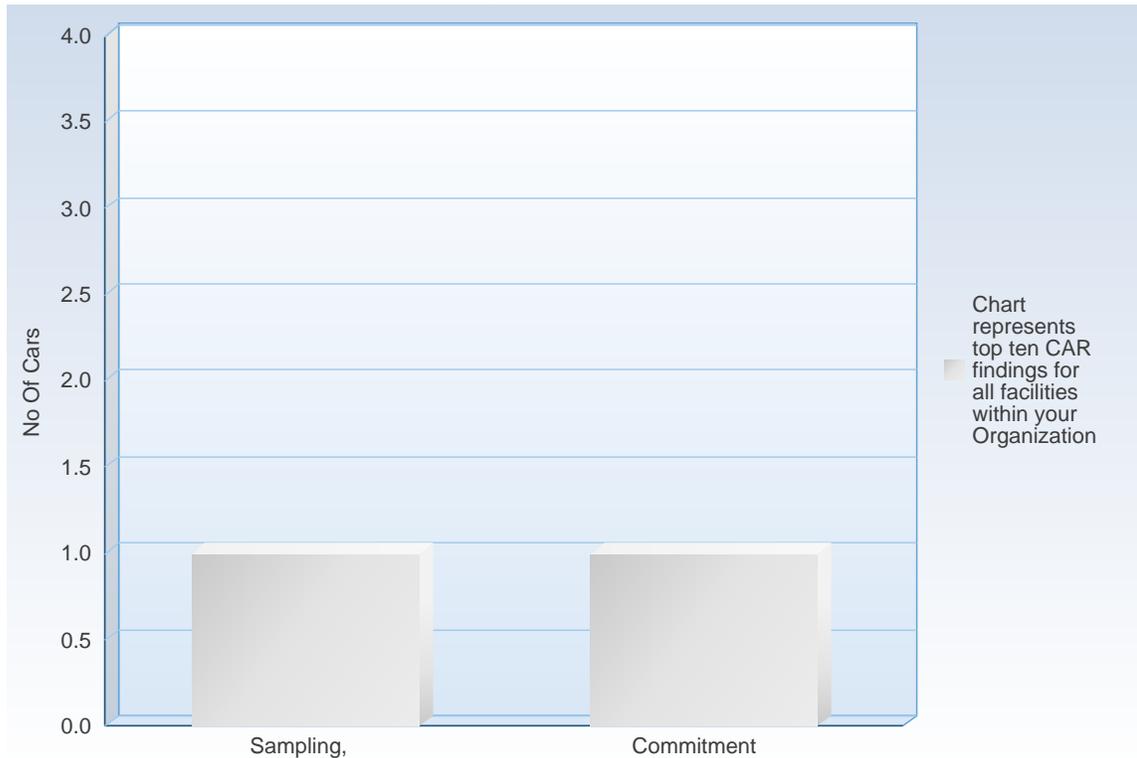


Executive Summary

Ontario's Drinking Water Quality Management Standard

This Organization has effectively implemented and utilized their DWQMS as evidenced by the small number of reporting issues required through the testing process, the continued investment in infrastructure and investment in personnel.

Top 10 Non Compliant Standard Clauses
CAR Chart Displays Current and Previous Years Data



The Corporation of The Town of Aurora

Standard Clause Description

Sampling, Testing & Monitoring
Commitment & Endorsement

Opportunities

Ontario's Drinking Water Quality Management Standard

The method of recording and responding to Customer Concerns could be better controlled as a method of driving improvement.

Corrective Action Request Summary By Type

Car Type	Car Count
MINOR	2

Corrective Action Request Summary By Standard Clause

Standard Clause	Car Count
Commitment & Endorsement	1
Sampling, Testing & Monitoring	1

Corrective Action Requests

CAR No	J1041240-1	Type	MINOR
Standard & Clause	DWQMS, Commitment & Endorsement	Discussed with	Lindsay Hayworth



Auditor Name	Robert Howarth
Statement of Requirement	Top Management must sign and date a commitment and endorsement that clearly expresses endorsement of the Operational Plan.
Statement of Nonconformity	Ilmar Simanovskis (Director of Infrastructure & Environmental Service) signed the Endorsement but no longer employed with the Corporation for the Town of Aurora. Additionally the form is not dated
Objective Evidence	Element 3
Location of Finding	Aurora Ontario

CAR No	J1041240-2	Type	MINOR
Standard & Clause	DWQMS, Sampling, Testing & Monitoring	Discussed with	Lindsay Hayworth
Auditor Name	Robert Howarth		
Statement of Requirement	The Operational Plan shall document a sampling, testing and monitoring procedure for process control and finished drinking water quality including requirements for sampling and monitoring at the conditions most challenging to the subject system,		
Statement of Nonconformity	The requirements for Testing of Lead as defined in QMS-PRO-004 does not coincide with the requirements as defined in the Operational Plan - Element-16; February 17,2017		
Objective Evidence	QMS-PRO-004 dated February 17, 2017 and Operational Plan - Element-16; dated February 17, 2017		
Location of Finding	Aurora Ontario		

Corrective Action Information and Instructions

See NSF-ISR Policies for Accredited Registration Services for corrective action information and instructions. (Available in the "Standards and Policies" section of [NSFOnline](#))

Also, submit all corrective actions through [NSFOnline](#). For instructions on how to use [NSFOnline](#), please click "Help" in the upper right-hand corner. If you require any assistance in accessing your [NSFOnline](#) account, please contact your Registration Specialist (Anastasia Hryciw de Reijke email: ahryciwdereijke@nsf-isr.org).

Site Information

The audit was based on a sampling of the company's management system.

Industry Codes

NACE:E 41

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 Aurora, Ontario;</p> <p>Discussed With Lindsay Hayworth;</p> <p>Description Whereas the Documentation does meet system requirements an opportunity exists to update Element 21 better define when the Corrective Action Form should be utilized as a means to drive improvement. This Element has not been updated since 2010 and currently only utilized for Audit nonconformances.;</p>

General Information

Operating Authority: Legal Name & Address	The Corporation of The Town of Aurora
Language Preference: Correspondence	English
Language Preference: Audit	English
Owner: Legal Name and Address	The Corporation of The Town of Aurora 100 John West Way Auroera, Ontario L4G 6J1
Owner Language Preference: Correspondence	English
Owner Language Preference: Audit	English
Applicant Representative Information; Include Name, Title, Phone, Fax, Email & Website	Iustina Voinea 100 John West Way, Aurora, Ontario L4G 6J1 ; mdwlp@ontario.ca Phone 905-727-3123 X3453 Fax 905-727-7616
Accreditation Option	Full Scope - Entire DWQMS
Date of Previous Systems Audit:	May 24/16
Date of Previous On-Site Verification Audit:	18&19-Jun-2014,

Processes

Ontario's Drinking Water Quality Management Standard

Process Name	Observations / Auditor Notes
7: DWQMS Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal	<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>Operational Plan - Element-15; February 17,2017 This Process is effectively controlled.; Process broken down into 3 Subsections Planned Maintenance - Controlled through Daily Work Orders Unplanned Maintenance- resulting from emergency repairs or breakdown Infrastructure Rehabilitation - Monitored for effectiveness Infrastructure Renewal - Monitored for effectiveness</p> <p>Capital Upgrades - Planned and Approved by Owner</p>



Process Name	Observations / Auditor Notes
7: DWQMS Element 6 – Drinking-Water System	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-6; February 17, 2017 This Process is effectively controlled.; The Drinking Water System Descriptions as listed above adequately and effectively address the requirements as defined in the DWQMS Standard including description, Ownership, Flow Charts and Specific Descriptions.</p> <p>Note: York Region has the responsibility for treating the water and providing safe drinking water to the town. The Town of Aurora only distributes the water.</p>
DWQMS Element 10 – Competencies	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-9; February 17, 2017 This Process is effectively controlled.; Table showing Title/Function, Required Competencies and Desired Competencies for Manager of Operation Services Water/Wastewater Supervisor Crew Leaders Operator-2 Operator-1 Operator in Training Program Coordinator Water</p> <p>Training Records available for Doug Eldridge - Class 2 Shane Hesmondhalgh - Class 2 Wes Smith - Class 2 Witold Warchol - Operator in Training David Oniel - Operator in Training</p>
DWQMS Element 11 – Personnel Coverage	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-11; November 12, 2015 This Process is effectively controlled.; Procedure adequately defines the necessary personnel requirements to ensure the operation of the Distribution System. This is supported by a Distribution Operator on call at all times outside of regular business hours Available 24 Hours a day - 7 Days a week</p>
DWQMS Element 13 – Essential Supplies and Services	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-13; February 17,2017 This Process is effectively controlled.; List of Primary and secondary suppliers broken down into Waterworks Supplies Instrumentation Calibration/Maintenance Contractors Laboratories Other</p> <p>Purchases must follow Corporation of Aurora By-Law 5500-13 Includes provision for emergency work. (Section 13.4)</p>
DWQMS Element 14 – Review and Provision of Infrastructure	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-14; February 17,2017 This Process is effectively controlled.; 10 Year Capital Plan Annual Meeting for Review of Infrastructure as defined in QMS-PRO- 024 Minutes retained and recommendations forwarded to council (Owner) as required</p>



Process Name	Observations / Auditor Notes
<p>DWQMS Element 16 – Sampling, Testing and Monitoring</p>	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-16; February 17,2017 QMS-PRO-004 - Water Sampling Procedure This Process is not effectively controlled. See CAR 2; All sampling and testing is defined in Sampling, Testing & Monitoring procedure (QMS-PRO-004) and meets all requirements as defined by the Ministry of Environment.</p> <p>Microbiological and Chlorine Testings: 18 Samples per week based on rotating basis from 40 sites. Chlorine Testing done by technician on site - Limits defined Microbiological Testing done by York Durham Regional Environmental Laboratory - Accredited</p> <p>Trihalomethanes: Every three months - Testing done by York Durham Regional Environmental Laboratory</p> <p>Nitrate and Nitrite: Every three months - Testing done by York Durham Regional Environmental Laboratory</p> <p>Lead Sampling: Frequency as defined by Regulatory Requirement Currently 20 Residential and 8 Distribution samples twice per year. Testing done by York Durham Regional Environmental Laboratory.</p> <p>Results of sampling, testing, and monitoring activities are documented in a Summary Report and included in the Ontario Regulation 170/03 Drinking Water Systems Annual Report. The Summary Report is submitted to Council.</p> <p>If sampling, testing, and monitoring activities indicate that results exceed acceptable limits; Town of Aurora will follow established reactive plans to address the situation as defined in Procedure QMS-PRO-011.</p> <p>The Townof Aurora will ensure that its actions comply with requirements and guidelines put forth by the Ministry of the Environment (MOE).</p> <p>Records Reviewed Microbiological and Chlorine Testings: Jan 23/17 Feb 21/17 Mar 13/17 Apr 3/17</p> <p>Trihalomethanes: Jan 1 /17 Mar 31/17</p> <p>Lead Feb 24/17 Mar 7/17</p> <p>The requirements for Testing of Lead as defined in QMS-PRO-004 does not coincide with the requirements as defined in the Operational Plan - Element-16; February 17,2017</p>
<p>DWQMS Element 17 – Measurement and Recording Equipment Calibration and Maintenance</p>	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-17; Mar 4, 2016 This Process is effectively controlled.; Calibration Records Pocket Clrmtr II Chlorine System - ID587000 - Cert 5537762 Pocket Clrmtr II Chlorine System - ID467000 - Cert 5537762 Pocket Colorimeter Chlorine System - ID4670000 - Cert 5537762 Portable pH Meter - HQ11D - Cert 5537762</p>
<p>DWQMS Element 18 -</p>	<p>Describe whether the process is effective or not (effectiveness should be</p>



Process Name	Observations / Auditor Notes
Emergency Management	<p>supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-18; July 15, 2016 QMS-PRO-019 - Waterworks Emergency Plan This Process is effectively controlled; QMS-PRO-019 - Waterworks Emergency Plan effectively defines</p> <ul style="list-style-type: none"> a) a list of potential emergency situations or service interruptions - Section 4.02 b) processes for emergency response and recovery - Section 3.0 and Emergency Response Plan c) emergency response training and testing requirements Emergency Training held October 2016 d) Owner and Operating Authority responsibilities during emergency situations - Section 3.0 and Emergency Response Plan e) references to municipal emergency planning measures as appropriate - Emergency Response Plan f) an emergency communication protocol and an up-to-date list of emergency contacts - Section 3.0 Chain of Command Table
DWQMS Element 19 - Internal Audits	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-19; Feb 17/17 QMS-PRO-008 - Internal Audit This Process is effectively controlled; Third Party Internal Audit undertaken December 1 2016 by AET Group Very thorough Audit Checklist utilised Audit Report 2 Minor nonconformances identified - All addressed in timely manner 3 Opportunities for improvement identified - most addressed</p>
DWQMS Element 20 - Management Review	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-20; Feb 8/2016 QMS-PRO-009 - Management Review This Process is effectively controlled; Management Review held February 27, 2017 Minutes available Senior Management involved - Philip Galin, Doug Nadorozny, Lindsay Hayworth, Iustina Voinea</p> <ul style="list-style-type: none"> a) incidents of regulatory non-compliance, b) incidents of adverse drinking-water tests, c) deviations from critical control point limits and response actions, d) the efficacy of the risk assessment process, e) internal and third-party audit results, f) results of emergency response testing, g) operational performance, h) raw water supply and drinking water quality trends, i) follow-up on action items from previous management reviews, j) the status of management action items identified between reviews, k) changes that could affect the Quality Management System, l) consumer feedback, m) the resources needed to maintain the Quality Management System, n) the results of the infrastructure review, o) Operational Plan currency, content and updates, and p) staff suggestions. <p>Report forwarded to Owner March 28/17 identifying the results of the management review, the identified deficiencies, decisions and action items,</p>
DWQMS Element 21 – Continual Improvement	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-21; Feb 1/2010 This Process is effectively controlled; Corrective Actions recorded on Corrective Action Form 3 Raised in 2017</p>



