

Attachment 2: Drinking Water Quality Management System – Summary of Management Review

Review – 2021 Operational Performance

The purpose of this summary is to provide Council with mandatory updates regarding the City of Vaughan's Drinking Water System's performance as mandated through Element 20 of the [Drinking Water Quality Management Standard \(DWQMS\)](#).

	Requirement of Element 20 - Management Review	Achieved?	Conforms to
1	<p>Ensure that a Management Review is conducted at least once every calendar year</p> <p>Completed on June 3, 2021 and November 17, 2021 with Top Management and the Owner representative for the 2021 operational year.</p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>
2	<p>Consider the results of the Management Review and identify deficiencies and action items to address the deficiencies</p> <p>Completed. See the Management Review Summary below.</p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>
3	<p>Provide a record of any decisions and action items related to the Management Review including the personnel responsible for delivering the action items related and the proposed timelines for their implementation</p> <p>All decisions and action items discussed during the Management Review have been captured through record of minutes. Action follow-up is tracked.</p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>
4	<p>Report the results of the Management Review, the identified deficiencies, decisions, and action items to the Owner (Council)</p> <p>Completed through this report, submitted for information on February 8, 2022.</p>	<p>Yes</p> <p>✓</p>	<p>Yes</p> <p>✓</p>

Management Review Summary

a) Annual Review of QMS 02- Quality Management System (QMS) Policy

The QMS Policy was reviewed with all attendees.

Action Items: No action items pending from the 2021 report.

b) Incidents of regulatory non-compliance

There was one (1) incident of regulatory non-compliance identified in the Ministry of Environment, Conservation and Parks (MECP) inspection on February 8, 2021. On July 29, 2020, the City notified the Ministry that an unauthorized live tap may have been made to the City's water main on Eagle Rock Way without a MECP certified Drinking Water Operator present. On January 28, 2021, Condrain Group was charged under the City's Water By-law 177-2016.

Action Item: There was one (1) action item issued and has been implemented. The City's Water By-law 177-2016 regulates private connections to the City's water distribution system to establish an effective method to measure and charge for water consumption, to conserve water, to prohibit practices and other actions that put the integrity of the water distribution system at risk, and to establish a system of recourse and penalties.

c) Incidents of adverse drinking water tests

Indicators of adverse water quality are immediately reported to York Region Public Health and the MECP's Spills Action Centre and appropriate corrective action is taken. In 2021, there were a total of 60 water quality reportable events, all of which were immediately addressed as required by the regulation. None of these events resulted in the integrity and safety of the drinking water supply being compromised. It was identified by the Water Operations group at the November 17, 2021 Management Review that the City's sampling stations experienced a significant number of adverse water quality incidents (AWQI) for total coliforms present. The Water Operations team resampled to ensure the Ontario Drinking Water Quality Standards per Ontario Regulation 169/03 were met. The root cause was attributable to water sampling station enclosures being susceptible to vegetation and insect intrusion throughout the spring to fall months when temperatures are higher. The Water Operations team implemented a number of actions including fitted caps on the spigots of the sample stations to prevent re-entry of insects, brushing out the station with 1% chlorine solution, and replacing interior plumbing hardware. The City met with the City of Markham and City of Richmond Hill as well as the sample station manufacturer in September 2021 to discuss their approaches and corrective actions related to this issue. The Water Sampling Standard Operating Procedure was revised to not drain the sample stations during the spring to fall months. A breakdown of which AWQIs are from the new sampling stations is included in the minutes.

Action Item: No action items pending from the 2021 report.

d) Deviations from Critical Control Points (CCP)

Critical control limits have been established based on known critical control points identified through Risk Assessment outcomes. The two identified CCP's are related to potential contamination during a watermain break. There was no deviation from the two identified CCP's.

Action Item: No action items pending from 2021 report.

e) The effectiveness of the risk assessment process

Verification of risks to public health and the Drinking Water System is conducted at least once every calendar year and assessed at least once every thirty-six (36) months. The Annual Review of the Risk Assessment was held on March 26, 2021 and April 8, 2021. Water Operations staff participated in the review process by ranking the identified potential hazards. The ranking was updated for the following hazards: Bulk Water Services, Watermain Flushing, Exercising Valves, Flooding at Woodland Acres station, Flooded Chambers, Chemical Spill Impacting Source Water, Terrorist Threat/Vandalism, and Pressure Fluctuations due to power failure at Maplewood Booster Station. One (1) new Critical Control Point (CCP) was identified: Terrorist Threat/Vandalism. Four (4) new potential hazards were identified including Pandemic, Unauthorized Operation of Valves, Return to Service of Isolated Watermain, and Nitrification in the Distribution System.

