



Subject: Drinking Water Quality Management System – Management Review
Prepared by: Iustina Voinea, Program Coordinator, Water/Wastewater/Stormwater
Department: Operational Services
Date: May 21, 2019

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 as required by the Safe Drinking Water Act, 2002 and related regulations. The 2018 information audits and inspections highlights are:

- The operation and management of the water system achieved full compliance for 2018
- Municipal Drinking Water Licenses expires June 29, 2021
- The Operational Plan is a document that outlines all 21 elements of the DWQMS.
- Internal Audit, System Audit, Inspections and Management Review are completed annually

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. In response to this recommendation, the Ministry of the Environment, Conservation and Parks developed the Drinking Water Quality Management Standard (“DWQMS”) that applies to owners and operating authorities for municipal drinking water systems. The DWQMS sets out the framework for the development of a Quality Management System. The implementation of the DWQMS is mandated by the provincial government through the Safe Drinking Water Act.

The DWQMS is based on a “Plan”, “Do”, “Check”, “Improve” principle. The Operational Plan provides an understanding of the drinking water system, the roles and responsibilities of the owner and operational staff, procedures to operate and maintain the drinking water system, and a commitment and endorsement by the owner to provide safe drinking water.

In order for the Owner to show their support of the drinking water system and DWQMS, it is required that they provide their endorsement of the Operational Plan.

Analysis

The operation and management of the water system achieved full compliance for 2018.

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.

Staff is pleased to report that 2018 was a successful year in fulfilling legislative requirements, resulting in confidence that the Town’s water system is safe, and both operated and maintained to a very high standard.

Municipal Drinking Water Licenses expires June 29, 2021.

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. A Municipal Drinking Water License (MDWL) was obtained and needs to be renewed every five years. The current license 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.

Some of the key elements include:

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

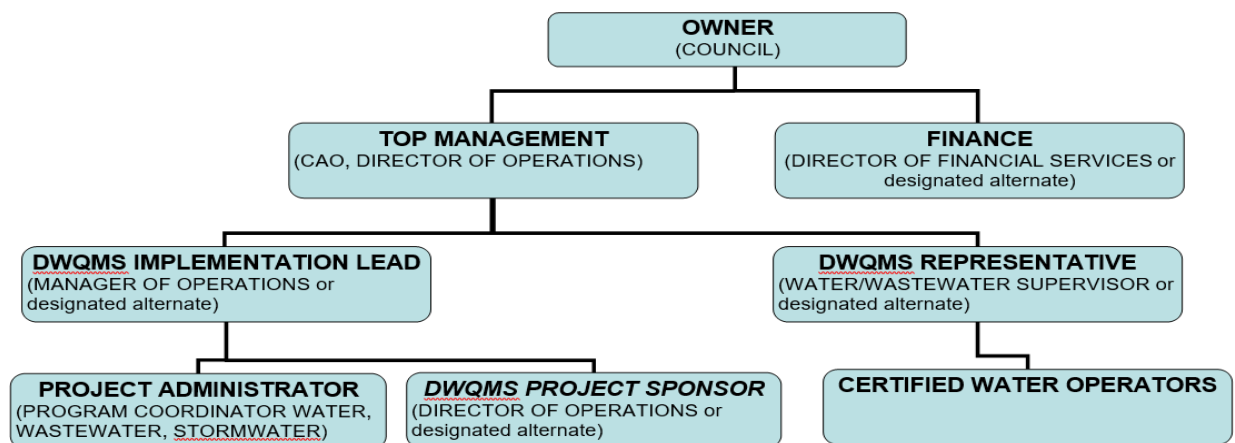
The elements for the commitment, endorsement and organization structure outlining the Corporation’s roles and authorities must be endorsed by Council as the owner of Aurora’s drinking water system.

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 below 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:

- Ensuring that a Quality Management System (QMS) is in place, maintained and meets the requirements of the DWQMS;
- Ensuring that the Operating Authority is aware of all applicable legislation and regulatory requirements; and
- Determining, obtaining or providing the resources necessary to maintain and continually improve the Quality Management System.