Process Name	Observations / Auditor Notes
	<p>All Addressing Audit Findings</p> <p>OFI Element 21 could be updated to better define when the Corrective Action Form should be utilized. Has not been updated since 2010 and currently only utilized for /Audit nonconformances.</p>
<p>DWQMS Element 3 - Commitment and Endorsement Statement</p>	<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>Operational Plan - Element-3; May 8, 2015 This Process is not effectively controlled; Commitment and Endorsement Statement available Approved by CAO and Director of Infrastructure & Environmental Service dated February 19, 2016 (Top Management)</p> <p>Council Identified as Owners Sent to council and approved March 31, 2015 Sent to council and approved June 28, 2016 Sent to Council May 2, 2017 - Not yet Approved</p> <p>Ilmar Simanovskis (Director of Infrastructure & Environmental Service) signed the Endorsement but no longer employed See CAR 1</p>
<p>DWQMS Element 5 - Document and Records Control</p>	<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>Operational Plan - Element-5; Feb 3/2016 QMS-PRO-001 Document Control Procedure QMS-PRO-002 Control of Records This Process is effectively controlled; Procedures adequately defined controls required for control of Documents and Records No uncontrolled documents evidenced during Audit Records suitably stored and readily available.</p>
<p>DWQMS Element 9 – Organizational Roles, Responsibilities & Authorities</p>	<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>Operational Plan - Element-9; February 17, 2017 This Process is effectively controlled.; Operational Plan - Element-9 defines the Responsibilities and Authorities for System Owner Top Management Director of Financial Services Manager of Operations Services Director of Infrastructure Program Administrator - Water DWQMS Management Representative Certified Water Operators</p> <p>Supported by Procedure QMS-PR0-003 Designation of Overall Responsible Operator and Operator In-Charge.</p>
<p>DWQMS-1 Quality Management System DWQMS-2 Quality Management System Policy DWQMS-4 QMS Representative</p>	<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>Operational Plan - Element-1; February 17/2017 Operational Plan - Element-2; March 4/2016 Operational Plan - Element-4; February 1/2010; Operational Plan available covering all elements as defined in Standard</p> <p>Policy meets all defined requirements Posted in facility</p> <p>Quality Management System Representative - The QMS Representative, currently the Water/Wastewater Supervisor (Lindsay Hayworth) and has been</p>



Process Name	Observations / Auditor Notes
	<p>appointed as the QMS Representative for The Town of Aurora by Top Management. The QMS Representative is authorized and responsible for administering all processes associated with the operation and performance of the QMS.;</p>
<p>Elements 7 and 8 – Risk Assessment and Risk Assessment Outcomes</p>	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-7; March 4, 2016 Operational Plan - Element-8; February 17, 2017 This Process is effectively controlled.; Procedure QMS-PRO-020 - Defines criteria and methodology for ascertaining risk. The Information in the Risk Assessment is reviewed Annually for validity and currency Last Review September 29, 2016</p> <p>The following staff met: Philip Galin - Acting Manager of Operations Service Lindsay Hayworth - Water/Wastewater Supervisor Anthony Del Balso - Water/Wastewater Crew Leader Lisa Lazzaro - Administrative Assistant Facilities</p> <p>Procedure QMS-PRO-020 identifies the criteria for assessing Risk broken into Likelihood, Severity and Detectability with ranks of 1-5 Risk assessment is based on adding the scores for Likelihood, Severity and Detectability to determine the Risk Ranking According to Procedure QMS-PRO-020 a Ranking of greater than 7 is considered critical.</p> <p>Sixteen Hazards identified Supply Interruption due to Frozen Water mains added Severity of Hazard for Vandalism Terrorism upgraded from 4 to 5</p> <p>Risk Assessment and Risk Assessment Outcomes Table available and up to date</p> <p>Procedure QMS-PRO-020 states The entire Risk Assessment process will be conducted at least once every three years to ensure that the information used remains current and the assumptions remain valid.</p>
<p>Processes or Activities (DWQMS)-09</p>	<p>Describe whether the process is effective or not (effectiveness should be supported with specific data/records/results). Include strengths & weaknesses of process: Operational Plan - Element-12; February 17, 2017 This Process is effectively controlled.; Process defines Communication requirements including Communication with:</p> <p>Owner: Annual Report forwarded to the Mayor and Council defining the suitability and effectiveness of the DWQMS and as defined in Section 11(1) of Ont Reg. 170/03</p> <p>Personnel Through Town Network Drive and monthly Tailgate meetings. Minutes and Records retained.</p> <p>Suppliers Purchase Orders</p> <p>Consumers/Public Through Operations Centre.</p>



Summary of Findings	
Requirement	Finding
1. Quality Management System	C
2. Quality Management System Policy	C
3. Commitment and Endorsement	Mn
4. Quality Management System Representative	C
5. Document and Record Control	C
6. Drinking-Water System	C
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	C
13. Essential Supplies and Services	C
14. Review and Provision of Infrastructure	C
15. Infrastructure Maintenance, Rehabilitation & Renewal	C
16. Sampling, Testing & Monitoring	Mn
17. Measurement & Recording Equipment, Calibration & Maintenance	C
18. Emergency Management	C
19. Internal Audits	C
20. Management Review	C
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 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 opportunity for improvement.
C	Conforms to requirement.
	Not Applicable to this audit
*	Additional Comment added by auditor in the body of the report.



Audit Summary Matrix





**DRINKING WATER QUALITY MANAGEMENT SYSTEM
2017 INTERNAL AUDIT**

Submitted to:

The Town of Aurora
100 John West Way, Box 1000
Aurora, ON L4G 6J1

Prepared by:

BluMetric Environmental Inc.
171 Victoria Street North
Kitchener, ON N2H 5C5

Project Number: 180047
Audit Date: 22 November 2017

DRINKING WATER QUALITY MANAGEMENT SYSTEM

2017 INTERNAL AUDIT

Submitted to:



You're in Good Company

The Town of Aurora
100 John West Way, Box 1000
Aurora, ON L4G 6J1

Prepared by:



BluMetric Environmental Inc.
171 Victoria Street North
Kitchener, ON N2H 5C5

Project Number: 180047

Audit Date: 22 November 2017

EXECUTIVE SUMMARY

BluMetric Environmental Inc. (BluMetric™) was retained by the Town of Aurora (the Town) to perform an internal audit of their Quality Management System and to determine its conformance to the Drinking Water Quality Management Standard (DWQMS). This audit was performed on November 22nd, 2017. Consideration to Version 2 of the DWQMS was made, although it is noted that Municipalities are not required to comply with Version 2 until the first audit of their system in 2019 (with the exception of Element 7 requirements to update Risk Assessment Procedures prior to the next Risk Assessment).

The **DWQMS non-conformances** identified during the audit, and discussed at the closing meeting are identified below:

- **Element 2: Quality Management System Policy** - The most recently endorsed QMS Policy is not in a form that provides for ready communication to the OA Personnel.
Objective Evidence: QMS Policy placards in Operations buildings are signed by the previous director.
- **Element 17: Measurement and Recording Equipment Calibration and Maintenance** - A reagent that is potentially used for verifications/ calibrations is expired.
Objective Evidence: 3M KCL Solution, saturated with AgCl in pH meter case, states use before 07 2014.
- **Element 18: Emergency Management** – - The referenced Municipal Emergency Contact List is not up-to date.
Objective Evidence: The list references the previous director and the previous manager.

Opportunities for improvements were identified and discussed at the closing meeting and are included in the body of the report.

Conclusions derived in this report are specific to the information provided by the Town of Aurora at the time of the audit.



TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
1. INTRODUCTION	1
1.1 OBJECTIVES AND SCOPE.....	1
1.2 METHODOLOGY	1
1.3 MANAGEMENT SYSTEM AUDITOR.....	2
1.4 SAMPLING	2
1.5 LIMITING CONDITIONS	2
2. AUDIT FINDINGS	2
2.1 COMMON ACRONYMS AND DEFINITIONS	3
2.2 POSITIVE OBSERVATIONS	3
2.3 DWQMS NON-CONFORMANCES	3
2.4 DWQMS OPPORTUNITIES FOR IMPROVEMENT	4
3. CONCLUSIONS	8

LIST OF TABLES

Table 1:	Schedule of Town of Aurora Internal Audit	1
Table 2:	Summary of Non-Conformances.....	4
Table 3:	Summary of Opportunities for Improvement.....	5

LIST OF APPENDICES

Appendix A:	Internal Auditor Checklist
Appendix B:	Audit Plan
Appendix C:	Opening/Closing Meeting Sign In Sheet



1. INTRODUCTION

The Town of Aurora (the Town) is the Owner and Operating Authority of the Aurora Drinking Water Distribution System. BluMetric Environmental Inc. (BluMetric™) was retained by the Town to conduct an audit of this system. The audit was performed on November 22nd, 2017.

1.1 OBJECTIVES AND SCOPE

The objective of the internal audit was to assess the conformance of the Town's Operational Plan and Procedures with the Drinking Water Quality Management Standard (DWQMS). Consideration to Version 2 of the DWQMS was made, although it is noted that Municipalities are not required to comply with Version 2 until the first audit of their system in 2019 (with the exception of Element 7 requirements to update Risk Assessment Procedures prior to the next Risk Assessment). The audit included off-site documentation review and an on-site review of records, interviews and observations of activities. The on-site audit took place at the Operations building located at 229 Industrial Parkway North in Aurora, Ontario.

1.2 METHODOLOGY

The audit was conducted in accordance with the standard for quality and environmental auditing ISO 19011. Table 1 presents the schedule and tasks completed in the performance of the internal audit.

A checklist, provided by BluMetric, was used to conduct the audit. The completed checklist can be found in Appendix A. Appendix B provides the proposed Audit Plan and Appendix C provides the Sign-In Sheet for the opening and closing meetings.

Table 1: Schedule of Town of Aurora Internal Audit

Task	Date
Opening Meeting	November 22, 2017
Site tour of Facility	November 22, 2017
Review of Site Documentation and Records	November 22, 2017
Interviews with Staff	November 22, 2017
Closing Meeting	November 22, 2017
Submission of Draft Report	December 5, 2017
Submission of Final Report	December 8, 2017



1.3 MANAGEMENT SYSTEM AUDITOR

BluMetric auditor S'rana Scholes, B.A.Sc., P. Eng., performed the internal audit with senior review completed by Ian Macdonald, M.Sc., P.Geo. EP(CEA). The auditors' curriculum vitae are available upon request.

1.4 SAMPLING

In order to maintain a reasonable budget and conform to time restraints, audits are always based upon a sampling of processes, systems, operations and documents. Not every single document, operation, system, process, or piece of information relating to quality management can be reviewed. The size of the sample selected by the auditors is appropriate to the size and scale of the operation and information available. Objective evidence collected by the auditors is based upon the sampling.

1.5 LIMITING CONDITIONS

The conclusions presented in this report represent our professional opinion, in light of the terms of reference, scope of work, and any limiting conditions noted herein.

Furthermore, the conclusions presented are based on information obtained up to and including the closing meeting for the audit on November 22, 2017.

2. AUDIT FINDINGS

The auditor reviewed the submitted documentation for conformance to the Plan portions of the first 20 elements of the DWQMS.

The auditor then verified the implementation of the Quality Management System for all 21 elements of the DWQMS.

The following sections describe the positive observations, areas of non-conformance with the DWQMS and opportunities for improvement in current management system performance. DWQMS elements without findings in the following sections can be assumed to be in conformance, based on the limitations and sampling described earlier.



2.1 COMMON ACRONYMS AND DEFINITIONS

DWQMS	Drinking Water Quality Management Standard
QMS	Quality Management System
Non-Conformance	Document is out of conformance with an element of the standard
OFI	Opportunity for Improvement - a situation which has the potential to become a non-conformance with an element of the standard if not corrected
BWA	Boil Water Advisory
CCP	Critical Control Point
OIC	Operator in Charge
ORO	Overall Responsible Operator

2.2 POSITIVE OBSERVATIONS

The following positive observations were made:

- Overall a clear and robust system is implemented.
- A GIS map of the system is available to operators via tablets (access to information when in the field).
- The Risk Assessment procedure was updated to include consideration of the Potential Hazardous Events as required by Version 2 of the Standard.
- New staff filling roles of Director and Manager have been included in QMS meetings and have completed QMS orientation.
- Relationship with neighbouring municipalities allow for sharing of resources, including training opportunities. Includes new quarterly meetings between Director-level staff in these municipalities.
- The use of Infrastructure Review process to move forward operations planning – i.e. valve turning machine and bulk filling station. This demonstrates continual improvement using DWQMS framework.

2.3 DWQMS NON-CONFORMANCES

Table 2 describes the DWQMS Non-Conformance identified at the facility for the DWQMS elements identified within the scope.

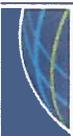


Table 2: Summary of Non-Conformances

Requirement	Description
<p>2. Quality Management System Policy PLAN – The Operational Plan shall document a Quality Management System Policy that provides the foundation for the Quality Management System, and:</p> <ul style="list-style-type: none"> a.) includes a commitment to the maintenance and continual improvement of the Quality Management System, b.) includes a commitment to the consumer to provide safe drinking water, c.) includes a commitment to comply with all legislation and regulations, and d.) is in a form that provides for ready communication to all Operating Authority personnel, the Owner and the public. <p>DO – The Operating Authority shall establish and maintain a Quality Management System that is consistent with the Policy.</p>	<p>NC - The most recently endorsed QMS Policy is not in a form that provides for ready communication to the OA Personnel.</p> <p>Objective Evidence: QMS Policy placards in Operations buildings are signed by the previous director.</p>
<p>17. Measurement and Recording Equipment Calibration and Maintenance PLAN – The Operational Plan shall document a procedure for the calibration and maintenance of measurement and recording equipment.</p> <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>NC - A reagent that is potentially used for verifications/ calibrations is expired.</p> <p>Objective Evidence: 3M KCL Solution, saturated with AgCl in pH meter case, states use before 07 2014.</p>
<p>18. Emergency Management PLAN – The Operational Plan shall document a procedure to maintain a state of emergency preparedness that includes:</p> <ul style="list-style-type: none"> a.) a list of potential emergency situations or service interruptions, b.) processes for emergency response and recovery, c.) emergency response training and testing requirements, d.) Owner and Operating Authority responsibilities during emergency situations, e.) References to municipal emergency planning measures as appropriate, and f.) An emergency communication protocol and an up-to-date list of emergency contacts. <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>NC - The referenced Municipal Emergency Contact List is not up-to date.</p> <p>Objective Evidence: The list references the previous director and the previous manager.</p>

2.4 DWQMS OPPORTUNITIES FOR IMPROVEMENT

Table 3 describes the opportunities for improvement identified at the facility for the DWQMS elements included within the scope.



