Schedule “A”

2022 Drinking Water System Operations Report

City of Barrie

Water Operations Branch

Drinking Water System

Operations Report

For the Period of

JANUARY 1ST, 2022 TO DECEMBER 31ST, 2022

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 6

Effective Date: 2023-02-15

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1 Introduction

The purpose of this report is to summarize the City of Barrie (the City) Municipal Drinking Water System's (the System) operating year from January 1st to December 31st, 2022. This report is a compilation of information that demonstrates the commitment of the Water Operations Branch (the Branch) to provide safe drinking water while remaining transparent, financially accountable and demonstrate initiative in driving continual improvement.

The Branch's commitment is driven by the following five (5) priorities:

1. To ensure the delivery of safe drinking water that meets or exceeds regulatory requirements
2. To ensure the delivery of safe drinking water that meets or exceeds expectations and promote customer confidence
3. To employ and retain a respectful, competent, motivated and adaptive workforce that is dedicated to teamwork, continual learning and improvement for the long term
4. To continually improve operational performance in a timely, sustainable, and cost-effective manner
5. To maintain an effective balance between expenditures and revenues

The following sections provide details of the 2022 achievements that support the Branch priorities listed above.

2 Program Review

2.1 Water Operations Branch

The primary objective of the Branch is the production and delivery of potable water from two sources; 1) a deep groundwater aquifer accessed through twelve (12) active groundwater wells and, 2) surface water from Lake Simcoe that is drawn to the Surface Water Treatment Plant (SWTP) from an intake in Kempenfelt Bay.

Comprised of five (5) organizational Sections, four (4) of which have operational responsibilities, the Branch works collaboratively to ensure high quality drinking water is produced and delivered to the City residents. Highlights regarding the performance and operations of these Sections are discussed in Sections 2.2 to 2.5 of this report.

2.1.1 Training

The Branch recognizes the importance of employee training as not only a legislated requirement for certified Operators but also a positive way to foster improved performance and adaptability of its workforce. In 2022, approximately 4,800 hours of staff training occurred, and thirty-four (34) Operators were awarded certificate renewals or upgrades.

2.1.2 Research and Educational Partnerships

In partnership with both the University of Toronto and University of Waterloo, the Branch provides sponsorship to the Natural Sciences and Engineering Research Council which supports university students in advanced studies and promotes discovery research. Not only does the partnership allow the Branch to participate in water treatment research but it also helps guide the research conducted by these schools.

The current research work being conducted by the Universities with the SWTP is associated with SWTP processes which routinely utilizes the membrane filtration pilot plant located within the SWTP. This allows Staff to actively participate in the research projects and be some of the first benefactors of the research being conducted.

Research work being conducted by the University of Waterloo in partnership with the Groundwater Section is focused on manganese removal using biofilters. This provides staff with an opportunity to participate in the research project by assisting with sampling events.

2.1.3 Budget and Costs

In 2022, approximately 98% of the projected operating budget was expended. References to financials within this report are based on the 2022 ledger prior to finalization and excludes debenture costs.

Corporate support is based on actual work and staff time in support of the Branch from various departments and is trending below budget to the end of 2022, in addition accounts for utilities (natural gas and hydro) in both the Surface Water Supply and Ground Water Supply Sections were under spent, however the Branch relies on Energy Management staff within the Corporate Facilities Department to establish these budgets each year.

The graph below illustrates the total revenues of the Branch and demonstrates the distribution of revenues in Millions of dollars.