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; and
- 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; and
- 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;
- Ensure the systematic progression through the program's action and implementation plans;
- Ensure 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; and
- 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;
- Appoint QMS Representatives;
- Preparation of budgets and programs;
- Assessment of supervisor's personnel performance (annual);
- Ensure adequate staffing is available at all times;
- Recommendation of system improvements;
- Emergency response planning and training; and
- 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;
- Develop procedures and processes for assuring water quality;
- Communication/liaison for the Water Treatment Plants run by the York Region;
- Act on and report incidents of non-compliance;
- Assessment of operators personnel performance (annual);
- Reporting of distribution system performance to the Manager of Operations;
- 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 department budget;
- Maintains and updates QMS as required;
- Identifies, co-ordinates and communicates staff training programs to comply with appropriate legislation;
- Recommends system improvements;
- Emergency response planning, training; and
- Reports on Operations and the QMS to Top Management and the CEO through Management review meeting, on an annual basis, to evaluate the continuing suitability, adequacy, effectiveness and compliance of the DWQMS.

Certified Operators:

- Monitors, maintains and operates the distribution system in accordance with established standard operating procedures;
- Documents all operating activities in accordance with provincial legislation and established operating procedures; files records;
- Reports on and acts on incidents of non-compliance;
- Reports any abnormal conditions to the Supervisor;
- Carry's 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; and
- Regularly communicates to the Drinking Water Quality Management System Representative.

Project Administrator:

- Compiles and builds an electronic program structure in a centralized file;
- Maintains and updates QMS as required; and
- Identifies, co-ordinates and communicates staff training programs to comply with appropriate legislation.

Internal Audit, System Audit, Inspections and Management Review are conducted annually

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 AET Group on September 17, 2018. All 21 Elements of Aurora's Operational Plan were audited to ensure "we do what we say we do".

The external accreditation audit is required to be performed annually by a MECP - approved auditors. NSF conducted an off-site system audit on June 11-12, 2018. All 21 Elements of Aurora's Operational Plan were audited to ensure "we do what we say we do".

On November 27, 2018, Ministry of the Environment, Conservation and Parks conducted an unannounced inspection of the Town of Aurora's Drinking Water Distribution System. The primary focus of this inspection is to confirm compliance with the Ministry of the Environment, Conservation and Parks' legislation, as well as evaluate conformance with Ministry drinking water policies and guidelines during the inspection period.

The DWQMS 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 March 18, 2019, in which the audit and inspection results were reviewed. During the meeting Management discussed incidents of adverse drinking water testing, operational performance, changes that could affect the QMS, resources needed to maintain the QMS and results of the infrastructure review. The Management Review minutes, Attachment "1" are attached.

Advisory Committee Review

Not applicable.

Legal Considerations

Council and the Town staff referenced in this report have a duty to exercise the level of care, diligence and skill of a reasonably prudent person and a duty to act honestly,

competently and with integrity to ensure the protection and safety of the users of the drinking water system. Failure to do so is an offence under the Act.

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 DWQMS and will be adjusted as required to ensure adequate funding is in place.

Communications Considerations

The high quality and safety of Aurora's drinking water is a good news story. Results of water testing are shared with the Town via News and Notices on the website, social media and Council Highlights.

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

Not applicable.

Conclusions

The Town has completed all the requirements to maintain its accreditation under the DWQMS for 2018. 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 (March 18, 2019)

Previous Reports

OPS19-002 2018 Annual Drinking Water Quality Report, February 12, 2019

Pre-submission Review

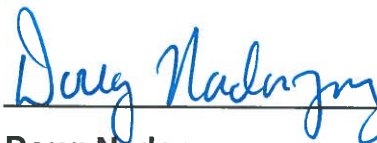
Agenda Management Team review on May 1, 2019

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

JOC, North Boardroom
Date: March 18, 2019
Time: 2:00 pm – 4:00 pm

Prepared by: Iustina Voinea
Reviewer: Lindsay Hayworth

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 NCR/OFI tracking form.

