

To: COUNCIL

Meeting Date: 06/08/2021

Subject: Drinking Water Quality Management Report for 2020

Submitted By: Mike Parsons – Director of Environmental Services and Chris Whetstone – Manager of Water Operations

Prepared By: Aaron O’Keefe – Compliance Technician

Report No.: 21-139(IFS)

File No.: C1101

Recommendation(s)

THAT the 2020 City of Cambridge Drinking Water Quality Management Report be received for information.

Executive Summary

Purpose

The purpose of this report is to inform Council as the decision-making authority about the status of the drinking water system on an annual basis. The Cambridge water distribution system meets the requirements under the Safe Drinking Water Act. There are specific areas that must be reported per regulatory requirements, which include; but are not limited to consumer feedback, results of infrastructure review, results of audits and summary of maintenance.

Key Findings

- The City of Cambridge operates 587km of watermain with a total replacement value of \$352.2M replacement value.
 - 498km is City owned (\$294.4M); 56.8km is Region owned (\$46.1M); 32.1km is shared ownership (\$11.7)
 - There are 5,403 valves (\$23.6M); 380km of water services (\$160M); and 3,654 fire hydrants (\$34.3M)
- External Surveillance Audit conducted in November of 2020 and recertification was achieved with 5 opportunities for improvement identified.

- Risk reviews were performed in relation to the COVID-19 pandemic and specific contingency protocols were created to maintain Public Health requirements and Water Operations.
- The annual Internal Audit was performed for 2020 in February of 2021, with 1 non-conformance found and 8 opportunities for improvement identified.
- Water loss, including all sources of non-revenue water volumes such as fire protection, and water system maintenance, increased to 21.3% in 2020 compared to 18.5% in 2019.
- There were 26 watermain breaks in 2020, compared to 36 in 2019.
- 118 service line leaks repaired in 2020 compared to 115 in 2019.
- 1463 leak loggers were deployed in 2020 finding 3 watermain breaks and 6 service leaks.
- Metering zones (District Metering Areas) were established using smart meter technology for 2 neighbourhoods, helping to identify water loss within the areas.
- Replacement/retrofit of approximately 16000 water meters in 2020 as part of the AMI project, combining with 2019 data for a total of 48% of the entire City of Cambridge meters.
 - NOTE: As of the date of this report there have been 25,092 meters upgraded.
- As cost containment measures, watermain flushing/swabbing and hydrant painting services were deferred for 2020. These services are now reinstated for 2021.
- All Fire Hydrants were inspected (over 3500) in 2020.
- Approximately 873 (16%) valves were proactively operated (Annual target is 20%).
- 4 Adverse Water Quality Incidents were found and resolved in 2020 with follow-up flushing and resampling.
- Bulk water sales to water haulers, flushing contractors, mobile wash units and dust suppression activities increased by 131%.
- The updated Ontario Disinfection Procedure was made available as of August of 2020.

Financial Implications

- The 2020 annual budget for the operation of the Cambridge Drinking Water system was \$37,126,100. There were no water rate increases for customers in 2021.

Background

The DWQMS requires Top Management to “report the results of the management review, the identified deficiencies, decisions and action items to the Owner”. Top Management is defined as “a person, persons or group of people at the highest management level within an Operating Authority that makes decisions respecting the QMS and recommendations to the Owner respecting the subject system or subjects systems”. The Owner of the water utility is the Corporation of the City of Cambridge, represented by City Council.

The 2020 Management Review was completed with Top Management: Mike Parsons – Director of Environmental Services; Chris Whetstone – Manager of Water; Jason Alexander – Manger of Wastewater/Meters/Storm; Harpreet Sumra – Supervisor of Compliance and Meters; Aaron O’Keefe – Utility Compliance Technologist

The Management Review Report highlights and action items can be found as Appendix A.

Analysis

Strategic Alignment

PROSPERITY: To support and encourage the growth of a highly competitive local economy where there is opportunity for everyone to contribute and succeed.

Goal #7 - Transportation and Infrastructure

Objective 7.3 Provide innovative leadership in the management of city assets to help plan, fund and maintain city assets in a sustainable way.

The Drinking Water Quality Management report is to inform Senior Leaders and Council about the status of the drinking water system on an annual basis and serves as an aid in their decision-making abilities with respect to The Cambridge Water Distribution System.