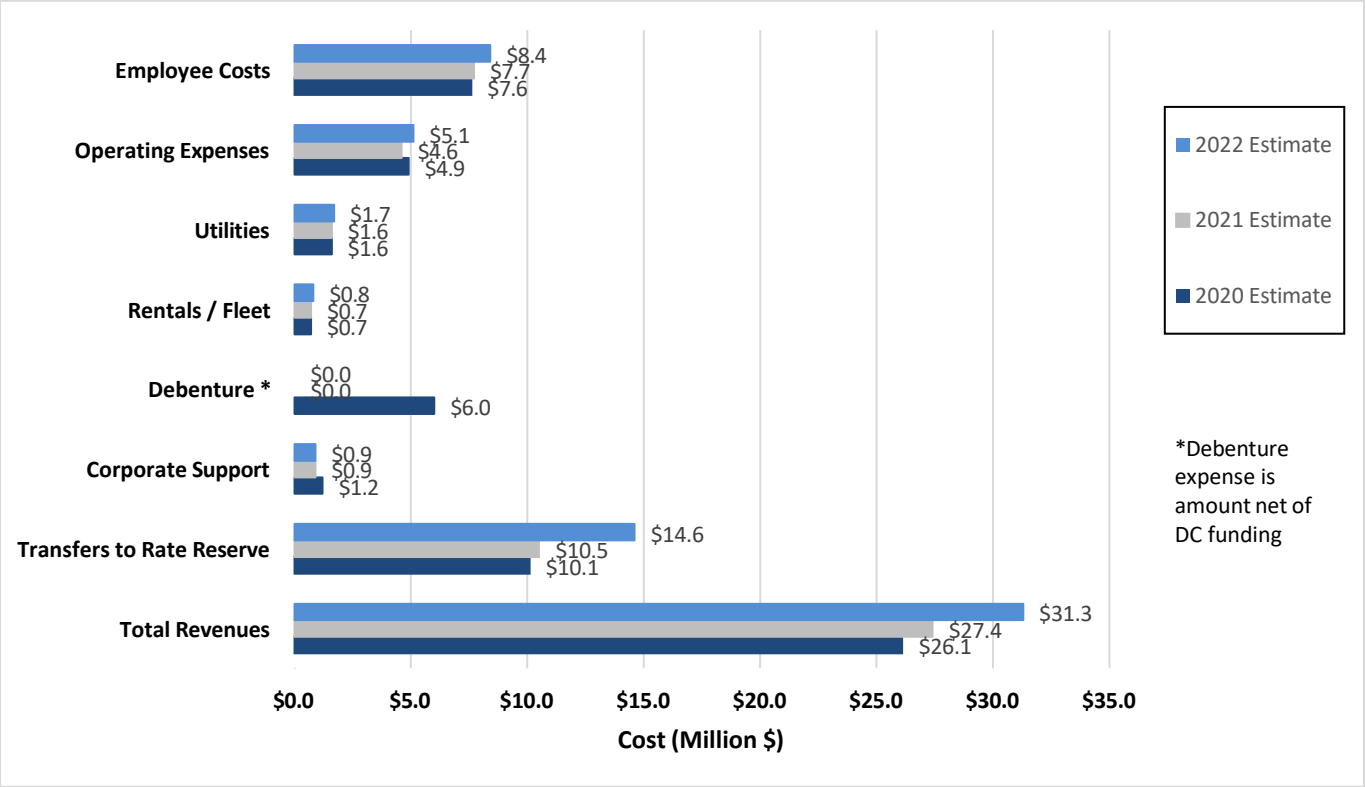

Figure 1. Water Operations Revenues and Fund Allocation

In accordance with O.Reg. 453/07, the Operating Authority developed a financial plan to ensure sustainability of the drinking water system. The Financial Plan is valid for a ten (10) year period and contains details of the financial position, financial operations, and cash flow of the System. The Financial Plan was updated in April of 2021 and a copy can be found at www.barrie.ca/waterservices.

2.2 Water Treatment Services

Water Treatment is one of the first steps in ensuring the production and distribution of safe drinking water. Water Treatment Services is responsible for all water treatment processes, storage tank monitoring,

ongoing operation and maintenance, and water quality sampling. This involves overseeing a System consisting of the SWTP and associated low lift pumping station (LLPS), 12 groundwater wells, 3 in- ground storage facilities, 7 booster stations, and 3 elevated storage towers.

2.2.1 Treatment System Performance

In 2022, a total of 13,732 ML of drinking water was produced, which represents a slight decrease from 2021. This seems to follow an overall trend of increased water conservation within the City in the past ten (10) years (Figure 2).