Action Item: No action items pending from 2021 report.

f) Internal and third-party Audit results

Internal and third-party audits assess how the City meets the requirements of the Drinking Water Quality Management Standard (DWQMS). The 2021 Internal Audit was held October 21 and 22, 2021. Zero (0) instances of non-conformance were identified and seven (7) opportunities for improvement (OFI) were identified and are in the process of being implemented. The Ministry of the Environment, Conservation, and Parks (MECP) approved Drinking Water Quality Management System Auditors, SAI Global, performed a system audit on April 28, 2021 and a verification system audit on June 10 and 11, 2021 which awarded the City re-accreditation of all 21 elements of the DWQMS. Zero (0) instances of non-conformance were identified and six (6) opportunities for improvement have been reviewed and are being incorporated into the system.

Action Item: There are 13 OFIs to be implemented in 2022.

g) Results of emergency response testing

Testing of emergency response ensures that staff are prepared for emergency situations and allows the City to identify what could happen in the Drinking Water System to cause an emergency. The DWQMS requires the City to complete emergency response testing at least once every two (2) years. A desktop exercise was conducted for water-related emergencies in Q4 2021.

Action Item: No action items pending from 2021 report.

h) Operational performance

Annual MECP inspections ensure the City meets the requirements identified in applicable legislation and regulations. A MECP Inspection was held on February 8, 2021 (unannounced) for the February 1, 2020 to January 31, 2021 inspection period. A MECP site visit was held at the Maplewood Booster Station on August 20, 2021 and subsequent document/record review was completed on November 22, 2021 for the January 31, 2021 to August 20, 2021 inspection period. One (1) non-compliance was identified for the February 1, 2020 to January 31, 2021 inspection period (see item b).

A mock shutdown of the feeder main to the Vaughan Distribution System was coordinated with York Region and the City of Vaughan on October 14, 2021. York Region and Peel Region were planning to execute future pipe maintenance on their respective systems which would require the

feeder main to be off-line. The mock shutdown demonstrated the controls, adjustments and monitoring requirements that would allow uninterrupted water supply to the City of Vaughan with the Peel feeder main out of operation.

Action Item: No action items pending from 2021 report.

i) Raw water supply and drinking water quality trends

The Annual Report and Annual Summary Report provide data on drinking water quality trends within the City's drinking water. The 2021 Annual Report and Annual Summary Report were posted on the City's website prior to February 28, 2022 and March 31, 2022, respectively. The City has an exemption under the Municipal Drinking Water Licence (MDWL) for lead sampling from plumbing systems.

Action Item: No action items pending from 2021 report.

j) Follow-up on action items from previous Management Reviews

The previous Management Review was held on June 26, 2020. There was a total of nine (9) action items identified.

Action Item: There are two (2) actions pending: review of QMS Policy and mapping of water quality inquiries.

k) The status of management action items identified between reviews

Top Management reviewed the DWQMS Action Items Log at the November 17, 2021 Review. There are five (5) recommendations from the internal and external audits identified on the log:

- Identifying York Region's role in monitoring the quality of drinking water;
- Identify the process for appointing the Quality Management System (QMS) Representatives;
- Provide a highlighted summary of the Management Review Meeting in the Council Report;
- Include minimum stock levels on the Water Operations Inventory list; and
- Expanding the Infrastructure Development Portfolio Capital Plan to cover at least five (5) years.

Action Items: The following action items were identified at the November 17, 2021 Management Review:

- The QMS-16 Procedure will be revised to include a review of York Region, Peel Region, and the City of Toronto's Annual Water Quality Reports to understand trending
- A review process for appointing QMS Representative will need to be discussed further
- A highlighted summary of the Management Review Meeting will be provided in a Council Report; and
- Water Operations will investigate the use of Microsoft Power Apps to maintain parts inventory

l) Changes that could affect the Quality Management System

There are enough resources available to mitigate any effect on the Quality Management System due to pandemic.