Table 3: Summary of Opportunities for Improvement

Requirement	Description
<p>6. Drinking –Water System PLAN – The Operational Plan shall document, as applicable: a.) for the subject system:</p> <ul style="list-style-type: none"> i. the name of the Owner and Operating Authority, ii. if the system includes equipment that provides Primary Disinfection and/or Secondary Disinfection: <ul style="list-style-type: none"> A. a description of the system including all applicable Treatment System processes and Distribution System components, B. a Treatment System process flow chart, C. a description of the water source, including: <ul style="list-style-type: none"> I. general characteristics of the raw water supply, II. common event-driven fluctuations, and III. any resulting operational challenges and threats, if the subject system is an operational subsystem, a summary description of the municipal residential drinking-water system it is a part of. iii. if the system does not include equipment that provides Primary Disinfection or Secondary Disinfection: <ul style="list-style-type: none"> A. a description of the system including all Distribution system components, and B. a description of any procedures that are in place to maintain disinfection residuals. <p>b.) if the Subject System is an Operational Subsystem, a summary description of the Municipal Residential Drinking Water System it is a part of including the name of the Operating Authority (ies) for the other Operational Subsystems.</p> <p>c.) if the Subject system is connected to one or more other Drinking Water Systems owned by different Owners, a summary description of those systems which:</p> <ul style="list-style-type: none"> i. indicates whether the Subject System obtains water from or supplies water to those systems, ii. names the Owner and Operating Authority(ies) of those systems, and iii. identifies which, if any, of those systems that the Subject System obtains water from are relied upon to ensure the provision of safe drinking water. <p>a.) DO – The Operating Authority shall ensure that the description of the Drinking Water System is kept current.</p>	<p>OFI - The newly installed bulk filling station is not in the description of the distribution system infrastructure. Note that there was one previous station at a different location.</p> <p>Consider adding this to the system infrastructure description under Element 6.</p>



Table 3: Summary of Opportunities for Improvement (continued)

Requirement	Description
<p>9. Organizational Structure, Roles, Responsibilities and Authorities PLAN – the Operational Plan shall:</p> <ul style="list-style-type: none"> a) describe the organisational structure of the Operating Authority including respective roles, responsibilities and authorities, b) delineate corporate oversight roles, responsibilities and authorities in the case where the Operating Authority operates multiple subject systems, c) identify person, persons or group of people within the management structure of the organisation responsible for undertaking Management Review, d) identify the person, persons or group of people having Top Management Responsibilities required by this Standard, along with their responsibilities, and e) identify the Owner of the subject system. <p>DO – The Operating Authority shall keep current the description of the organisational structure including respective roles responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.</p>	<p>OFI – there is a Procedure “Designation of Overall Responsible Operator and Operator In-Charge” QMS-PRO-003, Version 3, November 24, 2015 that is not referenced in the Operational Plan. Instead it references Report No. PW06-003 under Element 11.</p> <p>Consider referencing that actual procedure under Element 9 or Element 11.</p>
<p>11. Personnel Coverage PLAN – The Operational Plan shall document a procedure to ensure that sufficient personnel meeting the identified competencies are available for duties that directly affect drinking water quality,</p> <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	
<p>10. Competencies PLAN – The Operational Plan shall document:</p> <ul style="list-style-type: none"> a.) competencies required for personnel performing duties affecting drinking water quality. b.) activities to develop and/ or 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. <p>DO – the Operating Authority shall undertake activities to:</p> <ul style="list-style-type: none"> a.) meet and maintain competencies for personnel directly affecting drinking-water quality and shall maintain records of these activities, and b.) ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water, and shall maintain records of these activities. 	<p>OFI - There is a potential gap in the training matrix of some training. For example October 2016 Emergency Table Top was completed and there is a record, however the matrix does not include this.</p> <p>Consider reviewing the training data that coincide with the dates that this gap may exist and updating the training matrix where necessary.</p>



Table 3: Summary of Opportunities for Improvement (continued)

Requirement	Description
<p>13. Essential Supplies and Services PLAN – The Operational Plan shall:</p> <ul style="list-style-type: none"> a.) identify all supplies and services essential for the delivery of safe drinking water and shall state, for each supply or service, the means to ensure its procurement, and b.) include a procedure by which the Operating Authority ensures the quality of the essential supplies and services, in as much as they may affect the drinking water quality. <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>OFI – The Essential Supplies and Services list does not include</p> <ul style="list-style-type: none"> • the supplier of water (York Region) • the after-hours call service • backflow preventer testing <p>Consider if these are essential supplies and add these to this list.</p> <p>OFI – E13 does not reference the Essential Supplies and Services QMS-PRO-023. The Essential Supplies and Services list includes a column 'notes' that sometimes references the quality requirements.</p> <p>Considering updating the Operational Plan to reference the procedure and to update the list column so that that the quality required and the means to ensure it are documented.</p>
<p>21. Continual Improvement PLAN – The Operating Authority shall develop a procedure for tracking and measuring continual improvement of its Quality Management System by:</p> <ul style="list-style-type: none"> a.) reviewing and considering applicable best management practices, including any published by the Ministry of the Environment and Climate Change and available on www.ontario.ca/drinkingwater, at least once every thirty-six months; b.) documenting a process for identification and management of Quality Management System Corrective Actions that includes: <ul style="list-style-type: none"> i. investigating the cause(s) of an identified non-conformity, ii. documenting the action(s) that will be taken to correct the non-conformity and prevent the non-conformity from re-occurring, and iii. reviewing the action(s) taken to correct the non-conformity, verifying that they are implemented and are effective in correcting and preventing the re-occurrence of the non-conformity. c.) documenting a process for identifying and implementing Preventive Actions to eliminate the occurrence of potential non-conformities in the Quality Management System that includes: <ul style="list-style-type: none"> i. reviewing potential non-conformities that are identified to determine if preventive actions may be necessary, ii. documenting the outcome of the review, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and iii. reviewing the action(s) taken to prevent a non- iv. conformity, verifying that they are implemented and are effective in preventing the occurrence of the non-conformity. <p>DO – The Operating Authority shall continual improve the effectiveness of its Quality Management System by implementing and conforming to the procedure.</p>	<p>OFI - There are multiple files/ means to track corrective and preventative actions resulting from Management Review, Infrastructure Review, Audits, Annual Review of Procedures, and Inspections.</p> <p>Consider whether combining these into one tracking log would streamline the system. Document the process in a Corrective and Preventative Action Procedure under Element 21.</p> <p>OFI - The MOECC has recently released Version 2.0 of the DWQMS (February 2017).</p> <p>Consider updating documentation to reflect this (some examples):</p> <ol style="list-style-type: none"> 1. Element 12 reference Essential Suppliers specifically 2. Element 14 specify outcomes of RA are considered/ add to meetings 3. Element 15 procedure reference to long term forecasting / preventative maintenance 4. Element 21 now requires a Preventive and Corrective Action Procedure – full review, reference MOECC BMPs



3. CONCLUSIONS

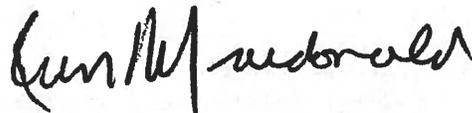
The DWQMS internal audit completed for the Town of Aurora demonstrates that the QMS has been well implemented and that there is strong commitment to the program.

The opportunities for improvement identified by the auditor are based on industry experience of best management practices.

Respectfully submitted,
BluMetric Environmental Inc.



Srana Scholes, B.A.Sc., P.Eng
Auditor



Ian Macdonald, M.Sc., P.Geo., EP (CEA)
Senior Auditor



APPENDIX A

Auditor's Checklist





DWQMS Form

DWQMS Internal Audit Checklist

Auditor: S'rana Scholes P.Eng., BluMetric Environmental Inc.

Audit Date: November 22, 2017

Scope: Town of Aurora DWQMS:

- Aurora Drinking Water Distribution System
- DWQMS Elements 1-21, with consideration to Version 2

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>1. Quality Management System PLAN – the Operating Authority shall document a Quality Management System that meets the requirements of this Standard</p> <p>DO – 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.</p> <p>2. Quality Management System Policy PLAN – The Operational Plan shall document a Quality Management System Policy that provides the foundation for the Quality Management System, and:</p> <ul style="list-style-type: none"> a.) includes a commitment to the maintenance and continual improvement of the Quality Management System, b.) includes a commitment to the consumer to provide safe drinking water, c.) includes a commitment to comply with all legislation and regulations, and d.) is in a form that provides for ready communication to all Operating Authority personnel, the Owner and the public. <p>DO – The Operating Authority shall establish and maintain a Quality Management System that is consistent with the Policy.</p>	<p>E1 – Quality Management System v2, February 17, 2017 Operating Authority – Town of Aurora Owner – Town of Aurora - QMS was developed by the management and staff of the Infrastructure and Environmental Services Dept. Ask to see hard copy if available - yes shown copy retained by Program Coordinator, says “uncontrolled when printed”</p> <p>E2 – Signed Policy 2017 – signed by Allan D. Downey – Acting Director, Infrastructure and Environmental Services May 18, 2017 – confirm still acting director POSITIVE (element 9) – updated “acting” role – it is now official - water supply is the Region of York – explain: “once the water enters the distribution system, water quality control and responsibility then becomes a partnership shared with the Town of Aurora.”</p> <ul style="list-style-type: none"> a) yes, Item 1 b) yes, Item 2 c) yes, Item 3 d) Ask to see in Operational Plan yes see evidence under Element 1. Policy has official director signature page. <p>Policy on website? - unable to find, not required</p> <p>Look for posted policies - in crew leader’s office on placard NC – this has the previous Director’s signature on it - also in “operations: room on placard NC – this has the previous Director’s signature on it</p> <p>Ask people: What does the policy mean to you and what do you do to support it? Discussion with Wes Smith - acting crew leader, Level 2 Distribution operator - provision of safe drinking water through maintenance, constantly improving</p>	<p>Positive – Overall a clear and robust system is implemented.</p>	<p>NC - The most recently endorsed QMS Policy is not in a form that provides for ready communication to the OA Personnel.</p> <p>Objective Evidence: QMS Policy placards in Operations buildings are signed by the previous director.</p>

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>3. Commitment and Endorsement PLAN – The Operational Plan shall contain a written endorsement of its contents by top Management and the Owner</p> <p>DO – Top Management shall provide evidence of its commitment to an effective Quality Management System by:</p> <p>a.) ensuring that a Quality Management System is in place that meets the requirements of this Standard,</p> <p>b.) ensuring that the Operating Authority is aware of all applicable legislative and regulatory requirements,</p> <p>c.) communicating the Quality Management System according to the procedure for communications, and</p>	<p>Discussion with Allan Downey</p> <ul style="list-style-type: none"> - new to the role of Director of Operations Services POSITIVE (element 9) - has the authority next to the CAO - ensuring compliance and sufficient staff to ensure property testing and reporting - ensuring sufficient funds for upgrades and repairs <p>Discussion with Jim Tree</p> <ul style="list-style-type: none"> - new to the role of Manager of Operations Services POSITIVE (element 9) - oversees the operations - works on budget and staffing - coordinates work program - authorizes reports to council <p>Discussion with Lindsay Hayworth:</p> <ul style="list-style-type: none"> - Supervisor of Water/ Wastewater - QMS Rep - assign work - ensures water quality is taken care of (i.e. sampling, equipment, etc. <p>E3 Top Management Commitment, Rev 2, May 8, 2015</p> <p>Appendix A - May 17, 2017</p> <ul style="list-style-type: none"> - provided hard copy signatures by CAO Doug Nadorozny May 24, 2017 and Acting Director, Infrastructure and Environmental Services, Allan Downey, May 18, 2017 – during audit shown updated version signed by the same people, however Allan Downey is permanently the director – dated November 16, 2017. <p>When was it last endorsed?</p> <ul style="list-style-type: none"> - owner - Tuesday March 31, 2015 – Report No. IE15-020 - Appendix A – Top Management (CAO and Director) – yes. <p>Ask Top Management: What have you done to make sure that the municipality has a QMS?</p> <p>Discussion with Allan Downey</p> <ul style="list-style-type: none"> - support QMS – signed policy - went through orientation training with Lindsay Hayworth to learn responsibilities - very new to the role 	Conforming	