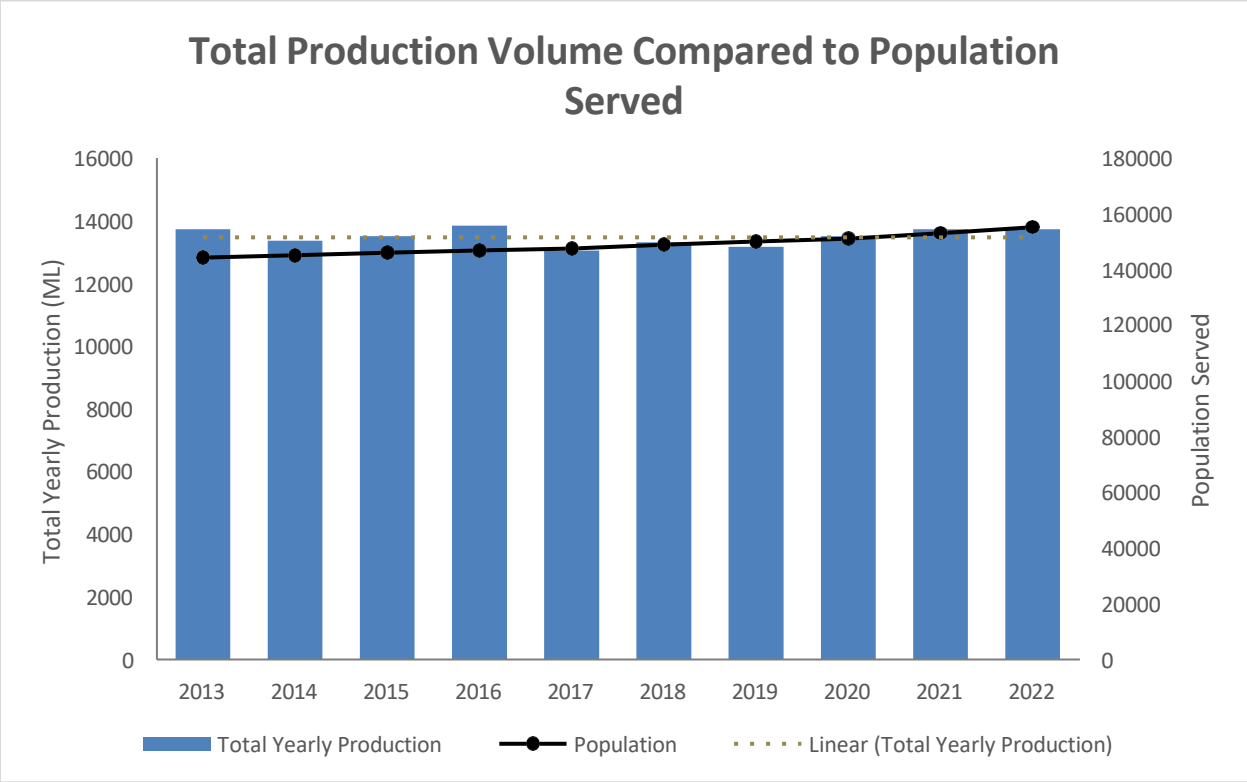

Figure 2. Total yearly production of drinking water (ML) compared to population served

The SWTP membrane filtration system has a manufacturers operational target of 98% efficiency for which staff have opted to set as an overall operational goal. Therefore, the SWTP has defined efficiency as the difference between the amount of water taken from Lake Simcoe and the amount of water that is sent out of the SWTP to our customers. In 2022 our overall average efficiency was 97.6%, a 0.4% increase from 2021. Factors that can cause these minor variations to the efficiency are annual pilot plant consumption, waste resulting from maintenance activities, age of the membrane filtration system and flow meter margins of error.

2.2.2 Preventative Maintenance Highlights

The following sections summarize the significant maintenance activities that were completed within the Water Treatment Services Sections in 2022.

