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TO:	CHAIR AND MEMBERS CIVIC WORKS COMMITTEE MEETING ON NOVEMBER 3, 2015
FROM:	JOHN LUCAS, P.ENG. DIRECTOR - WATER AND WASTEWATER
SUBJECT:	2015 EXTERNAL AUDIT OF LONDON'S DRINKING WATER QUALITY MANAGEMENT SYSTEM AND 2015 MANAGEMENT REVIEW

RECOMMENDATION

That, on the recommendation of the Director - Water and Wastewater, the following report on the 2015 external audit of London's Drinking Water Quality Management System, and the subsequent 2015 Management Review meeting, **BE RECEIVED** for information.

PREVIOUS REPORTS PERTINENT TO THIS MATTER
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[2013 External Audit of London's Drinking Water Quality Management System and 2013 Management Review](#)

[2014 External Audit of London's Drinking Water Quality Management System and 2014 Management Review](#)

BACKGROUND

Quality Management Systems (QMSs) can be defined as sets of interrelated elements (e.g. policies and procedures) that direct and control the way a facility operates with regard to quality. A QMS is a way of formally ensuring that an organization is consistently in control of the quality of the product or services that it supplies.

Following the Walkerton tragedy of May 2000, Justice Dennis O'Connor recommended that *"the MOE should initiate the development of a drinking water quality management standard for Ontario."* The Ministry of the Environment (MOE) led the development of a Drinking Water Quality Management Standard (DWQMS) which combined elements of existing ISO 9001 and HACCP standards. Through the Municipal Drinking Water Licensing Program, the MOE mandated that municipal drinking water systems develop and implement Quality Management Systems that met the requirements of Ontario's DWQMS. An Operational Plan was therefore developed for London's drinking water system based on the 21 Elements of the DWQMS.

In June, 2013, the City of London's Drinking Water Quality Management System received its first On-Site Verification Audit by third-party auditors SAI Global Assurance Services. As a result, the City of London became fully accredited as the operating authority for London's drinking water system under Ontario's Municipal Drinking Water Licensing Program.

On-Site Verification Audits are performed every 3 years, with 12-month Off-Site Surveillance Audits being performed in the intervening years. In June, 2015, SAI Global conducted a 12-month Off-Site Surveillance Audit of London's Drinking Water Quality Management System. The purpose of the audit was to ensure conformity with all 21 elements of the approved Operational Plan.

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DISCUSSION

Following the 2015 Off-Site Surveillance Audit, SAI Global reported that *“The overall effectiveness of The Corporation of the City of London’s Quality Management System is considered effective”* and recommended *“Maintenance of existing accreditation after response to corrective action requests has been deemed acceptable to SAI Global.”*

The *“corrective action requests”* referred to by the auditor relate to one nonconformity that was identified during the audit. The nonconformity was identified as a minor nonconformity, which related to Element 5 - Document and Records Control. The auditor reported that:

“The 10 year retention time of Operational Plans that were the subject of an audit by the accreditation body, as required by the Director’s Directions, 2007 Section 4.0.1 has not been identified on QMS Table 05-02 (rev.003, 2015-03-30). Corrective action from NCR 2014-01 resulted in the previous version of the Record Master List (QMS Form 05-F3 rev.002, 2014-09-01) being revised to include this information.”

The Record Master List (QMS Table 05-02) lists water system records and the minimum retention time for each of those records. Operational plans that were the subject of an audit by the accreditation body must be retained for a minimum of 10 years. The auditor noted that this 10-year retention requirement was not listed on QMS Table 05-02. The auditor also noted that this same nonconformity was identified in the previous audit, and had been corrected – yet it appeared again.

Following receipt of the audit report, staff were required to submit a Nonconformance Report (NCR) to the Auditor for the identified nonconformity. Staff were required to detail the root cause of the nonconformity, the action taken to correct the incident and contain the problem, and the systemic (long term) corrective action(s) planned or taken to eliminate the root cause to prevent recurrence.

The immediate cause of non-conformance was determined first - when staff updated the Record Master List on 2015-03-30, they mistakenly started with a copy of Revision 001, rather than the current version, Revision 002. Because of this error, updates that were incorporated into Revision 002 on 2014-09-01 were left out of Revision 003.

The root cause identified was that the electronic file management system stored current and previous revisions of QMS records in the same location, increasing the probability of mistakenly using an obsolete version of a record when making updates. Though human error played a large role, the file management system could have been designed so as to limit the probability of such an occurrence.

The electronic file management system was restructured to separate obsolete versions of QMS documents from the current versions.

On July 8, 2015 SAI Global reported that *“Corrective actions taken to resolve the non-conformance have been reviewed and found to be fully satisfactory in meeting the requirements of DRINKING WATER QUALITY MANAGEMENT STANDARD (DWQMS):2006.”*

On September 24, 2015, the Top Management team of the accredited operating authority for London’s water system (the Director - Water and Wastewater, and the

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Division Managers of Water Engineering and Operations) held the annual Management Review for London's Drinking Water Quality Management System. The results of the Management Review are summarized in Appendix 'A'.

SUMMARY

Section 19 of the *Safe Drinking Water Act, 2012* imposes a statutory standard of care on the "owner of a municipal drinking water system, and every person who, on behalf of the municipality, oversees the accredited operating authority of the system or exercises decision-making authority over the system". In recommending the Standard of Care provision, Justice O'Connor stated that "*the fact that a municipality has an accredited operating agency will do much to satisfy the standard of care.*"

In June, 2015, a 12-month Off-Site Surveillance Audit was completed for the Quality Management System of London's drinking water system. The auditor reported that "*The overall effectiveness of the Corporation of the City of London's Quality Management System is considered effective*". In addition, one minor nonconformity was identified and was subsequently addressed to the satisfaction of the auditor.