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>d.) determining, obtaining or providing the resources needed to maintain and continually improve the Quality management System</p>	<p>What else do you do to make sure that the QMS is implemented and working? Discussion with Allan Downey - currently working through budget and researching where the numbers come from to ensure long-term sustainability</p> <p>What triggers a new endorsement by Top Management? - change in personnel - or big change to the procedures</p> <p>What triggers a new endorsement by Council? - new council</p>		
<p>4. Quality Management System Representative</p> <p>PLAN – The Operational Plan shall identify a Quality Management System representative.</p> <p>DO – Top Management shall appoint and authorise a Quality Management System representative who, irrespective of other responsibilities, shall:</p> <p>a.) administer the Quality Management System by ensuring that processes needed for the Quality Management System are established and maintained,</p> <p>b.) report to Top Management on the performance of the Quality Management System and any need for improvement.</p> <p>c.) ensure that the current version of documents required by the Quality Management System are being used at all times,</p> <p>d.) ensure that personnel are aware of all applicable legislative and regulatory requirements that pertain to their duties for the operation of the subject system, and</p> <p>e.) promote awareness of the Quality Management System throughout the Operating Authority</p>	<p>E4 – Quality Management Representative, Rev 1, February 2010 - designated as the Water/ Wastewater Supervisor – who is this? Lindsay Hayworth</p> <p>Discussion with Lindsay Hayworth - is there a backup? - whomever is acting ORO</p> <p>Can you show me examples of how you have communicated QMS information to top management? Can you show me an example of how you have promoted awareness of the QMS? Tree - recently completed Risk Assessment – including new Manager – Jim - completed orientation training to new Manager and new Director - had new Director sign the QMS policy</p> <p>How do you ensure that people are aware of their regulatory requirements? Discussion with Iustina Voinea (QMS Program Administrator) - had a group meeting on the new Watermain Disinfection Procedure - ensures everyone has access to the OP plan and SOPs on TRIM</p> <p>Can you show me how you find if regulatory requirements change? Discussion with Lindsay Hayworth - emails from MOECC - attending meetings hosted by the MOECC (most recently in Markham)</p>	Conforming	

		Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DWQMS Requirement, Version 2 February 2017</p> <p>5. Document and Records Control</p> <p>PLAN – The Operational Plan shall document a procedure for document and records control that describes how:</p> <p>a.) documents required by the Quality Management System are:</p> <ol style="list-style-type: none"> i. kept current, legible and readily identifiable ii. stored, protected, retained and disposed of. iii. Records required by the Quality Management System are: <ol style="list-style-type: none"> i. kept legible and readily identifiable ii. stored, protected, retained and disposed of. iii. The Operating Authority shall implement and conform to the procedure for document and records control and shall ensure that the Quality Management System documentation for the subject system includes: <ol style="list-style-type: none"> a.) the Operational Plan and its associated policies and procedures, b.) documents and records determined by the Operating Authority as being needed to ensure the effective planning, operation and control of its operations, and the results of internal and external audits and management reviews 	<p>Findings</p> <p>E5 – Document and Records Control, Rev# (ask why blank – is it the first?) yes - and dated February 3, 2016</p> <p>Document Control</p> <ul style="list-style-type: none"> - references QMS-PRO-001 Document Control Procedure, Rev 6, February 17, 2017 - revision history states that a mandatory document review was done in February 17, 2017 - QMS administrator is responsible – ask to see Document Control Table SF-001 – yes shown - ask for tour of Town's network server <p>K:\Infrastructure & Environmental Services\ENM\PlanProtect\DWQMS.</p> <ul style="list-style-type: none"> - provided a tour by Wes Smith and Justina Voinea – they sometimes use shortcuts, but in general able to find everything - Waterworks - 2017 - printed version all say "uncontrolled" – yes confirmed - documents are kept current through annual internal audit process – explain <p>Internal documents shall be reviewed annually, as a component of the annual internal audit. Revised dates shall only be updated when a change is made to that specific chapter or procedure. – shown record of this review by Justina Voinea</p> <p>CONFIRM THIS IS WHAT IT MEANS</p> <ul style="list-style-type: none"> - all electronic documents are read-only – only the QMS Administrator, Manager of Operations, Water Supervisor – confirmed, also include crew leader - any examples of documents stamped "obsolete" – there were none - is there a revision table for the Operational Plan? – use the Document Matrix to track edits <p>Ask operators how they make request to change documents?</p> <ul style="list-style-type: none"> - should say they use Document Request Form SF-003 - Discussion with Wes Smith - did not immediately answer this – could use a refresher 	<p>Conforming</p> <p>Positive - GIS map of system available to operators via tablets (access to information when in the field)</p>	

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
	<p>QMS Rep have you had any requests to update documents?</p> <ul style="list-style-type: none"> - ask for records of completed Document Request Form SF-003 - Discussion with Justina Voinea - there have been no requests in the past year since she's held this position <p>Controlled Versions?</p> <ul style="list-style-type: none"> - all are uncontrolled Operational Plan and SOPs <p>Record Control</p> <ul style="list-style-type: none"> - references QMS-PRO-002 Records Control Procedure, Version 4, October 1, 2015 - ask to see Record Control List (SF-002) – yes shown - ask to see Town of Aurora Record Classification Structure & Retention By-Law –yes shown CYH5 <p>Ask how are electronic documents and records backed up? IT Department</p> <p>Look for obsolete documents</p> <ul style="list-style-type: none"> - shown file on TRIM "Deleted or Amended" folder - archived hard copies go to Town Hall <p>Look for records</p> <ul style="list-style-type: none"> - check that all log sheets and work schedules identify the ORO and OIC for each shift (as per QMS-PRO-003) – yes they are <p>Records reviewed in Crew Leaders office space</p> <ul style="list-style-type: none"> - Daily Work Schedule – signed off by ORO and OIC, details activities for the day, in a binder - also on outlook calendar – accessible to ORO, OIC, QMS Administrator (has information like flushing and sampling prepopulated, but also locates get added – through phone messages and after-hours calls) - Binder called "Dead End Flushing 2017" – completed SF-021 forms - shown GIS map on TRIM that operators have access to in the field on tablets – gives all the information they need for locates/ breaks, etc. <p>POSITIVE</p> <ul style="list-style-type: none"> - after a year the crew leader brings all the binders to Justina Voinea who keeps them at her desk, until the following year at which point they are sent to archive at Town Hall's main storage - cross check of records: chlorine residuals 1. shown in outlook on October 13, 2017 – Witold Warchol 		

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>6. Drinking –Water System PLAN – The Operational Plan shall document, as applicable:</p> <p>a.) for the subject system:</p> <ol style="list-style-type: none"> i. the name of the Owner and Operating Authority, ii. if the system includes equipment that provides Primary Disinfection and/or Secondary Disinfection: <ol style="list-style-type: none"> A. a description of the system including all applicable Treatment System processes and Distribution System components, B. a Treatment System process flow chart, C. a description of the water source, including: <ol style="list-style-type: none"> I. general characteristics of the raw water supply, common event-driven fluctuations, and II. 	<p>2. binder with results – Forest Grove 1.2 free and 2.2 total (all matches)</p> <ul style="list-style-type: none"> - shown filing area by Iustina's office - full training records files for each operator (see Element 10 for further evidence) <p>E6 Description of DWS v5, Rev 5, February 17, 2017 Source: blended ground and surface water from York Region and the City of Toronto/ Peel Region - is there an agreement with York Region (or City of Toronto or Peel Region)? There is nothing in place. The Region provides an annual report Treatment: all by York Region Water Storage: 6 zones Zone 1: Central District – two reservoirs owned by Region Zone 2: Western District – NW Water Tower owned by Region Zone 3: SSW Tower and Water Tank owned by Region Zone 4: Wellington Street East Booster Station – owned by Region Zone 5: City of Toronto Transmission Main Zone 6: Vandorf St. Town of Aurora Booster Station – Town OWNED – shown PSI inspection record, however not currently in use OFI – there is also a bulk filling station that is not included in the description</p> <ul style="list-style-type: none"> - distribution piping, booster stations (s), fire hydrants, service connections and meters <p>Operational Challenges and Threats: - maintaining chlorine residual</p> <p>Mitigation Measures:</p> <ul style="list-style-type: none"> • Maintaining an effective monitoring program to assist in meeting such challenges • Harness system knowledge to adapt and improved planned infrastructure • System geometry improvements to eliminate water infrastructure designs dead zones are essential in meeting such operational challenges. • Update and enforcing the Town's design standard for new developments and infrastructure. • Undertake a regular flushing regimen as part of the Town's operations and maintenance program in concert with York Region's Operations staff. 		<p>OFI - The newly installed bulk filling station is not in the description of the distribution system infrastructure. Note that there was one previous station at a different location.</p> <p>Consider adding this to the system infrastructure description under Element 6.</p>

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>iii. any resulting operational challenges and threats.if the subject system is an operational subsystem, a summary description of the municipal residential drinking-water system it is a part of.</p> <p>iii. if the system does not include equipment that provides Primary Disinfection or Secondary Disinfection:</p> <p>A. a description of the system including all Distribution system components, and</p> <p>B. a description of any procedures that are in place to maintain disinfection residuals.</p> <p>b.) if the Subject System is an Operational Subsystem, a summary description of the Municipal Residential Drinking Water System it is a part of including the name of the Operating Authority (ies) for the other Operational Subsystems.</p>	<ul style="list-style-type: none"> • Ensure that the Town of Aurora water operating policy & procedures are constantly updated and improved to comply with the mandatory results dictated by regulatory parameters. • Maintain historical records to gain a historical perspective on system fluctuations and water chemistry <p>Confirm descriptions with on-site observations.</p> <ul style="list-style-type: none"> - this is a Class 2 system - shown inventory storage and main office, but nothing else to see 		

	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DWQMS Requirement, Version 2 February 2017</p> <p>c.) if the Subject System is connected to one or more other Drinking Water Systems owned by different Owners, a summary description of those systems which:</p> <ul style="list-style-type: none"> i. indicates whether the Subject System obtains water from or supplies water to those systems, names the Owner and Operating Authority(ies) of those systems, and ii. identifies which, if any, of those systems that the Subject System obtains water from are relied upon to ensure the provision of safe drinking water. iii. <p>DO – The Operating Authority shall ensure that the description of the Drinking Water System is kept current.</p>			

		Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DWQMS Requirement, Version 2 February 2017</p> <p>7. Risk Assessment</p> <p>PLAN – The Operational Plan shall document a risk assessment process that:</p> <p>a.) Considers potential hazardous events and associated hazards, as identified in the Ministry of the Environment and Climate Change document titled Potential Hazardous Events for Municipal Residential Drinking Water Systems, dated February 2017 as it may be amended. A copy of this document is available at www.ontario.ca/drinkingwater</p> <p>b.) identifies potential hazardous events and associated hazards</p> <p>c.) assesses the risks associated with the occurrence of hazardous events,</p> <p>d.) ranks the hazardous events according to the associated risk,</p> <p>e.) identifies control measures to address potential hazards and hazardous events,</p> <p>f.) identifies critical control points,</p> <p>g.) identifies a method to verify, at least once every calendar year, the currency of the information and the validity of the assumptions used in the risk assessment,</p> <p>h.) ensures that the risks are assessed at least once every thirty-six months, and</p> <p>i.) considers the reliability and redundancy of equipment.</p> <p>DO – The Operating authority shall perform a risk assessment consistent with the documented process.</p>	<p>Findings</p> <p>E7 – Risk Assessment, Rev (Blank), March 4, 2016 – ask if first revision? – references QMS-PRO-020 Risk Assessment. Version 7, October 16, 2017</p> <p>- references Element #8 Risk Assessment Outcomes. Identifies Redo 1 and Revision 6, Dated October 16, 2017 – ask what Redo Means</p> <p>- note version 2.0 identifies specific hazardous events and associated hazards to be included – have these been considered?</p> <p>See below list POSITIVE – yes, PRO-020 has been updated</p> <p>Ask to see date of last annual review</p> <p>- Management Review Meeting Minutes states that the next review is scheduled for October 2017, a re-assessment is October 2018</p> <p>Ask to see date of last full 3 year review? Yes shown. Considered frozen services.</p> <p>Who participated?</p> <p>- should be Manager of Operations, Water/ Wastewater Supervisor, plus 1 certified operator</p> <p>- this year was the first RA for new Manager Jim Tree</p> <p>- CCPs have risk ranking of 8 or more</p> <p>Ask if they know at which risk ranking an action plan must be developed? Answer is 8</p> <p>Yes</p>	<p>Conforming</p> <p>Positive – The Risk Assessment procedure was updated to include consideration of the Potential Hazardous Events as required by Version 2 of the Standard.</p>	

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>8. Risk Assessment Outcomes</p> <p>PLAN – The Operational Plan shall document:</p> <ul style="list-style-type: none"> a.) the identified potential hazardous events and associated hazards b.) the assessed risks associated with the occurrence of hazardous events, c.) the ranked hazardous events, d.) the identified control measures to address the potential hazards and hazardous events, e.) the identified critical control points and their respective critical control limits, f.) procedures and/or processes to monitor the critical control limits, g.) procedures to respond to deviations from the critical control limits, and h.) procedures for reporting and recording deviations from the critical control limits. <p>DO – The Operating Authority shall implement and conform to the procedures.</p>	<p>Findings</p> <p>- references Element #8 Risk Assessment Outcomes. Identifies Redo 1 and Revision 6, Dated October 16, 2017 – ask what Redo Means – this is the three year re-assessment</p> <p>Identifies CCPs:</p> <ol style="list-style-type: none"> 1. Supply Interruption 2. Deliberate Contamination of Water Supply – ask what is the CCP for this? <ul style="list-style-type: none"> - the CCP for both require notification by others – that is the critical control - eg of theft – in Zone 5, every other night, Region flow monitors shows high flow - notified by others (Region) <p>Emergency Procedures/ CCP Procedures Referenced:</p> <ol style="list-style-type: none"> 1. Adverse Sample Reporting QMS-PRO-011 2. Watermain Breaks and Repairs QMS-PRO-010 3. Waterworks Emergency Plan QMS-PRO-019 4. Water Shortage Emergency Procedure QMS-PRO-015 5. Town of Aurora Emergency Plan By-Law – 5395-12 Schedule A – ask to see – yes shown March 2012 6. ESD-York Region Operating and Emergency Procedures Inter-Municipal Communication Protocol – ask to see – yes developed by York Region, May 2017 7. Standby Procedure and Staffing QMS-PRO-018 	<p>Conforming</p>	