2.2.2.1 Groundwater Supply

In 2022, the Groundwater Supply Section completed the following significant maintenance activities:

- Cleaned and disinfected Cells 1, 2, 3 & 5 at Harvie Reservoir, Cells 1 & 2 at Anne St Reservoir, and Cells A & B at Sunnidale Reservoir
- Cleaned and disinfected Sarjeant Dr. Well #7 clear well, Heritage Park Well #11 clear well, Johnson St. Well #9 clear well, and Johnson St. Well #13 clear well
- Completed well pump and associated motor maintenance at Sarjeant Well #7, and Cross Street Well #18
- Completed well maintenance at Cross Street Well #18, and Johnson Street Well #13
- Completed booster pump and associated motor maintenance at Leacock Booster Pumping Station – Pump #1 and Pump #2, and Innisfil Booster Pumping Station – Pump #2
- Replaced six (6) in station valves at Codrington Booster Pumping Station

2.2.2.2 Surface Water Supply

In 2022, the Surface Water Supply Section completed the following significant maintenance activities associated with the SWTP:

- Conducted multiple rounds of membrane repairs to maintain filter integrity and efficiency
- Employed the use of remote submersible camera to complete video inspections of internal tanks and reservoirs
- Contracted services to complete camera inspections of the raw water intake pipe
- Improved spare parts internal inventory to reduce down-time during equipment failures

2.3 Water Distribution Services

The quality of drinking water in the distribution system is ensured through ongoing water quality monitoring, and preventative and reactive maintenance completed by Water Distribution Services. Consisting of approximately 4,052 hydrants, 6,695 valves, and 672 kilometers of watermain, the City's distribution system continues to reliably direct potable water to the community.

2.3.1 Preventative Maintenance Highlights

Water Distribution Services conduct ongoing preventative maintenance in an effort to reduce reactive maintenance and sustain system performance. In 2022, approximately 1.17km of watermain were cleaned by scouring it with foam swabs as part of the Annual Swabbing Program. These areas were selected to be swabbed based on water quality data collected by field staff as well as feedback received from residents through the logging of water quality concerns associated with discoloured water.

To ensure the continued operability of valves within the System, routine valve exercising is conducted. In 2022, approximately 1,400 valves were exercised throughout the City including 170 Critical valves (400mm to 1200mm). A valve turning application is utilized to track the progress and number of valves turned, this is in cooperation with Information Technology (IT) staff and implemented to assist the operators. A hydrant inspection program is also maintained by the Water Distribution Services Section and includes any necessary replacement or repairs that are discovered.

2.3.2 Reactive Maintenance Highlights

Reactive maintenance in the event of infrastructure failure is an inevitability in the distribution system. In 2022, 36 watermain breaks occurred which is an increase of 6% compared to the number of watermain breaks in 2021.

Figure 3 illustrates the historical trend of watermain breaks that occurred in the last ten (10) years.