As a result of the audit, the City of London has maintained its accreditation as the operating authority for London's drinking water system under Ontario's Municipal Drinking Water Licensing Program.

PREPARED BY:	RECOMMENDED BY:
JOHN SIMON, P.ENG. DIVISION MANAGER, WATER OPERATIONS	JOHN LUCAS, P.ENG. DIRECTOR - WATER AND WASTEWATER
REVIEWED & CONCURRED BY:	
JOHN BRAAM, P.ENG. MANAGING DIRECTOR OF ENVIRONMENTAL AND ENGINEERING SERVICES AND CITY ENGINEER	

CC:

Art Zuidema – City Manager
 Roland Welker – Division Manager – Water Engineering
 Dan Huggins - Water Quality Manager

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APPENDIX 'A'

Report on QMS to Council

Management Review Meeting of September 24, 2015

RESULTS OF MANAGEMENT REVIEW	REPORT (where applicable include Personnel Responsible & Due Date)
Summary of Management Review	<p>The 2015 Management Review meeting was held between 1:00 pm and 4:00 pm on September 24, 2015. The meeting was attended by John Lucas, Director – Water and Wastewater, Roland Welker, Division Manager – Water Engineering, John Simon, Division Manager – Water Operations, and Dan Huggins, Water Quality Manager and QMS Representative. The agenda items discussed were, a) Incidents of regulatory non-compliance, b) Incidents of adverse drinking water tests, c) Deviations from critical control point limits and response actions, d) Efficacy of the risk assessment process, e) Results of audits (internal and external), f) Results of relevant emergency response testing, g) Operational performance, h) Drinking water quality trends, i) Follow-up action items from previous management reviews, j) Status of management action items identified between reviews, k) Changes that could affect the QMS, l) Summary of consumer feedback, m) Resources needed to maintain the QMS, n) Results of the infrastructure review, o) Operational Plan currency, content and updates, p) Summary of staff suggestions, and q) New Business - Other issues that impact on the quality management system.</p>
Deficiencies Identified	<p>1) Concern was expressed regarding our ability to ensure the effectiveness of London's Backflow Prevention Program. Though contamination due to backflow events represents a serious risk of water contamination in distribution systems, the Backflow Prevention Program is not subject to the same level of oversight as other aspects of London's Water System operations (MOECC Inspections, Internal and External DWQMS audits).</p> <p>It was agreed that it would be beneficial for the administrators of London's Backflow Prevention Program to implement elements of a Quality Management System for the program.</p> <p>Implementation should involve investigating other successful municipal backflow prevention programs, comparing London's program against the identified best practices of others. A formal plan should be developed, with</p>

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identified performance benchmarks, to optimize the effectiveness of London's Backflow Prevention Program by emulating the identified best practices. Regular audits should be performed to verify whether London's Backflow Prevention Program is operating in accordance with the devised plan. The auditing firm used to perform the internal audits of London's DWQMS could be used for that purpose in conjunction with the annual DWQMS audits.

It was agreed that the proposal should be discussed with the City of London Building Division (the program administrators).

- 2) The June, 2015 12-Month Surveillance Audit of the QMS identified one (1) nonconformity and two (2) opportunities for improvement. The April, 2015 Internal Audit of the QMS identified five (5) nonconformities and seven (7) opportunities for improvement.
- 3) Plans had been made to coordinate with OCWA (Huron) to perform a test of the Arva Pumping Station Bypass Procedure in September, 2015. This test has been postponed due to a broken valve operating gear that was identified by OCWA as part of the preparations for the test. It is anticipated that the valve will be repaired in October, 2015 and the emergency test should be able to proceed in November, 2015.
- 4) The extreme cold experienced in the winter of 2014, and especially 2015 created many challenges for the Water Operations Division, and for many Londoners due to the high number of frozen water services.
- 5) In the 2014 Management Review, it was decided to enlist the services of an Engineering Consultant to review the entire chlorination process at the Springbank reservoirs. This project was undertaken in 2015. The consultant first recommended the purchase and installation of new chlorination equipment. The new equipment has been purchased and delivered, and is not yet installed.

Part 2 of the consultant's task is to evaluate the effectiveness of the current chlorination regime and recommend possible modifications to improve effectiveness where identified. This has not yet been completed.
- 6) The effectiveness of London's program for recording consumer feedback was discussed and possible deficiencies were identified.
- 7) One of the opportunities for improvement that was identified in the April, 2015 internal audit was as follows:
"The City Council had a significant turnover in the last election. The Endorsement of the Operational Plan has not changed. Consider having the new Council endorse the

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	<i>Operational Plan.”</i>
Decisions Made / Action Items	<ol style="list-style-type: none"> 1) It was agreed that the proposal to introduce Quality Management System elements into London’s Backflow Prevention Program should be discussed with the City of London Building Division (the program administrators). 2) Dan Huggins to address the Nonconformities and Opportunities for Improvement that were identified through the audits and update the Operational Plan accordingly. 3) Dan Huggins to coordinate a test of the Arva Pumping Station Bypass Procedure in November, 2015. 4) It was decided that a Council Report should be presented to the January 5, 2016 meeting of the Civic Works Committee detailing the extent of the 2015 frozen services situation, the response to that situation, the remediation efforts so far, and the customer service response plans for future frozen service incidents. 5) New chlorination equipment to be installed after the demand for re-chlorination ceases in the fall of 2015, and before the need to begin re-chlorination in the spring/summer of 2016. The recommendations that will be presented in Part 2 of the consultant’s report will need to be assessed for potential implementation. 6) John Simon to review London’s program for recording consumer feedback and compare against industry Best Practices. 7) The Operational Plan for London’s water system to be submitted to City Council for re-endorsement in November, 2015.