Agenda Items Reviewed (Please do not delete any headings and document each item discussed)

1. Review of action items from previous meeting.
 - a) A summary on the number of adverse results from other municipalities for 2017 was completed
 - b) The Director of OPS attended the Emergency Table Top Exercises on October 24, 2018 and will be invited to future Emergency Preparedness meetings
 - c) A wallet size emergency list for water operations was requested. An APP on the phone is used to view the emergency contact list by water staff and management.
 - d) The DWQ policy was posted on the website
 - e) Backflow prevention program status – this action item is not closed. Updates on the program:
 - DFG Consulting was hired to help with program development and implementation. Some forms and communication material were prepared for the program.
 - A report to council was prepared and will be presented to council on April 16, 2019 along with a presentation on the program.
 - The consultant updated the bylaw, that is currently under review by legal.

Action Item: No action item.

2. Incidents of Adverse Drinking Water Tests

There were 11 adverse drinking water tests results in 2018. No location had two consecutive adverse results. The chlorine residual values were good in all instances. The adverse results were reported to Ministry of the Environment, Conservation and Parks (MECP) and the York Region Medical of Health as per legislative requirements.

Action Item: No action item.

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



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- a) 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 in 2017.
- b) A complete redo of the risk assessment is due in 2020.
- c) Changes to Element 8 - Risk Assessment Outcomes:
 - 1. In the past years the Town had a low number of watermain breaks. The rating for 'Likelihood' for watermain breaks was reduced from 5 to 4, to reflect current situation.
 - 2. Two hazards, "theft and vandalism," were combined and assessed together. During the review it was acknowledged that theft may happen more often than vandalism, therefore the two hazards were separated. Each hazard was individual reviewed and ranked.
 - 3. The water booster station is off line, however it goes through regular scheduled maintenance. The risk that the station is not functioning is low, therefore the Likelihood for malfunction was reduced from 3 to 2.
 - 4. The Element 8 of the operational plan was updated accordingly.
- d) It was discussed the watermain lining impact on the number of watermain breaks. It is a good program to have, however the number/location/length of watermain to be lined is based on the number and frequency of the breaks in one area.
- e) It was discussed that we may need to use the booster station in the event of a watermain break.
- f) The discussion on water loss was extended to comparison of Town's water loss with other neighbouring municipalities and York Region.

Action Item: What is York Region's Water loss?

4. Internal and Third Party Audit Results and Incidents of Regulatory Non-Compliance: System Audits, Internal Audit and MECP Inspection.

- The DWQM System Internal Audit was conducted on September 17, 2018 by AET Group Inc., an external accredited auditor. Six opportunities for improvement were identified during the audit.

Internal Audit -- NCR and OFI		
ELEMENT #	NCR/OFI Details	Action Details
E 5 - Document and Records Control	Consider revising hard copy locations so they are accurate. Several hard copies of documents were not retrieved from the location listed on the Record Control Table.	At the time of the audit, the policy had as locations for hard copy documents the individual personnel filing cabinets. To allow more flexibility with storage, the locations of the filing cabinets are categorised as: 'JOC filling cabinets - Second floor' and 'JOC Water Operations filling cabinets - First floor'
E 6 - DWQMS System	Booster station is no longer online. Consider updating the system description to reflect the current status of this booster	Element E6 - Drinking Water System was updated to include a statement that the booster stations is not in use.



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	station.	
E 14 - Review and Provision of Infrastructure	Consider creating a record that details the results of the Infrastructure Review.	The template for Infrastructure Rehabilitation meeting minutes was updated to include: 'Action Items'. This template will be used for future meeting records. The minutes should clearly state if there are no action items.
E 15 - Infrastructure Maintenance, Rehabilitation and Renewal	Consider providing more detail on how the planned maintenance (e.g. frequency, and method) activities are to be performed.	E 15 was updated to include a Table with existing planned maintenance activities and their frequency.
E 19 - Internal Audit	Consider including the qualifications required for internal auditors in the Internal Audit procedure.	PRO 008 was updated to include auditor's qualifications.
E 20 - Management Review	Ensure all required discussion items are documented in Management Review meeting minutes, even if there was nothing to discuss on that particular sub-element (see sub-elements a, h & j).	The Management Review meeting minutes template was updated to include Action items for each Agenda item. Also the following statement was added as a reminder to document all items covered during the meeting: 'Please do not delete any headings and document each item discussed'

- NSF an external Accreditation Body conducted the DWQM System third party Audit on June 11-12, 2018. One OFI was identified during the audit.