DWQMS Requirement, Version 2 February 2017		Findings	Degree of Conformance	
			Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>9. Organisational Structure, Roles, Responsibilities and Authorities</p> <p>PLAN – the Operational Plan shall: a.) describe the organisational structure of the Operating Authority including respective roles, responsibilities and authorities, b.) delineate corporate oversight roles, responsibilities and authorities in the case where the Operating Authority operates multiple subject systems, c.) identify person, persons or group of people within the management structure of the organisation responsible for undertaking Management Review, d.) identify the person, persons or group of people having Top Management Responsibilities required by this Standard, along with their responsibilities, and e.) identify the Owner of the subject system.</p> <p>DO – The Operating Authority shall keep current the description of the organisational structure including respective roles responsibilities and authorities, and shall communicate this information to Operating Authority personnel and the Owner.</p>	<p>E9 – Organizational Structure, v5, Rev 5, February 17, 2017</p> <p>Print Org Chart – fill in names – yes done - includes table that states roles and responsibilities of each role in Org Chart</p> <p>Explain ORO - Operations Supervisor (Water and Wastewater) - Lindsay Hayworth unless off then crew leader fills role</p> <p>Who is the OIC? - Infrastructure and Environmental Services Crew Leader (Water and Wastewater) - anyone who is a Level 2 can fill in</p> <p>- OFI – there is a Procedure “Designation of Overall Responsible Operator and Operator In-Charge” QMS-PRO-003, Version 3, November 24, 2015 that is not referenced in the Operational Plan. Instead it references Report No. PW06-003. Consider referencing that actual procedure. Could be under Element 9 instead of Element 11.</p> <p>Is there a backup QMS Rep? the back up ORO</p> <p>Ask all staff – what is your role and responsibility? Wes Smith -acting crew leader - level 2 operator - record keeping - take phone calls from public (eg. Water complaints) - work assigned</p>	<p>POSITIVE - New staff filling roles of Director and Manager have been included in QMS meetings and have completed orientation</p>	<p>OFI – there is a Procedure “Designation of Overall Responsible Operator and Operator In-Charge” QMS-PRO-003, Version 3, November 24, 2015 that is not referenced in the Operational Plan. Instead it references Report No. PW06-003 under Element 11.</p> <p>Consider referencing that actual procedure under Element 9 or Element 11.</p>	

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>10. Competencies</p> <p>PLAN – The Operational Plan shall document:</p> <p>a.) competencies required for personnel performing duties affecting drinking water quality.</p> <p>b.) activities to develop and/ or maintain competencies for personnel performing duties directly affecting drinking water quality, and</p> <p>c.) activities to ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water.</p> <p>DO – the Operating Authority shall undertake activities to:</p> <p>a.) meet and maintain competencies for personnel directly affecting drinking-water quality and shall maintain records of these activities, and</p> <p>b.) ensure that personnel are aware of the relevance of their duties and how they affect safe drinking water, and shall maintain records of these activities.</p>	<p>E10 – Competencies, Rev 22, February 17, 2017</p> <ul style="list-style-type: none"> - required competencies (mandatory) versus desired competencies (training provided when available) - list of operator and distribution license classification - who maintains training? - Iustina Voinea has spreadsheets showing CEUS - use eLearning software - also in house training - out of house training - fall and winter sessions - ask to see training records - on TRIM: Water Training Matrix – CEU, hours, expiry date, each person has a tab, plus a summary tab, - shows February 22, 2017 DWQMS meeting - also October 27, 2017 – emergency testing - hard copies in file storage on main floor - each operator has a file – sign in sheets are copied to each folder - shown fax for operator getting renewal done – Anthony Del Balso - "DW Certificate Renewal" - shown electronic record of QMS training to James (Jim) Tree and Allan Downey - shown tailgate meeting record from February 22, 2017 – updated procedures, went through watermain break procedure, there is a sign-in sheet. - ask to see proof of Emergency training - shown October 27, 2017 record – delivered by Lindsay Hayworth - shown powerpoint presentation – freezing temperatures - outcomes – 4x4 trucks, chains for tires, walkie talkies - not included in matrix is the 2016 emergency testing – there is a record OFI <p>What class is the system? Class 2</p> <p>How many OITs are there?</p> <ul style="list-style-type: none"> 4 x Class 2 2 x Class 1 3 x OIT in roads department Lindsay Hayworth is Class 3 <p>Certificates (should be posted at the Waterworks Yard): Wesley G. Smith – Water Distribution Class 2 June 30, 2019 #86290 Tony Del Balso – Water Distribution Class 2, Nov. 30, 2017 #68178</p>		<p>OFI - There is a potential gap in the training matrix of some training. For example October 2016 Emergency Table Top was completed and there is a record, however the matrix does not include this.</p> <p>Consider reviewing that dates that this gap may exist and updating</p>

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance
		<div data-bbox="305 216 418 541"> <p>Conformance/ Positive</p> </div> <div data-bbox="305 541 418 1192"> <p>Non-Conformance/ Opportunity for Improvement</p> </div>
<p>11. Personnel Coverage</p> <p>PLAN – The Operational Plan shall document a procedure to ensure that sufficient personnel meeting the identified competencies are available for duties that directly affect drinking water quality.</p> <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>E11 – Personnel Coverage, Rev 5, November 12, 2015</p> <ul style="list-style-type: none"> - normal hours M-F, 7:30am to 4pm - Water/ Wastewater Supervisor/ Manager of Operations Services/ Director of Infrastructure and Environmental Services – 8:30am to 4:30pm - Report No PW06-003 – designates the Operations Supervisor (Water/ Wastewater) as the ORO - The crew leader is the OIC - ORO and Director may designate an ORO in the event of absence – any examples of this? How is it relayed to the team? - ORO and Director may designate crew leaders as ORO - OFI – there is a Procedure "Designation of Overall Responsible Operator and Operator In-Charge" QMS-PRO-003, Version 3, November 24, 2015 that is not referenced in the Operational Plan. Instead it references Report No. PW06-003. Consider referencing that actual procedure. Could be under Element 9 instead of Element 11. <p>During Regular Hours:</p> <ul style="list-style-type: none"> - Infrastructure and Environmental Services Reception or Waterworks Supervisor/ Crew Leader - the receptionist shall determine the extent of the problem and location then calls the supervisor an ask time for a response - informs resident of timing - if shutting of water mains, fire department notified by receptionist <p>How many Operators? 5 operators and 1 crew leader (one off at the moment)</p> <p>Ask about Vacation Schedules</p> <ul style="list-style-type: none"> - minimum must have 3 staff there –union rule - July through August – guaranteed 2 weeks off <p>Ask Operators – how do you know if you are "on-call?"</p> <ul style="list-style-type: none"> - stand by on-call after hours, 7 days a week - provides phone number - after-hours operator 905 727-1375 or 905 727-3123 - check online for these numbers (yes first is main switchboard, second is 24-hour automated hotline) - 2 employees on standby year round - ask what is different about November 15 to April 15 – beefed up stand-by list 	<p>OFI – there is a Procedure "Designation of Overall Responsible Operator and Operator In-Charge" QMS-PRO-003, Version 3, November 24, 2015 that is not referenced in the Operational Plan. Instead it references Report No. PW06-003 under Element 11.</p> <p>Consider referencing that actual procedure under Element 9 or Element 11.</p>

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>12. Communications</p> <p>PLAN – The Operational Plan shall document a procedure for communications that describes how the relevant aspects of the Quality Management System are communicated between Top Management and:</p> <ol style="list-style-type: none"> the Owner, Operating Authority personnel, Suppliers that have been identified as essential under Plan (a) of Element 13 of this Standard, and the public. 	<p>Discussion with Lindsay Hayworth</p> <ul style="list-style-type: none"> - always on call in his role <p>Discussion with West Smith</p> <ul style="list-style-type: none"> - every operator on call, every other week - there is a schedule - always a "dedicated water person" <p>Walk me through an after-hours call from the alarm system?</p> <ul style="list-style-type: none"> - there is a dedicated phone – whomever is on-call just forwards the number to their personal number <p>Discussion with Jim Tree</p> <ul style="list-style-type: none"> - always on call - ultimate approval of standby - Director would backfill <p>who is the answering services? – there is an after-hours services, it prompts if water emergency – Access Aurora is the Town's regular hours reception</p> <p>OFI – should the after-hours answering service be an Essential Supplier?</p> <p>Review Emergency Contact List to confirm names/ numbers up to date</p> <ul style="list-style-type: none"> - see Element 18 - strikes/ lockouts handles by collective agreement <p>E12 – Communications, Rev 3, February 17, 2017</p> <p>Discussions with Jim Tree (Manager) and Allan Downey (Director) – both new in this role in the last year</p> <p>Provide Examples of Communication</p> <p>To Owner</p> <ul style="list-style-type: none"> - formal council reports - Jim Tree would authorize and Allan Downey would report to council - example is the budget – this is in progress – will go to Finance Advisory Committee and then Budget Committee of the Whole, recommend to council - council is always receptive to water (aware from previous role as Director of Parks) - will encourage new council following election to get Standard of Care training and do an orientation meeting - also go to council for contracts/ tenders/ annual reports 	<p>Positive - Relationship with neighbouring municipalities allow for sharing of resources, including training opportunities. Includes new quarterly meetings between Director-level staff in these municipalities. (See more evidence in Elements 13 and 21)</p>	

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>To OA Personnel</p> <ul style="list-style-type: none"> - Operational Plan is available through network – ask operator to find – yes found by Wes Smith - QMS Rep responsible for hard copy locations and regular meetings to update staff - new hires and temp staff are trained within first 3 months of hire- shown proof of Director and Manager going through training - through QMS Implementation Lead and Rep through regular meetings, memos, and emails - mostly of the contact from Director goes through Manager and Supervisor, all three in contact regularly - Supervisor meets with OA staff every day <p>To suppliers – under external communications</p> <ul style="list-style-type: none"> - notices in all tenders and contractors <p>The Public – external communications</p> <ul style="list-style-type: none"> - QMS Rep must ensure the Operational Plan and Policies are available for viewing at the Town of Aurora Operations Centre at 229 Industrial Parkway North - notices in all tenders and contractors - use social media, water bills, tax bills, website – this could be improved - meetings eg. Director met with an industrial client on Monday to go over complaints <p>Is there a customer complaint process?</p> <ul style="list-style-type: none"> - call ins - example – recent red staining complaint from consumer because of hydrant maintenance. Will use this to improve public communication (i.e. website, local notices to advise when work is going on) CHECK NEXT AUDIT - Director would like to improve customer service <p>Director meeting with “Northern 6” municipalities on a regular basis now (that is those municipalities getting water from the Region) POSITIVE</p>		

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>13. Essential Supplies and Services</p> <p>PLAN – The Operational Plan shall:</p> <p>a.) identify all supplies and services essential for the delivery of safe drinking water and shall state, for each supply or service, the means to ensure its procurement, and include a procedure by which the Operating Authority ensures the quality of the essential supplies and services, in as much as they may affect the drinking water quality.</p> <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>E13 List Suppliers and Contractors, Rev 11, October 26, 2017 – ask for proof this is reviewed annually (as per procedure)? Yes shown proof by Justina Voinea</p> <p>OFI – there is an ES&S Procedure but it is not referenced in the Operational Plan.</p> <ul style="list-style-type: none"> - QMS-PRO-023 – Essential Supplies and Services - procurement process and vendor performance - supplies must meet AWWA, ANSI, and CSA Standards - Town of Aurora's Procurement By-Law <p>As per Element 12 – ask to see proof of contracts/ tenders explaining QMS. – yes shown proof, usually have 1 year with option to renew</p> <ul style="list-style-type: none"> - ask to see PO issued annually for Wolsely <p>Any new suppliers? Cummins Hydraulics Ltd.</p> <p>POSITIVE – sometimes share resources with neighbouring municipalities (eg. Newmarket and Richmond Hill)</p> <ul style="list-style-type: none"> - have you ever had to remove a vendor from the list? no - ask to see examples of using the Contractor Performance Report through the Town of Aurora's Purchasing Department <p>Yes done at end of the year as part of approval process – shown the template April 2017 and signed version from September 19, 2017</p> <p>Inventory stored where? How do you ensure supplies don't run out?</p> <p>Ask Operators how they get essential supplies?</p> <p>Tour with Wes Smith</p> <ul style="list-style-type: none"> - clamps and valves are downstairs in Water Room - pipe is outside - when used write down in log book and let Supervisor know - contractor control form – records, equipment - eg. Wolsley for Pipe – stamped to say approved material– invoice is signed by Operator - only chemicals are approved bleach and dechlor pucks - Water Equipment Storage Room – copper, sealed cabinet, meters, etc <p>Explain how supplies are ordered</p> <ul style="list-style-type: none"> - operators call or go to supplier - have a rule of thumb to check inventory at end of year 	<p>OFI – The Essential Supplies and Services list does not include</p> <ul style="list-style-type: none"> • the supplier of water (York Region) • the after-hours call service • backflow preventer testing <p>Consider if these are essential supplies and add these too this list. (Some evidence under Element 11)</p> <p>OFI –E13 does not reference the Essential Supplies and Services QMS-PRO-023. The Essential Supplies and Services list includes a column 'notes' that sometimes references the quality requirements.</p> <p>Considering updating the Operational Plan to reference the procedure and to update the list column so that the quality required and the means to ensure it are documented.</p>	

		Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DWQMS Requirement, Version 2 February 2017</p>	<p>14. Review and Provision of Infrastructure</p> <p>PLAN – The Operational Plan shall document a procedure for the annual review of the adequacy of the infrastructure necessary to operate and maintain the subject system that:</p> <p>a. Considers the outcomes of the risk assessment documented under Element 8, and</p> <p>b. Ensures that the adequacy of the infrastructure necessary to operate and maintain the Subject System is reviewed at least once every Calendar Year.</p> <p>DO – The Operating Authority shall implement and conform to the procedure and communicate the findings of the review to the owner.</p>	<p>Findings</p> <p>E 14 – Review and Provision of Infrastructure, Rev 2, February 23, 2011</p> <ul style="list-style-type: none"> - within Op plan - distribution system; fire hydrants, water mains, valves, service connections up to the property line, water booster stations (how many are there?), water meters, sample stations, pressure zone boundaries (what does that mean?) - references QMS-PRO-024 The Review and Provision of Infrastructure Procedure - OFI – Update to DWQMS. Consider specifying that the outcomes of the risk assessment documented under Element 8 be considered in the procedure for reviewing the adequacy of the infrastructure necessary to operate and maintain the system (under Element 21) <p>Ask to see documentation of last review meeting</p> <p>May 23, 2017, 9am to 10:30am</p> <p>Follow up on Action Items:</p> <p>1. Purchase a turbidity meter to be used by staff in the field after directional flushing. – who is responsible? Was this done? Discussion with Lindsay Hayworth – turns out this is not recommended so was not done</p> <p>Who participates?</p> <ul style="list-style-type: none"> - Director, Manager of Engineering, Manager of Operations, Water/Wastewater Supervisor, Technical Assistant <p>Can you show me what information you review for reviewing and updating this data.</p> <ul style="list-style-type: none"> • All components in drinking-water distribution system and water maps – shown in GIS • Engineering's 10 year road reconstruction plan • Operations capital project requests eg. Bulk water filling station - built in 2017 versus using hydrant meters POSITIVE • All equipment and materials used for the operation of the drinking-water distribution system. – new valve turner with means to record info electronically POSITIVE • All vehicles and communication devices supporting the operation of the drinking-water distribution system • All personnel supporting the operation of the drinking-water distribution system. <p>- also example – after watermain break – always line watermain</p>	<p>Conformance/ Positive</p> <p>Positive - Use of Infrastructure Review process to move forward operations planning – i.e. valve turning machine and bulk filling station. Demonstrates continual improvement using DWQMS framework.</p>

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
	<p>What do you do to prioritize infrastructure needs and how do you relay that information to the Owner</p> <p>Discussion with Jim Tree</p> <ul style="list-style-type: none"> - water and roads together - water budget is typically done in December – will be January this year - operating is rate based <p>Explain the budgeting process</p> <ul style="list-style-type: none"> - 10 year capital reconstruction programs (year 11 sits blank) - uses analysis and condition assessment reports derived from planned maintenance activities - being reviewed by new manager and new director this year so pushing to January instead of December <p>What happened in 2016?</p> <p>http://www.aurora.ca/TownHall/Documents/Infrastructure%20and%20Environmental%20Services/2016%20Annual%20Water%20Quality%20Report%20Report.pdf</p> <p>New water mains = \$438,325 Watermain repairs = \$ 34,156.33 Hydrant maintenance = \$ 28,801.00 Hydrant Painting = \$ 6,169.00</p> <p>2017:</p> <ul style="list-style-type: none"> - hydrant maintenance - watermain lining (started 10 years ago) -ongoing <p>2018?</p> <ul style="list-style-type: none"> - top management not aware – just looking at budget now <p>E 15 – Infrastructure Maintenance, Rehabilitation and Renewal</p> <ul style="list-style-type: none"> - references QMS-PRO-024 <p>Ask if there is a long-term forecast of major infrastructure maintenance, rehabilitation, and renewal activities? Version 2.0 of DWQMS. – confirm if the planned activities cover these below OFI – under Element 21</p> <ul style="list-style-type: none"> - there is a 10-year capital plan <p>Ask staff – how do you know what you are going to be doing each day?</p> <p>Discussion with Wes Smith</p> <ul style="list-style-type: none"> - use TRIM and outlook calendar system 	Conforming	
<p>15. Infrastructure Maintenance, Rehabilitation and Renewal</p> <p>PLAN – The Operational Plan shall document:</p> <p>a.) a summary of the Operating Authority's infrastructure maintenance, rehabilitation and renewal programs for the subject system.</p>			

	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DWQMS Requirement, Version 2 February 2017</p> <p>b.) a long term forecast of major infrastructure maintenance, rehabilitation and renewal activities.</p> <p>DO – The Operating Authority shall:</p> <p>a.) keep the summary of the infrastructure maintenance, rehabilitation and renewal programs current.</p> <p>b.) ensure that the long term forecast is reviewed at least once every Calendar Year.</p> <p>c.) communicate the programs to the Owner, and</p> <p>d.) monitor the effectiveness of the maintenance program.</p>	<p>- Supervisor</p> <p>- there is a daily log</p> <p>- there is a work order system called Maximo but not user friendly</p> <p>Discussion with Lindsay Hayworth</p> <p>- planned activities set in outlook</p> <p>- reactive items like meter checks, respond to construction requirements, locates, etc. added in</p> <p>Discussion with Justina Voinea</p> <p>- prioritize work activities. eg. Must make sure tenders are dealt with at end of year.</p> <p>What is the difference between planned versus unplanned maintenance?</p> <p>- planned flushing, hydrants, watermain breaks, customer complaints, sampling records, booster station maintenance</p> <p>What is planned?</p> <p>- normal: dead end flushing M/W/F, bacti samples M, valve exercising is fillers, booster station (contractor PSI visits monthly</p> <p>E 16, Sampling and Monitoring, Rev 4, February 17, 2017</p> <p>- O.Reg. 170 – 69 samples per month</p> <p>- references Water Sampling Procedure QMS-PRO-004, Rev 11, May 17, 2017 – very thorough with specific work instructions</p> <p>- recent revision added HAA and updated lead, added table of sample containers and holding times</p> <p>Is there a sampling plan or map? How often is it reviewed?</p> <p>- shown list of sampling station – all in GIS</p> <p>- plan is set up so bacti samples happen on Monday</p> <p>- quarterly sampling in outlook</p> <p>Who is responsible to ensuring compliance?</p> <p>- the ORO - Lindsay Hayworth</p> <p>Records</p> <p>- daily chlorine residual – yes shown</p> <p>- York-Durham Regional Environmental Laboratory in Pickering – shown hard copy results in Justina Voinea's office</p> <p>- lead sampling at private residential taps – have applied for relief</p> <p>- COCs – Operations Departments Document/ Records file room - yes</p>	<p>Conforming</p>	
<p>16. Sampling, Testing and Monitoring</p> <p>PLAN – The Operational Plan shall document:</p> <p>a.) a sampling, testing and monitoring procedure for process control and finished drinking water quality including the requirements for sampling, testing and monitoring at the conditions most challenging to the subject system</p> <p>b.) a description of any relevant sampling, testing or monitoring activities, if any, that take place upstream of the subject system, and a procedure that describes how sampling, testing and monitoring results are recorded and shared between the Operating Authority and the Owner, where applicable.</p> <p>DO – The Operating Authority shall implement and conform to the procedures.</p>			

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
	<p>- any adverse last year? http://www.aurora.ca/TownHall/Documents/Infrastructure%20and%20Environmental%20Services/2016%20Annual%20Water%20Quality%20Report%20Report.pdf</p> <p>July 13, 2016 – AWQI #130220 Total Coliforms, flush mains and resample, corrected July 13, 2016</p> <p>July 20, 2016 – AWQI # 130373 Total Coliforms, flush mains and resample, corrected July 20, 2016</p> <p>Any for 2017?</p> <ul style="list-style-type: none"> - there were around 20 adverse in 2017 – high total coliforms - this was reflected in other local Municipalities as well - it is believed the high water levels were responsible <p>Discussion with Justina Voinea,</p> <ul style="list-style-type: none"> - prepares a COC every Friday for following Monday - managed the lead program – customer contact – letters - receives the lab data (goes to LH, crew leader) - shown proof of letters: 2 letters go out eg. Appointment booked and then results <p>Eg. July 2017 to 10 Cedar Cres., 11 Jasper Dr, and 42 Owl's Foot Court</p> <ul style="list-style-type: none"> - also shown hard copy lab reports filed by month in office <p>E 17 equipment Calibration, Rev (blank), March 4, 2016</p> <ul style="list-style-type: none"> - water/ wastewater supervisor responsible for calibration of equipment - references QMS-PRO-016 Field Test Kit Calibration and Standards , Rev 4, February 17, 2017 <p>Check - Look for calibration stickers, records</p> <ul style="list-style-type: none"> - chlorine pocket colorimeter – monthly or if questionable operation, records in Water and Wastewater Supervisor Office <ul style="list-style-type: none"> • shown outlook reminder for colorimeter check – next due November 23 • Binder Form SF-009 – completed • Also has certificates from HACH – all shown done in 2017 • Keep in IV's office - ask to see SF-009 Chlorine Tester Preventive Maintenance Work Order 		
<p>17. Measurement and Recording Equipment Calibration and Maintenance</p> <p>PLAN – The Operational Plan shall document a procedure for the calibration and maintenance of measurement and recording equipment.</p> <p>DO – The Operating Authority shall implement and conform to the procedure.</p>			<p>NC - A reagent that is potentially used for verifications/calibrations is expired.</p> <p>Objective Evidence: 3M KCL Solution, saturated with AgCl in pH meter case, states use before 07 2014.</p>

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance																													
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement																												
<p>18. Emergency Management</p> <p>PLAN – The Operational Plan shall document a procedure to maintain a state of emergency preparedness that includes:</p> <ol style="list-style-type: none"> a list of potential emergency situations or service interruptions, processes for emergency response and recovery, emergency response training and testing requirements, Owner and Operating Authority responsibilities during emergency situations, References to municipal emergency planning measures as appropriate, and An emergency communication protocol and an up-to-date list of emergency contacts. <p>DO – The Operating Authority shall implement and conform to the procedure.</p>	<p>DPD Chlorine-IR Secondary Standards Kit April 2019 X2 HACH Colorimeters AURORA X26968 – checked by HACH Service Plus, Service due January 2018</p> <p>What about?</p> <ul style="list-style-type: none"> - pH Meters? pH meter Serial #070900012057, last checked 05 Jan 2017, due January 2018 NC – 3M KCL Solution Saturated with AgCl in pH meter case –says use before 07 2014 - turbidimeter? none - any online analyzers - none - flowmeters - none <p>E 18 – Emergency Management</p> <ul style="list-style-type: none"> - references QMS-PRO-019 – Waterworks Emergency Plan, Version 10, July 15, 2016 - Emergency Contact List is updated under QMS Activity Schedule on Page 2 of the QMS-PRO-008 Internal Audit Procedure - emergency training is scheduled as per QMS Activity Schedule on Page 2 of the QMS-PRO-008 Internal Audit Procedure <p>From QMS-PRO-019 Events that cause emergencies:</p> <table border="1"> <tr> <td>Natural Disasters</td> <td>-severe structural damage</td> </tr> <tr> <td>Earthquake</td> <td>-contamination of wells</td> </tr> <tr> <td>Flood</td> <td>-washouts of roads, bridges, infrastructure</td> </tr> <tr> <td>Water borne diseases</td> <td>-causes power outages and freezes</td> </tr> <tr> <td>Ice storm</td> <td>water pipes</td> </tr> <tr> <td>Power Failure</td> <td>-pump failures, loss of pressure</td> </tr> <tr> <td>Human Caused Events</td> <td></td> </tr> <tr> <td>Construction Accidents</td> <td>-because of development there is considerable activity</td> </tr> <tr> <td>System neglect</td> <td>-cross connections</td> </tr> <tr> <td></td> <td>-backflow prevention on private property</td> </tr> <tr> <td></td> <td>-need a list of industries equipped with backflow</td> </tr> <tr> <td>Chemical spills</td> <td>- Ground water contamination</td> </tr> <tr> <td>Vandalism</td> <td>-ensure all access to systems are secure</td> </tr> <tr> <td>Power Failure</td> <td>-pump failures, loss of pressure</td> </tr> </table> <p>Key Consequences:</p> <ul style="list-style-type: none"> • Interruption of service to customers • Threat to life, health and safety • Threat to the environment • Serious customer complaints • Threat to our business operation 	Natural Disasters	-severe structural damage	Earthquake	-contamination of wells	Flood	-washouts of roads, bridges, infrastructure	Water borne diseases	-causes power outages and freezes	Ice storm	water pipes	Power Failure	-pump failures, loss of pressure	Human Caused Events		Construction Accidents	-because of development there is considerable activity	System neglect	-cross connections		-backflow prevention on private property		-need a list of industries equipped with backflow	Chemical spills	- Ground water contamination	Vandalism	-ensure all access to systems are secure	Power Failure	-pump failures, loss of pressure		<p>NC - The referenced Municipal Emergency Contact List is not up-to date.</p> <p>Objective Evidence: The list references the previous director and the previous manager.</p>
Natural Disasters	-severe structural damage																														
Earthquake	-contamination of wells																														
Flood	-washouts of roads, bridges, infrastructure																														
Water borne diseases	-causes power outages and freezes																														
Ice storm	water pipes																														
Power Failure	-pump failures, loss of pressure																														
Human Caused Events																															
Construction Accidents	-because of development there is considerable activity																														
System neglect	-cross connections																														
	-backflow prevention on private property																														
	-need a list of industries equipped with backflow																														
Chemical spills	- Ground water contamination																														
Vandalism	-ensure all access to systems are secure																														
Power Failure	-pump failures, loss of pressure																														