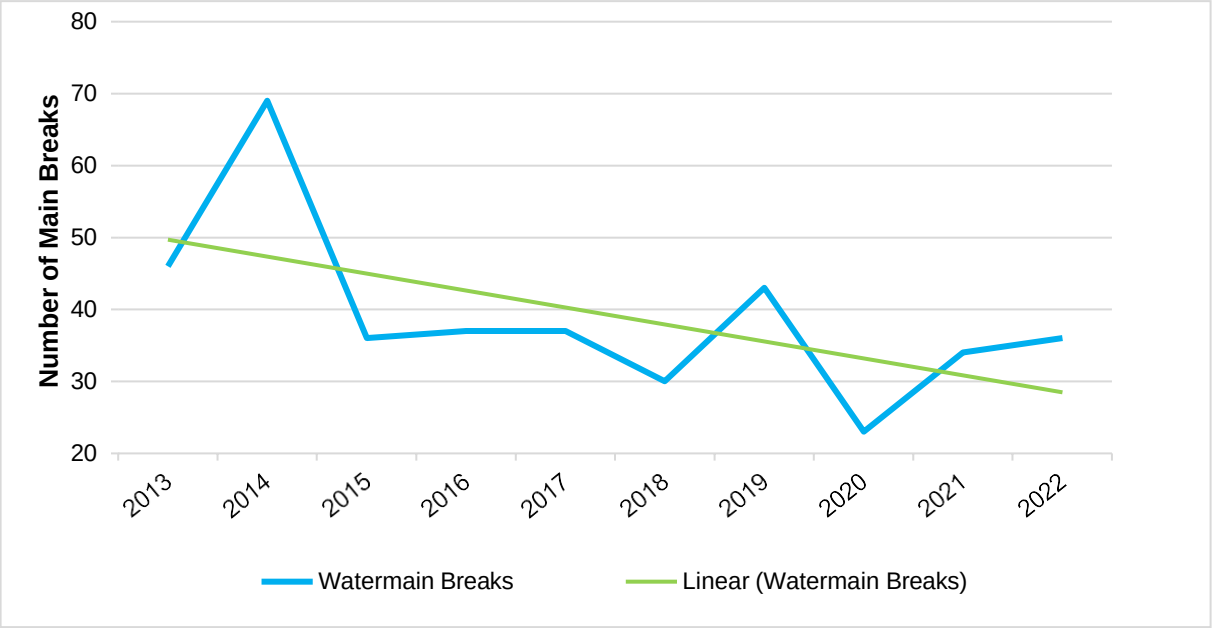

Figure 3. Number of watermain breaks and trend from 2013 to 2022

2.3.3 System Growth, Rehabilitation and Renewal

New infrastructure is installed and commissioned in accordance with the City's Design Guidelines, in addition to the Ministry of Environment, Conservation and Parks (MECP) Watermain Disinfection Procedure.

Infrastructure works completed in the distribution system in 2022 are summarized as follows:

- Blake St. from Puget St. to Penetanguishene Rd. – new 300 mm watermain installed
- Poyntz St., Codrington St., and Berczy St. Reconstruction project – new 300 mm distribution watermain and 400 mm transmission watermain installed
- Big Bay Point Rd. reconstruction from Huronia Rd. to Bayview Dr. – new 300 mm distribution watermain and 500 mm transmission watermain installed
- Mapleview Dr. E from Yonge St. to Madelaine Dr. – new 300 mm distribution watermain and 600 mm transmission watermain installed
- Five (5) new subdivisions were commissioned – Bemp Phase 2, Barrie Lockhart, Hewitt's Gate, Great Golf Phase 2, Blue Sky Honey Field (total of 1,030 lots)
- Eight (8) watermain construction projects to service growth and renewal were completed
- Forty-five (45) Industrial, Commercial and Institutional (ICI) servicing projects were commissioned
- Total new watermain commissioned in 2022 was 21.05 kms
- Nineteen (19) residential services were replaced
- Three hundred and six (306) curb box replacements were completed
- Thirty-six (36) watermain breaks were repaired
- Thirty-one (31) service breaks were repaired

2.4 Water Customer Services

Customer service continues to be a priority for the Branch. The Water Customer Services Section ensures our 155,137 residents have access to quality water at the tap. They also offer a wide range of services, such as conducting annual system maintenance and providing infrastructure locates of all corporately owned water, sanitary sewer, storm sewer, traffic light and streetlight cabling in the municipal right-of-way or on any of the City's easements.

2.4.1 Available Services

Customers have 24/7 access to required services such as routine inquiries and/or emergency requests. Calls made regarding water quality complaints averaged seven (7) complaints per month in 2022. This is a slight increase from 2021 which can be attributed to more watermain breaks in 2022, as well as an increase in preventative maintenance hydrant flushing. Additionally, 1,208 chargeable service calls were completed, which includes long term meter gate valve installations, pool fills, and illegal water use charges.

Water Customer Services is also responsible for installing and maintaining water meters and their associated remote reading devices, as well as programs that improve their efficiency and reduce costs. In 2022, a total of 614 new water meters were installed, and 951 water meters were replaced, representing an increased number from 2021. The increase can be attributed to the ongoing development taking place in the south end of Barrie and the ongoing Water Meter Replacement Program which aims to replace both ICI and residential meters on a predetermined schedule. This replacement program is based on industry standards and ensures that meters continue to provide accurate consumption measurement while in use. Monitoring of water consumption in residential and ICI applications is accomplished through the Advanced Metering Infrastructure (AMI) system. Ongoing efforts of staff ensure that greater than 99.5% of all water meters transmit up-to-date, accurate meter readings for billing purposes throughout the year.