Action Items: No action items pending from 2021 report.

m) Consumer feedback

Consumer feedback allows the City to identify if the water system is operating effectively. In the 2021 Management Review reports, there were a total of 116 calls that were related to water odour, taste, colour, and quality inquiries. All the concerns/inquiries were addressed appropriately and in a timely manner. Resolutions included field investigations, testing, sharing information, and laboratory results.

Action Items: No action items pending from the 2021 report.

n) Resources needed to maintain the QMS

Adequate resources are in place to maintain the QMS. Water Operations Staff were been trained for DWQMS Awareness in Q1 2021.

Action Items: No action items pending from 2021 report.

o) The results of the infrastructure review

Physical condition of water infrastructure is regularly evaluated to maintain a state of good repair. Capital projects were identified by Environmental Services and Infrastructure Delivery via the City's capital budget process. In the 2021 Management Reviews reporting period, there were 22 watermain breaks. A total of 28km of water main was added/replaced during the 2021 reporting period. Preventative maintenance of the Drinking Water Wystem included the following during 2021: 2,939 valves were exercised by an external contractor; 9,776 hydrants were maintained by external contractor; 12 anti-stag valves were maintained; and 15 pressure reducing valves were maintained.

Action Items: No action items pending from 2021 report

p) Operational Plan currency, contact and updates

The Operational Plan is currently under revision to incorporate the OFIs from the internal and external audits and inspection that were completed in 2021.

Action Items: The following OFIs are being discussed for implementation into the DWQMS Operational Plan:

- Including a process for appointing the QMS Representative (QMS-04);
- Including a revision history for each QMS procedure and associated document (QMS-05);
- Requesting accreditation from external parties providing service (QMS-17);
- Listing criteria used to identify the need for corrective actions resulting from audit findings (QMS-19);

- Improving the organizational chart by highlighting those in the Operating Authority (QMS-9);
- Improving the inventory list by adding a minimum stock level (QMS-13);
- The addition of the Municipal Drinking Water Licence, Drinking Water Works Permit, and Long-Term Capital Plan to the Document Master List (QMS-05);
- Identifying the mobile back-up generator in the Water Operations Procedures Manual or within QMS-06 Procedure (QMS-05);
- Adding system pressure to the list of critical control limits for watermain breaks (QMS-08);
- Delivering the Top Management Review as a separate report from the Annual Summary Report (QMS-12);
- Listing the relevant QMS requirements within the Environmental Conditions section of tender documents (QMS-12);
- Linking the action requirements of QMS Elements 19 and 21 (QMS-21); and
- Establishing a field for due dates of action items within action item logs (QMS-21).

q) Staff suggestions

Water Operations staff participated in the Annual Review of the Risk Assessment in 2021. During this time, staff provided feedback on the ranking of potential hazards to the Drinking Water System. This resulted in the consideration of re-ranking some identified hazards. Water Operations also continue to provide input and assist in the development of the Standard Operating Procedure Manual. Water Operations maintains a One Drive folder with meeting minutes which captures staff discussions and is shared with the Compliance team to facilitate the review of staff suggestions.

Action Items: No action items pending from the 2021 report.

r) Review of Best Management Practices

There were two (2) Best Management Practices identified during this reporting period from the June 3, 2021 Management Review which include conducting two (2) DWQMS internal audits and implementing a Standard Operating Procedure (SOP) Review Committee for the Water Operations Team. The SOP Review Committee is currently in effect.

Action Items: One (1) action item pending from 2021 report.

s) New Business

None identified.

Action Items: No action items pending from 2021 report.

t) Date of Next Meeting

The DWQMS dictates that the Management Review meeting be held at least once every calendar year.

Action Items: No action items pending from 2021 report.

Conclusion

The Management Review is recognized as a best practice for continual improvement for the City's Drinking Water Quality Management System, Drinking Water System, and associated monitoring and maintenance programs.

The on-going maintenance of the Quality Management System and focus on continual improvement provides assurance to Council, as the Owner of the municipal Drinking Water System, that its duties, responsibilities, and standard of care under the Act are being met.