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>19. Internal Audits</p> <p>PLAN – The Operational Plan shall document a procedure for internal audits that:</p> <ol style="list-style-type: none"> evaluates the conformity of the QMS with the requirements of this Standard, identifies internal audit criteria, frequency, scope, methodology and record-keeping requirements, considers previous internal and external audit results, and describes how the Quality Management System corrective actions are identified and initiated. 	<ul style="list-style-type: none"> Threat to community infrastructure Damage to private or public property Threat to financial viability of the business Threat of prosecution or fine Threat of litigation Adverse media reaction Loss of public confidence Loss of manufacturer's production/cost recovery <p>Any Emergencies in the Last Year?</p> <ul style="list-style-type: none"> - adverse/ mainbreaks - AWQI folders shown by IV - 1. Town Notification, 2. Lab Results, 3. MOECC resolution form <p>Any emergencies in 2016 and proof those SOPs were followed? Ask to see post-emergency de-briefs</p> <p>Emergency Training and Testing – ask to see proof of: (should be annually or after major staff changes)</p> <ul style="list-style-type: none"> -shown proof October 27, 2017 – last one was October 27, 2016 however gap identified as matrix does not include this (See OFI in Element 10) <p>Is there a municipal emergency plan? Yes shown</p> <p>Ask to see up-to-date contact list?</p> <p>- NC – not up-to-date (2016) has old Director and Manager</p> <p>E 19 – Plan for Internal Audit: Rev 4, February 17, 2017</p> <ul style="list-style-type: none"> - references QMS-PRO-008 <p>QMS Calendar:</p> <ul style="list-style-type: none"> Review all QMS documents (operational plan, QMS policy, all procedures, hazard analysis, PFD's etc.) - At least once per year (prove) Shown record by IV – January 2017 completed Review emergency procedures and emergency contacts list - At least once per year Perform internal audit - at least once per year for all elements Perform management review- At least once per year Test emergency procedures -At least once per year Review competencies - At least once per year Review and update training matrix and schedule - Annually prior to management review 	Conforming	

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DO – The Operating Authority shall implement and conform to the procedure and shall ensure that internal audits are conducted at least once every Calendar Year.</p>	<ul style="list-style-type: none"> Review and conduct hazard analysis - Prior to a process or equipment change and after a significant change to the source water Review the status of corrective actions -As needed till closed Review status of continual improvement initiatives- Per initiative/project schedule Perform QMS awareness training -DWQMS review of updates - at least once a year. New hires or temporary staff - within first three months of employment. <p>Last year's internal audit (December 2016): NC – 1. Element 5 – provide Form SF-014, date closed March 8, 2017 Several records were incomplete or missing including: o annual review of documents record – yes see above o several Tailgate Safety Meeting Minutes are not recorded – shown multiple o orientation training in Training Matrix – yes shown o ask to see new form to record weekly chlorine residuals – yes shown 2. Element 21 – provided Form SF-014, date closed March 8, 2017 One non-conformity has not been addressed from previous audits. It is recommended that a formal procedure for Town of Aurora DWQMS Internal Audit addressing non-conformances and opportunities for improvement be developed. An opportunity of improvement also exists in this element. Two opportunities for improvement (OFI) were identified in previous audits and emergency tests for which there was neither evidence of corrective action nor screening of these OFI.</p> <p>OFI – 1. Element 1 2. Element 9 Several roles within the QMS are either temporarily vacant (Project Administrator) or filled with interim personnel (Manager of Operations), but are not accounted for in the Organizational Structure 3. Element 12 More information about the presence of a Quality Management System could be provided through the Town's Website</p>		

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>4. Element 17 Record of field calibration checks missing for several colorimeters in April 2016. - provided DWQMS Internal Audit – OFI chart identify that all were addressed - ask – what was added to the website? I don't see much there. - confirm all 9 colorimeters are on the Form 9 used for calibration checks. – It now says 8</p>	<p>E 20 – Management Review Plan, Rev 2, February 8, 2016 - references QMS-PRO-009, Rev 2, February 9, 2016 - procedures covers off each point</p> <p>Who participates?</p> <ul style="list-style-type: none"> • CAO • Director of Infrastructure and Environmental Services • Manager of Operations • QMS Representative • QMS Administrator <p>When was the last review? February 27, 2017 When is the next one scheduled? February 2018</p> <p>Does the MR detail action items, who is responsible, and due date - meeting minutes references 5-015</p> <p>K:\Infrastructure & Environmental Services\EN\PlanProtect\DWQMS\Records\Management Review - ask to see</p> <p>1. resources needed to maintain QMS Fees for backflow prevention program administration and maintenance should be established and included in the Fees bylaw.– October 26, 2017 - this was addressed by meeting with Finance and including this in the by-law (budget) 2. policy – signed by new director upon hire – Fall 2017 – signed by acting director May 2017 – done.</p>	Conforming	
<p>20. Management Review PLAN – The Operational Plan shall document a procedure for management review that evaluates the continuing suitability, adequacy and effectiveness of the Quality Management System and that includes consideration of:</p> <ul style="list-style-type: none"> a.) incidents of regulatory non-compliance, b.) incidents of adverse drinking-water tests, c.) deviations from critical control point limits and response actions, d.) the effectiveness of the risk assessment process, e.) internal and third party audit results, f.) results of emergency response testing, g.) operational performance, h.) raw water supply and drinking water quality trends, i.) follow-up action items from previous management reviews, j.) the status of management action items identified between reviews, k.) changes that could affect the Quality Management System, l.) consumer feedback, m.) the resources needed to maintain the Quality Management System, n.) the results of infrastructure review, o.) Operational Plan currency, content and updates, and/ p.) Staff suggestions 			

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>Do - Top Management shall implement and conform to the procedure and shall:</p> <ul style="list-style-type: none"> a.) ensure that a management review is conducted at least once every Calendar Year. b.) consider the results of the management review and identify deficiencies and action items to address the deficiencies, c.) provide a record of any decisions and action items related to the management review including personnel responsible for delivering the action actions and the proposed timelines for their implementation, and d.) report the results of management review, the identified deficiencies, decisions and action items to the Owner. 			

DWQMS Requirement, Version 2 February 2017	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>21. Continual Improvement</p> <p>PLAN – The Operating Authority shall develop a procedure for tracking and measuring continual improvement of its Quality Management System by:</p> <p>a.) reviewing and considering applicable best management practices, including any published by the Ministry of the Environment and Climate Change and available on www.ontario.ca/drinkingwater, at least once every thirty-six months;</p> <p>b.) documenting a process for identification and management of Quality Management System Corrective Actions that includes:</p> <ol style="list-style-type: none"> i. investigating the cause(s) of an identified non-conformity, ii. documenting the action(s) that will be taken to correct the non-conformity and prevent the non-conformity from re-occurring, and iii. reviewing the action(s) taken to correct the non-conformity, verifying that they are implemented and are effective in correcting and preventing the re-occurrence of the non-conformity. <p>c) documenting a process for identifying and implementing Preventive Actions to eliminate the occurrence of potential non-conformities in the Quality Management System that includes:</p> <ol style="list-style-type: none"> i. reviewing potential non-conformities that are identified to determine if preventive actions may be necessary. 	<p>E 21 - Continual Improvement</p> <p>Note update to DWQMS Version 2.0 OFI – add consideration to best management practices (see MOECC link) and other “Plan” portions not addressed.</p> <p>– ask to see completed Corrective Action Reports – yes provided for internal audit (see evidence under Element 19 and for external audit (see evidence below)</p> <p>Discussion with Iustina Voinea - DWQMS Records\NSF\Internal Audits – have corrective action forms OFI – consider combining outcomes for RA, MR, audits, etc. in one table</p> <p>Last External Audit - NSF DWQM Verification Audit 1. Car No. J1041240-1 – The Endorsement was signed by someone no longer employed by the Town – completed May 19, 2017, signed by acting Director 2. Car No. J1041240-2 – the lead testing requirement don't match between the procedure and the Operational Plan – completed May 17, 2017 – procedure was updated and now will be reviewed annually</p> <p>Last MOECC February 22, 2017 – no actions required</p> <p>Ask for examples of Continual Improvement from everyone:</p> <p>Discussion with Lindsay Hayworth - lining of watermain - valve turning machine - bulk water station</p> <p>Discussion with Jim Tree - valve exercising in house - excellent response/ customer service - well organized staff/ group</p>		<p>OFI - There are multiple files/ means to track corrective and preventative actions resulting from Management Review, Infrastructure Review, Audits, Annual Review of Procedures, and Inspections.</p> <p>Consider whether combining these into one tracking log would streamline the system. Document the process in a Corrective and Preventative Action Procedure under Element 21</p> <p>OFI - The MOECC has recently released Version 2.0 of the DWQMS (February 2017).</p> <p>Consider updating documentation to reflect this (some examples):</p> <ol style="list-style-type: none"> 1. Element 12 reference Essential Suppliers specifically 2. Element 14 specify outcomes of RA are considered/ add to meetings 3. Element 15 procedure reference to long term forecasting / preventative maintenance 4. Element 21 now requires a Preventive and Corrective Action Procedure – full review, reference MOECC BMPs

	Findings	Degree of Conformance	
		Conformance/ Positive	Non-Conformance/ Opportunity for Improvement
<p>DWQMS Requirement, Version 2 February 2017</p> <ul style="list-style-type: none"> ii. documenting the outcome of the review, including the action(s), if any, that will be taken to prevent a non-conformity from occurring, and iii. reviewing the action(s) taken to prevent a non-conformity, verifying that they are implemented and are effective in preventing the occurrence of the non-conformity. iv. The Operating Authority shall continual improve the effectiveness of its Quality Management System by implementing and conforming to the procedure. 			

APPENDIX B

Audit Plan





**TOWN OF AURORA
DRINKING WATER SYSTEM
DWQMS INTERNAL AUDIT 2017
On-Site Audit Plan**

PART 1 - AUDIT INFORMATION

Audit Dates: November 22, 2017

BluMetric Team: S'rana Scholes P. Eng., Auditor

Personnel Contacts: Iustina Voinea

Audit Objectives: To verify conformance with audit criteria (DWQMS), including the documentation and implementation of the quality management system.

Scope: Town of Aurora Water Distribution System
Drinking Water Quality Management Standard Elements 1-21

Criteria:

- Drinking Water Quality Management Standard (DWQMS)

Audit Team Resources:

- Access to employees for interviews
- Access to a work room

Methodology:

The DWQMS internal audit will be performed in accordance with the ISO 19011:03 'Guidelines for quality and/or environmental management systems auditing'. BluMetric utilizes checklists to record evidence, and compile findings. An audit report will be prepared after the audit, and delivered to the client. Audit language will be English.

Tel. 519-742-6685

Fax. 519-742-9810

BluMetric Environmental Inc.

171 Victoria Street North, Kitchener, Ontario, Canada N2H 5C5

www.blumetric.ca



Confidentiality:

All information, data, material, etc. gathered as a part of this project shall be treated as confidential and shall only be discussed with the auditee, unless otherwise directed. All queries on the project from the public, news media, etc. will be referred to the auditee. No contacts will be made to any third party without the full knowledge and approval of the auditee's Project Manager.

PART 2 – AUDIT SCHEDULE

To protect budget and minimize travel expenses, BluMetric has proposed to send a one-person audit team, aiming to complete the internal audit in one day.

DAY ONE – November 22, 2017	
Time	Task
8:00 am	Opening Meeting (229 Industrial Parkway North, Aurora) <ul style="list-style-type: none"> • Verify facility tours • Discuss purpose of audit • Confirm time for Closing Meeting
8:15 am	Facility Tours and Maintenance/ Repair Visit (if possible) Audit - interview with Operators and Program Coordinator <ul style="list-style-type: none"> • (elements 2, 6, 8, 9, 11, 13, 15, 16, 17, 18)
11:00 am	Interview with Water/ Wastewater Supervisor / QMS Rep <ul style="list-style-type: none"> • (elements 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21)
12:00 pm	<i>Break – Lunch & Auditor Preparation</i>
12:30 pm	Interview with Manager of Operations and Services/ QMS Implementation Lead <ul style="list-style-type: none"> • (elements 2, 4, 5, 9, 10, 12, 14, 15, 18, 20, 21)
1:30 pm	Interview with Director of Infrastructure and Environmental Services/ Top Management/ QMS Sponsor <ul style="list-style-type: none"> • (elements 3, 12, 14, 20)
2:30 pm	Interview with Program Coordinator Water/ Wastewater/ Stormwater <ul style="list-style-type: none"> • (elements 2, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21)
3:00 pm	<i>Break – Auditor Preparation</i>
3:30 pm	Closing Meeting <ul style="list-style-type: none"> • Discuss Positive, Opportunities, Non conformances • Discuss Timing for completion of Non conformances

APPENDIX C

Opening/Closing Meeting Sign in Sheet



Ministry of the Environment and
Climate Change

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

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

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



December 8, 2017

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

Attention: Jim Tree, Manager of Operations Services

**RE: Aurora Distribution System (260003227)
Drinking Water Inspection Report 1-F91E8**

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 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 and Climate Change 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 Town of Newmarket staff for the assistance afforded to me during this compliance assessment. If you have any questions or concerns please contact myself or Craig Seabrook, Drinking Water Program Supervisor, Central Region at 705-739-6392.