Comments

Overall, the report highlights many system inputs and has gauged system growth and parameter comparisons from the previous year noting action items and follow-up if need be in each section. The report is laid out in two parts. Part A deals with the overall reasoning behind the report complete with executive highlights of system performance. Part B, of the report goes into more details by category and gives some in depth review.

The report provides clear evidence that the City of Cambridge maintained its drinking water system and continued to deliver clean and safe supply of water during a Pandemic.

Despite reduced swabbing/flushing activities and increases in residential water activity due to stay at home orders and home schooling, consumer concerns relating to discoloured calls, low pressure, taste and odour were considerably lower for 2020. This is a testament of overall system quality and indicates prior preventative activities are aiding in system integrity.

Albeit Cambridge increased to 21.3% non-revenue water, there was a slight increase to maintenance related volumes, and the volumes lost due to theft and meter inaccuracies decreased from 486ML (2019) to 474ML (2020). Staff recommend staying the course of AMI completion with continued efforts in leak detection for 2021. Staff speculate higher billing volumes of billing estimates impacted maintenance activities and are suspected to have contributed to the increase in water loss.

The statistics within the report will assist the Environmental Services Division in the allocation of resources, measuring trends, and making improvements year-over-year. By utilizing this data, the department will be able to continue making positive choices that will benefit the residents of the City of Cambridge.

Existing Policy/By-Law

City of Cambridge Drinking Water Quality Management System Policy

As the owners and operators of the City of Cambridge's water distribution system we are committed to:

- Providing safe sustainable drinking water to our consumers;
- Complying with applicable legislation and regulations as related to the provision of safe drinking water; and
- Maintaining and continually improving our Quality Management System

Financial Impact

The 2020 annual budget for the operation of the Cambridge Drinking Water system was \$37,126,100. The budget allocation for 2021 is \$37,516,100. Long-range financial plan recommended 3.9% increased revenue required for 2021, staff were able to find operational savings and efficiencies to maintain same water rates for customers. The Region of Waterloo has also maintained same water rates for the City's bulk purchases for 2021.

Public Input

This report has been posted to the City's website with the agenda in advance of its submission into the Council Information Package. The City's Drinking Water Quality Management Policy is available on the City of Cambridge website.

Internal/External Consultation

Internal consultation was completed with Finance, Asset Management, Engineering and Building Divisions.

This report references the City of Cambridge Annual Drinking Water Distribution System Inspection report for 2020 as provided by Ministry of Environment, Conservation and Parks.

Conclusion

As referenced in the Drinking Water Quality Management report, Cambridge has met and continues to meet all legislative requirements and continues to improve and sustain its drinking water system.

Signature

Division Approval

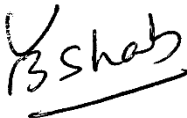


Name: Mike Parsons
Title: Director of Public Works

Reviewed by the CFO

Reviewed by Legal Services

Departmental Approval



Name: Yogesh Shah
Title: Deputy City Manager - Infrastructure Services

City Manager Approval



Name: David Calder
Title: City Manager

Attachments

Appendix A: Management Review Action Table

Follow-up on Action Items from Previous Management Reviews

SR#	Action Item Description	Assigned To	Proposed Timeline	Priority Ranking	Status as of May 12, 2021
106622	Revise Water Supply Bylaw	Chris Whetstone	December 2021 (Revised)	Medium	In Progress – Updates continuing into 2021
009-15	Incorporate new lockout procedures for new service valves	Ron Rooke	For next management meeting	Medium	COMPLETE

Action Items from 2020 Management Review

SR#	Action Item Description	Assigned To	Proposed Timeline	Priority Ranking	Status as of May 12, 2021
316318	Work with the Region to change out bulk water meters	Water Technologist	01/01/22	Med	In progress
316321	Explore new methods of calibration for bulk regional water meters	Water Technologist	01/01/22	Med	In progress
316324	Explore new methods or expand current methods of leak detection.	Water Technologist	01/01/22	Med	TICKET COMPLETED but – Efforts are ongoing in progressing

SR#	Action Item Description	Assigned To	Proposed Timeline	Priority Ranking	Status as of May 12, 2021
					leak detection.
316330	Update the Sampling Plan in Element 16 of the QMS to show new sampling points and remove old sampling locations	Utility Technologist	10/01/21	Med	In progress