NSF VERIFICATION Audit - OFI		
Element #	OFI - Details	Action Details
E 21 - Continual Improvement	It was recommended to better use the corrective action	Part of the annual review of the Operational Plan, the Preventive and Corrective Action Procedure was updated for version 2 of the DWQMS.

- MECP Inspection was conducted on November 27, 2018: - Final Inspection rating 100%.

MECP Inspection - Recommendations		
Element #	Recommendation- Details	Action Details
E 15 - Infrastructure Maintenance, Rehabilitation and Renewal	Create an SOP to reflect the valve exercising program	Procedure QMS-PRO-029 Valve exercising v1 was created. Input from operators was received at the tailgate meeting on Dec 18, 2018 and the final revision was reviewed at the meeting on Jan 23, 2019



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E 15 - Infrastructure Maintenance, Rehabilitation and Renewal	Create an SOP to reflect the flushing program	Procedure QMS-PRO-028 Flushing v1 was created. Input from operators was received at the tailgate meeting on Dec 18, 2018 and the final revision was reviewed at the meeting on Jan 23, 2019
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Action Item: All OFIs and recommendations from audits and inspections are closed. There are no action items.

5. Results of Emergency Response Testing

- The emergency preparedness training – Table top exercise was conducted on Oct 24, 2018. The scenario on Backflow from an industrial property to Municipal drinking water system was prepared and presented by Lindsay Hayworth.
- One action item was identified during this meeting:

Findings	Action Taken	Action Details
<p>E 18 - Emergency Management</p> <p>It was recommended to Revise PRO 016 specifically the levels of emergency and to clarify operational steps to be taken in case of emergency</p>	<p>The procedure was updated.</p>	<ol style="list-style-type: none"> 1- The number of levels of emergencies was reduced from four to three LEVEL I – Minor Emergency LEVEL II – Significant Emergency LEVEL III – Catastrophic Disaster / Major Emergency 2- The information was restructured for easy reference 3- New sections: Incidents with advanced warning; Acceptable levels of service 4- An appendix was created for this procedure. The appendix includes the Chain of Command, Responsibilities and the three levels of emergencies.

- Town staff has conformed to the requirements of Element # 18 of the Ontario Ministry of the Environment, Conservation and Parks' Drinking Water Quality Management Standard (DWQMS).

Action Item: The Procedure need to be finalized and training to be provided to staff. CAO to be invited to the Emergency Table Top Exercises.

6. Operational Plan Currency, Content and Updates

- Some Operational Plan Policies and Procedures were reviewed and updated as part of responding to non-conformances and OFIs from audits.
- All DWQMS policies, SOPs and Procedures have been reviewed and updated to meet DWQMS v2 requirements. On August 22, 2018, the updates were discussed and agreed upon



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with Supervisor of Water/Wastewater and Manager of Operations.

- There are two new procedures in place: Procedure QMS-PRO-029 Valve exercising v1 and Procedure QMS-PRO-028 Flushing v1.
- The Operational Plan to be presented to council for endorsement with the Council Report on the Management Review of the Drinking Water Quality Management System.

Action Item: The Operational Plan to be presented to council for endorsement.

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

- Management Team reviewed Element # 2. The Quality Management System Policy statement was reaffirmed.

Action Item: No Action Items.

8. Drinking Water Quality Trends

- O.Reg. 169/03 was updated; the limit for Arsenic was reduced from 0.025mg/l to 0.01 mg/l.
- In 2018 there were discussions on reducing the Maximum Acceptable Concentration of Lead in DW from 0.010 mg/l to 0.005 mg/l. In March 2019 Health Canada released the 'Guidelines for Canadian Drinking Water Quality' - Technical Document for Lead. This document has the new concentration for lead, at the consumer's tap, 0.005 mg/l.
- A new regulation was enacted under the Safe Drinking Water Act, O. Reg 205/18 - Municipal Residential Drinking Water Systems In Source Protection Areas. This regulation applies to DW systems located within a source protection area and new wells or changes to existing wells located in the source protection area.

Action Item: No Action items.