2.4.2 Preventative Maintenance Highlights

Watermain flushing maintains water quality within the distribution system thereby reducing the number of incoming water quality complaints. In 2022, Water Customer Services continued to focus its flushing efforts on areas of the distribution system that were prone to complaints and often associated with aging infrastructure. Accordingly, 2,117 hydrants were flushed in 2022, representing approximately 52% of the distribution system. Additionally, thirty-eight (38) flush boxes were deployed after April 2022 and remained in service until the end of October 2022. Each of these flush boxes operates daily on varying schedules and assist in maintaining adequate chlorine residuals and aesthetic water quality objectives within the distribution system.

2.4.3 Infrastructure Damage Prevention Program

The Branch has dedicated Utilities Technicians that ensure utility locates are provided for all corporately owned water, sanitary sewer, storm sewer, traffic light and streetlight cabling in the municipal right of way or on any of the City's easements. As an Ontario 1Call member and the associated provincial legislation, locate requests received are completed within the mandatory five (5) business days, unless otherwise negotiated with the locate requestor. The level of service mandated and achieved for this service was 96% in 2022.

2.5 Compliance and Technical Support

The Compliance and Technical Support (CTS) Section is responsible for regulatory conformance/compliance and reporting with respect to the System, as well as development and implementation of quality/risk management and optimization functions for the Branch. The core responsibilities of the Compliance and Technical Support Section include the Backflow Prevention Program, Computerized Maintenance Management System (CMMS), Quality Management System (QMS), inventory and materials management, and technical support as it relates to water infrastructure.

3 Quality Management System Summary

This section is a summary of the updates, changes, and pertinent information in relation to the requirements of the Safe Drinking Water Act and the City's Quality Management System to meet the requirements of Staff Report 20-G-209, Delegation of Owner Representative for Water Operations Quality Management System and Safe Drinking Water Act Requirements. The Staff Report designates the

Infrastructure Department head as the Owner Representative for the City's Drinking Water System for all matters related to the Safe Drinking Water Act and the Quality Management System.

3.1 Adverse Water Quality Incidents (AWQI's)

There were zero (0) AWQIs reported in 2022.

3.2 Emergency Scenario

The Rogers Communications service outage that occurred in July, 2022, was used as a live emergency scenario for 2022. Given the nature of the incident and the impacts to the City, it provided an opportunity for the Branch to test their emergency response plan and associated documentation. The incident involved coordination of efforts from all staff within the City Branch, as well as assistance from the Information Technology (IT) Branch. Through diligent efforts by Staff, the Branch was able to ensure the delivery of safe drinking water to residents. An incident debrief meeting was held on August 10, 2022 where staff and management provided feedback on the incident and discussed opportunities for improvement. This debrief resulted in actioning six (6) opportunities for improvement which are in the process of being completed and/or have already been implemented.

3.3 Internal Audit

Two (2) Internal Audits were conducted and focused on the Drinking Water Quality Management System Procedures. The first audit focused on Elements 5 (Documents and Records Control), and Element 17 (Measurement and Recording Equipment, Calibration and Maintenance). Results yielded one (1) non-conformance and two (2) opportunities for improvement related to recording of calibration and verification activities. The second audit focused on Elements 1 (Quality Management System Operational Plan), 3 (Commitment ad Endorsement), 9 (Organizational Structure, Roles, Responsibilities and Authorities) and 18 (Emergency Management). Results yielded two (2) opportunities for improvement related to documentation of the Owner Representative. All items have been actioned and are in the process of being completed and/or have already been implemented.

3.4 External Audit

The 2022 External Audit conducted by a third party was a surveillance audit which consisted of an off-site desktop audit of the Operational Plan. There were zero (0) non-conformances identified by the external auditor and accreditation was maintained until 2025.

3.5 Ministry of the Environment, Conservation and Parks (MECP) Inspection

The MECP conducted one (1) detailed inspection of portions of the System in 2022. There were zero (0) non-compliances or opportunities for improvement identified in the inspection report.

3.6 Alterations to the Drinking Water System (Forms 1, 2 and 3)

The Drinking Water Works Permit (DWWP) requires that alterations to the drinking water system be recorded on Forms published by the MECP. There were a variety of alterations made to the System between January 1 and December 31, 2022, that required a Form 1 or Form 2 to be completed.

Watermain Additions, Modifications, Replacements or Extensions are recorded on a Form 1 – Record of Watermains Authorized as a Future Alteration. During 2022, there were nine (9) of these forms completed for the Drinking Water System.