Status of Management Action Items Identified Between Reviews

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
183967	Recommendation made to provide input to Planning to include requirements for chlorine management (flushing) and district meters in all new development agreements.	CI2	Risk Assessment	Mike Parsons	Med	IN PROGRESS - Planning has initialized review of current agreement template and developer communication plan.
184060	After-hours handling of online requests needs to be set up for call service to manage. Language of website	CI2	Staff Suggestion	Mike Parsons	Med	COMPLETE (Bestel reviews online requests)

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
	needs updating for interim.					
204408	Verify that communications with essential suppliers (e.g. parts suppliers and contractors for construction projects) so that they are aware of the quality specifications for parts: NSF 61 and NSF 372 certified as per s. 14.0 MDWL.	CI2	Internal Audit	Aaron O	Med	In Progress
204411	Consider developing a process to periodically document staff suggestions presented through: ♦ the corporate CI2 system and ♦ at tailgate meetings; to compile a more fulsome list of ideas provided by Water staff. Also consider a standard agenda item at quarterly staff meetings to discuss these suggestions. Also consider	CI2	Internal Audit	Aaron O	Low	COMPLETE

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
	developing a communication process about the status and follow-up on staff suggestions (e.g. what can/can't be pursued, why, thank you, etc.)					
231359	Top Management commitment includes the required commitments, signed in November / December 2018 by the Director of Public Works, the Manager of Corporate Compliance and the Manager of Water Operations. New Top Management (new Director, no Corporate Compliance Mgr). (OFI for Element 9 re: organizational information update)	CI2	Internal Audit	Aaron O	Med	COMPLETE
231360	Consider listing Cambridge's Licence-related documents (MDWL, DWWP, Accreditation Certificates, Financial	CI2	Internal Audit	Aaron O	Med	IN PROGRESS

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
	Plan) and their expiries. Consider adding internal and external audit reports to the list of records as well. Note: Already been updating this document. It is just not finished yet due to SharePoint (all locations of documents are changing).					
231367	Consider updating the references to “once per year” and “once every three years” to “once per calendar year” and “once every thirty-six months”, as this is the language used in this element of the DWQMS	CI2	Internal Audit	Aaron O	Med	IN PROGRESS (some documents already updated)
313070	Remember to take risk assessment minutes for record keeping as per the risk assessment element	CI2	External Audit	Aaron O	Med	IN PROGRESS – Must wait till next Risk Review / Assessment to take minutes and close CI2
313091	Update Ops plan with	CI2	External Audit	Aaron O	Med	COMPLETE

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
	2019 risk outcomes. The current version is 2017.					
313204	Management review actions need to be assigned to individuals	CI2	External Audit	Aaron O	Low	COMPLETE
313254	Official document list has some outdated links in it (hyperlinks inactive).	CI2	Internal Audit	Aaron O	Low	In progress
313257	System description data for assets is inconsistent across platforms.	CI2	Internal Audit	Aaron O	Med	In progress
313267	Element 5): Consider removing “2019 Risk Assessment” to the title for Summary of Critical Control Points and “Risk Assessment YYYY” from the CCP Decision Tree documents so that these can apply perpetually following each risk assessment review (which is the item that requires the calendar year updates) – and only update the Summary of	CI2	Internal Audit	Aaron O	Low	In progress

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
	CCP's or CCP Decision Tree if these change.					
313322	Competencies of mgmt is not well detailed. Consider adding more detail to the competency element	CI2	Internal Audit	Aaron O	Low	COMPLETE
313326	Consider getting ideas from staff regarding pandemic protocols and how they could be improved.	CI2	Internal Audit	Aaron O	Low	COMPLETE
313327	Consider updating Communications document (SYS-WD-12) to include Service Cambridge for public communications, and any new methods for communications (as might have been implemented during the pandemic).	CI2	Internal Audit	Aaron O	Med	In progress
313328	Update suppliers list with more information (e.g. contract status, end dates, etc.)	CI2	Internal Audit	Aaron O	Med	In progress
313330	Preventative actions need to be described in the continuous	CI2	Internal Audit	Aaron O	Med	In progress

SR#	Action Item Description	Type	Source	Assigned To	Priority Ranking	Status as of May 12, 2021
	improvement element as per QMS 2.0v					
313331	An internal audit was not carried-out in 2020. This audit's scope covers the time since the last audit, from December 18, 2019 to April 1, 2021.	NC	Internal Audit	Aaron O	High	COMPLETE