9. Changes That Could Affect the QMS

- A Consultant will conduct the training/presentation to Councillors on Drinking Water Quality Management Standard – part of Standard of Care under Safe drinking Water Act. Operational Services staff is working with Clerks Office staff to set a date for the presentation.
- Ministry of the Environment, Conservation and Parks is updating the Drinking Water licences and permits. The updated conditions will come in effect with the renewed licences. Town's licence and permit expire in June 2021.
- New limit for lead will affect sampling in residential plumbing. During last two sampling periods December 2016 – April 2017 and June 2017-October 2017 we had one sample in private plumbing (in each period) that exceeded the new MAC for lead 0.005mg/l. In 2017, the Town applied and received a regulatory relief for lead sampling and testing in residential plumbing, for the period December 2017 to October 2019. This summer we will apply again for regulatory relief for lead sampling and testing in residential plumbing.

Action Item: A date to be set for Councillors training/presentation on Drinking Water Quality Management Standard – part of Standard of Care under Safe Drinking Water Act.

10. The Resources Needed to Maintain the QMS

- The requested budget to maintain QMS, \$20,000.00, will be presented to Council in Spring 2019, for approval.
- 2018 Annual Water Quality Report was completed and presented to Council On February 12, 2019. The report was posted on Town's website before February 28, 2019.



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- Backflow prevention program – a consultant (DFG Consulting) was hired to develop a backflow prevention program. Operational Services Staff prepared a council report for April 16 meeting to introduce the program. On the same day the consultant will have a presentation on the Backflow Program, legislative requirements, steps for implementation and responsibilities. Al talked about the implementation steps. First is the report to council along with the presentation on the program followed by the amendment to the bylaw, approval of staff.

Action Item: A copy of the backflow prevention Bylaw and the 2014 report to council to be sent to Doug.

11. The Results of the Infrastructure Review

- There were no action items from the Infrastructure Review Meeting.
- A new requirement of the DWQMS v2 is to include the results of the risk assessment to the Infrastructure review meeting.
- It was discussed the risks posed by backflow from ICI including Town's facilities and the need to install Backflow Preventers on Town's properties and/or testing of the existing ones.

Action Item:

12. Operational Performance

- In the past, the valve maintenance services were contracted out. Currently the valve maintenance/ exercising is done in house, over a four (4) year period. Last year 338 out of 2157 valves were exercised, this represents 16% of the total valves.
- It was reported twenty-seven (27) watermain breaks for last year, from which twenty (20) were on private side and one (1) due to construction. There were six (6) Town's watermain breaks on: Devlin Place, 328 Kirkvalley Cres, 245 Edward Street, 70 Centre Street, 94 Catherine Ave, Wellington St West East of McLeod, 72 Dunning Ave.
- Zero frozen services.
- 1600 hydrants were checked by the contractor. Six hydrants were repaired last year, four by the contractor and two in house. The fire hydrants are replaced, as needed, by the contractor that does the maintenance.
- 96 water boxes were repaired last year.
- 1 water sample repaired
- 1 valves replaced
- 1 water service repairs
- Unidirectional flushing was done from September 4 to September 7
- It was discussed the private hydrants and the need to have them tested. The Town has approximately 300 private hydrants. Lindsay mentioned that City of London checks the private hydrants and charge the owner a fee.

Action Item: Operational Services staff to look into options to have the private hydrants tested.

13. Consumer Feedback

- Top Management reviewed the 2018 Water Quality Complaints report.
- 31 water quality complaints recorded in 2018, most of them related to discoloration. In two instances an operator was sent out to investigate. In both instances, the chlorine residuals were good.



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- 50 low pressure calls were on private side maybe due to water softeners. One call was from a resident living in an un-assumed area. Complaints and low water pressure logs are maintained.

Action Item: No action items.

14. Staff Suggestions

- The water/wastewater operators' certificates and licences were moved from the IES Room to the first floor hallway wall.
- The unidirectional flushing program to be continued during the night.
- Extend the hydrant maintenance program to the private hydrants.

Action Item: Extend the hydrant maintenance program to the private hydrants.

Summary

All action Items are identified on the NCR/OFI tracking form. 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