Yours truly,



Jennifer Moulton

Provincial Officer
Central Region Water Inspector
Safe Drinking Water Branch
Ministry of the Environment & Climate Change
Phone: (905) 427-5618

ec:

Lindsay Hayworth, Water & Wastewater Supervisor
Iustina Voinea, Waster & Wastewater Program Coordinator, Aurora
Ben Longstaff, Lake Simcoe Conservation Authority
Bernard Mayer, Manager of Health Protection, York Region Health Department
Tanya Fishenden, Admin Clerk, Safe Water Team, York Region Health Department
Craig Seabrook, Supervisor, York Durham District Office, MOE



Ontario

Ministry of the Environment and Climate Change

TOWN OF AURORA DISTRIBUTION SYSTEM Inspection Report

Site Number:	260003227
Inspection Number:	1-F91E8
Date of Inspection:	Nov 17, 2017
Inspection by:	Jennifer Moulton

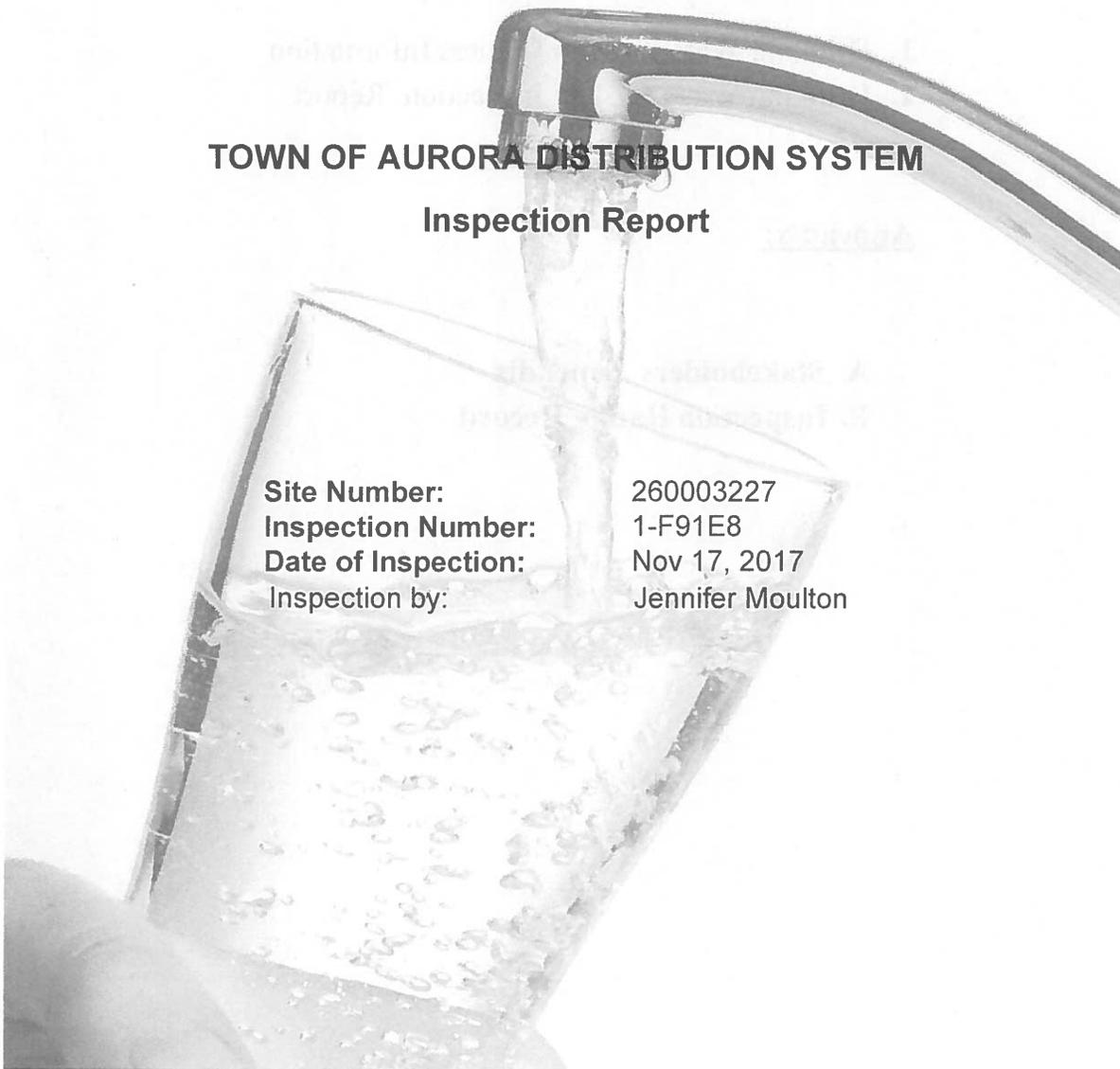




TABLE OF CONTENTS

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

Type: Coordinator **Name:** Iustina Voinea
Phone: (905) 727-3123 **Fax:** (905) 727-7616
Email: ivoinea@aurora.ca
Title: Program Coordinator Water, Wastewater, Stormwater

INSPECTION DETAILS:

Site Name: TOWN OF AURORA DISTRIBUTION SYSTEM
Site Address: 100 JOHN WEST WAY AURORA L4G 6J1
County/District: Aurora
MOECC District/Area Office: York-Durham District
Health Unit: YORK REGION HEALTH SERVICES DEPARTMENT
Conservation Authority:
MNR Office:
Category: Large Municipal Residential
Site Number: 260003227
Inspection Type: Announced
Inspection Number: 1-F91E8
Date of Inspection: Nov 17, 2017
Date of Previous Inspection: Jan 16, 2017

COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point **Sub Type:**

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 62,400. 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.

On November 17, 2017, Provincial Officer, Jennifer Moulton conducted an announced on-site inspection of the Town of Aurora Distribution System. Documents pertaining to the system were reviewed both on-site and off-site following the physical inspection.

Information and assistance with the inspection was provided by Town of Aurora staff. Data was reviewed for the inspection period of January 1, 2017, to November 1, 2017.

The Town of Aurora Distribution System operates under Municipal Drinking Water Licence (MDWL) No. 115-101, issue No. 4, and Drinking Water Works Permit (DWWP) No. 115-201, issue No. 2.

For the purpose of this report, "the Town" refers to the Corporation of the Town of Aurora and "the Ministry" refers to the Ontario Ministry of the Environment and Climate Change.

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 Emergency Standby Booster Pumping Station, referenced Schedule A of the DWWP, was offline at the time of the inspection and was not visited.

Schedule A of the DWWP also indicates that watermains in the distribution system comprise those set out in the July 3, 2012 Town of Aurora Distribution System document.

Treatment Processes

At the time of the inspection, the Permit was not required to be updated to include watermains that have been added, modified, replaced, or extended as all watermain projects were conducted in accordance with Condition 3 of the Permit.

- **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.**

Six Form 1 documents – Record of Watermains Authorized as Future Alteration were prepared for the Aurora Distribution System during the inspection period. One document was for watermain replacement and the others were for watermain construction.

Treatment Process Monitoring

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

Ontario Regulation 170/03, Schedule 7-2 (3), requires the owner of a large municipal residential system that provides secondary disinfection, to take at least seven (7) distribution samples each week and test immediately for:

- a) Free chlorine residual, if the system provides chlorination and does not provide chloramination, or
- b) Combined chlorine residual, if the system provides chloramination.

Unless one sample is collected each day of the week, four (4) of the samples must be taken on one day of the week and three (3) of the samples are to be taken on a second day of the week, at least 48 hours after the last sample was taken on the previous day in the same week.

The Town of Aurora Distribution System collects grab samples for free and total chlorine residuals while conducting routine distribution microbiological sampling. Grab samples for free and total chlorine residual are also collected at a location within the distribution system twice per week at least 48 hours apart.

Distribution System

- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).**

The DWWP Schedule B, 2.3, requires that all parts of the drinking water system in contact with the 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 documents were reviewed on site and the current AWWA Standard C651 is being followed by the Town.

Operations Manuals

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

Up to date plans and drawings were available for review at the time of the inspection. The Town of Aurora is using Infrastructure Map, a GIS (Geographic Information System) program, to capture and store information pertaining to the distribution system. The data is current and is available to view by operations staff.

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and**

Operations Manuals

Municipal Drinking Water Licence issued under Part V of the SDWA.

Condition 16.0 of Schedule B of the Municipal Drinking Water Licence (MDWL), No. 124-101, lists the items to be included in the operations and maintenance manual.

Logbooks

- **Logbooks were properly maintained and contained the required information.**
- **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

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

The majority of the drinking water components are underground. Extra equipment is stored securely at the operations centre inside the building and within the fenced area. The building and fence are locked with intruder alarms after hours.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**
- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

Water Quality Monitoring

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

In accordance with section 10-2 of Schedule 10 of O. Reg. 170/03, the Town must collect at least eight distribution samples, plus one additional sample for every 1,000 people served by the system, every month with at least one sample taken each week. All samples are to be analyzed for E. coli (EC), total coliforms (TC) of which 25% of the required samples must also be tested for heterotrophic plate count (HPC).

For the current population served by this system, 70 samples are to be collected monthly and analysed for microbiological parameters. Sample data for this inspection period showed that the required number of samples was collected monthly.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

Haloacetic acids (HAA) monitoring is conducted at least once every calendar quarter from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of HAAs, as required by section section 13-6.1 of Schedule 13 of O. Reg. 170/03.

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

Trihalomethane (THM) monitoring is conducted at least once every calendar quarter from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of THMs, as required by section 13-6(1) of Schedule 13 of O. Reg. 170/03.

Water Quality Monitoring

- **All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit were being met.**

The Town was granted regulatory relief for lead sampling under MDWL No. 115-101, section 1 of Schedule D. In exchange of regulatory requirements under Schedule 15.1 of O. Reg. 170/03, the owner was required to collect and test for lead at 20 sampling points that serve private residences and eight (8) sampling points in the distribution system. This was in effect for the December 15, 2016 to April 15, 2017 and June 15, 2017 to October 15, 2017 sampling periods.

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

The chain of custodies, reviewed at the time of the inspection, confirmed that chlorine residual tests were conducted at the same time and same location the microbiological samples were taken.

Water Quality Assessment

- **Records did not show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

During the inspection period, there were 19 occurrences where total coliforms were detected in the distribution system. These exceeded the values set out in Schedule 1 of O. Reg. 169/03. See below in report for the corrective actions taken.

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.**

During the inspection review period, there were 9 adverse water quality incidents (AWQIs) reported. This was due to 19 test results indicating a presence of total coliforms in the distribution system. The Ontario Drinking Water Quality Standard for Total Coliform is not detectable. Resamples were collected and corrective actions taken for all adverse test results until results met the Ontario Drinking Water Quality Standards (ODWQS) for microbiological parameters.

- **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.**

Other Inspection Findings

- **The following items are noted as being relevant to the Drinking Water System:**

Samples collected for microbiological parameters on June 26, 2017 resulted in the presence of total coliforms in four (4) samples, which were reported under one (1) adverse water quality incident (AWQI). Reporting and corrective actions were taken as required under O. Reg. 170/03. The resamples collected resulted in four (4) more AWQIs with a presence of total coliforms in seven (7) samples. The Town was required to continue to resample until the test results for two consecutive sets of samples taken 24 to 48 hours apart were clear or as directed by the Health Unit, as per Section 17-6 of O. Reg. 170/03. All incidents were resolved after two sets of resamples taken on July 4, 2017 and July 6, 2017, were clear.

There was confusion with the Town as to when an AWQI is resolved when multiple adverse locations are recorded under one AWQI. Hence, two separate notices of issue resolution being submitted for the same AWQI. Two out of

Other Inspection Findings

the four original adverse locations were resolved on June 28th, so a notice of issue resolution was submitted at that time for those two locations. The other two adverse locations were resolved on July 6, 2017, and another notice of issue resolution was submitted at that time.

When submitting the notice of issue resolution, only one resolution is required for each AWQI. The AWQI is considered resolved once all adverse locations listed in the AWQI are resolved.

When the Town resolves an AWQI, state all resample AWQI number's associated with the initial AWQI in Section 2B of the Notices of Adverse Test Results and Issue Resolution form (PIBS 4444E). This eliminates the requirement to submit a Section 2B form for every adverse test result associated with one AWQI.

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 RECOMMENDATIONS AND BEST PRACTICE ISSUES

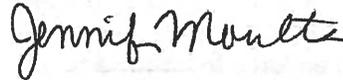
This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

Not Applicable

SIGNATURES

Inspected By:

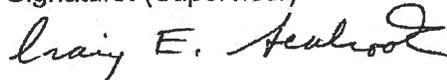
Signature: (Provincial Officer)



Reviewed & Approved By:

Signature: (Supervisor)

Craig Seabrook



Review & Approval Date:

2017 - 12 - 08

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

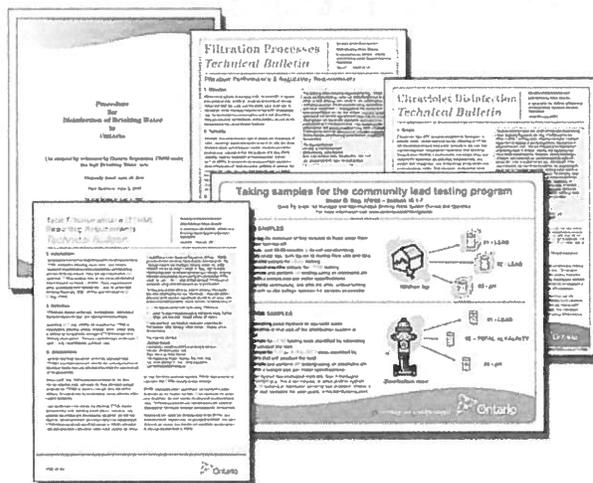
STAKEHOLDER APPENDIX

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. 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.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater and email drinking.water@ontario.ca to subscribe to drinking water news.



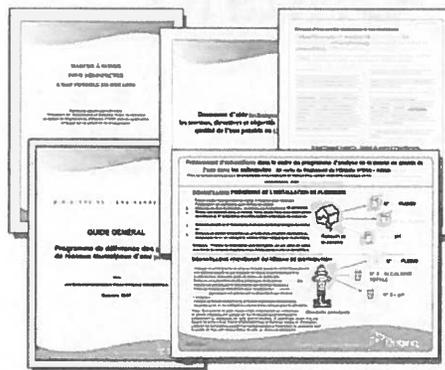
PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

ontario.ca/drinkingwater

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

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment.

Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le Centre d'information au 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.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable ou envoyez un courriel à drinking.water@ontario.ca pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
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	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

ontario.ca/eaupotable



APPENDIX B
INSPECTION RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2017-2018)

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: November 17, 2017
Ministry Office: York-Durham District

Maximum Question Rating: 232

Inspection Module	Non-Compliance Rating
Treatment Processes	0 / 18
Distribution System	0 / 21
Operations Manuals	0 / 28
Logbooks	0 / 18
Certification and Training	0 / 14
Water Quality Monitoring	0 / 63
Reporting & Corrective Actions	0 / 49
Treatment Process Monitoring	0 / 21
TOTAL	0 / 232

Inspection Risk Rating 0.00%

FINAL INSPECTION RATING: 100.00%

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2017-2018)

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: November 17, 2017
Ministry Office: York-Durham District

Maximum Question Rating: 232

Inspection Risk Rating | 0.00%

FINAL INSPECTION RATING: | 100.00%