Minor Modifications to the drinking water system may require a Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System. There were twenty (20) of these forms completed for various work at the booster pump stations, water towers, well stations and the SWTP.

Equipment with Emissions to Air would require a Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere to be completed. There were zero (0) Form 3s completed for the Drinking Water System for 2022.

3.7 Management Review

The Branch continued to implement procedural and process improvements in 2022. A component of the continual improvement process is Management Review, which identifies potential deficiencies and/or opportunities for improvement and establishes action plans to address them. Management Review meetings were conducted on a quarterly basis on the following dates: May 20, August 29, and November 14, 2022, and scheduled for February 22, 2023.

In addition to the items noted in Sections 3.1 to 3.6 above, the following are additional highlights from the 2022 Management Review meetings:

1. Total annual production volume of 13,732 ML in 2022 remained consistent with usage trends over the last few years, with only a slight decrease in production compared to 2021.
2. Refinements to the Branch databases to provide workplace efficiencies resulting in shorter and more effective meetings, reporting capabilities for staff in relation to training reports, and workflow management.
3. Continued use of the electronic logbooks for all 3 subsystems allowing more real time updates for operators while they are working in the field, as well as, staff working at the SWTP and remotely.
4. Continued implementation of an electronic work order management system for staff to document completed work allowing for more real time updates and providing efficiencies in reporting capabilities.
5. Increased reporting accuracy for annual water loss summary by obtaining more detailed numbers for non-revenue water.

A copy of the 2021 Q4, 2022 Q1, Q2 and Q3 Management Review Meeting Minutes are included in Schedule E for reference. Note that the 2022 Q4 Management Review meeting is scheduled to take place on February 22, 2023, and as a result the meeting minutes are to be included in the 2023 Annual Report.

4 Closure

It is the belief that this report provides a summary of the operational and performance success of the Branch for 2022. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support.

Schedule “B”

2022 Annual Report, Section 11

Ontario Regulation 170/03

City of Barrie
Water Operations Branch

Drinking Water System
2022 Annual Report
Section 11, O.Reg. 170/03

For the Period of

JANUARY 1ST, 2022 TO DECEMBER 31ST, 2022

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 6

Effective Date: 2023-02-15

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2022 Annual Report – Section 11, O.Reg. 170/03

1 Introduction

The City of Barrie Water Operations Branch (the Branch) prepared this Annual Report (Report) to satisfy the requirements of Section 11 of Ontario Regulation (O.Reg.) 170/03. Section 11 (1) requires that the owner of a drinking water system prepare a report in accordance with subsection (3) and (6) for the preceding calendar year. The annual report must be prepared no later than February 28th of each year.

This report covers the period of January 1st to December 31st, 2022, and the information provided complies with the reporting requirements outlined in Section 11 of O.Reg.170/03.

A summary of the City of Barrie's Municipal Drinking Water System (the System) description is outlined below:

- Drinking-Water System Number: 220001192
- Drinking-Water System Name: City of Barrie Drinking Water System
- Drinking-Water System Owner: Corporation of the City of Barrie
- Drinking-Water System Category: Large Municipal Residential

2 Reporting Requirements under Section 11 - O.Reg.170/03

Section 11 requires that the Report include the following information relating to the period covered by the report:

- Include a statement of where a Report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge;
- Contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system;
- Describe any major expenses incurred to install, repair, or replace required equipment;
- Summarize any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQIs);
- Summarize the results of tests required under O.Reg. 170/03, or under an approval; Municipal Drinking Water Licence (MDWL) or order, including an Ontario Water Resources Act order, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter; and
- Describe any corrective actions taken.

3 Evidence of Compliance

3.1 Availability of the Annual Report

In accordance with Section 11 of O.Reg. 170/03, a copy of the Annual Report is available to the public, free of charge from the City of Barrie website and from the Branch by request. The Schedule 22 Report is available to the public free of charge from the Branch by request.

The public will be advised of the Report's availability and how to obtain a copy, without charge, on the City of Barrie's website, in a local newspaper and on social media outlets after February 28, 2023.

3.2 Description of the Municipal Drinking Water System

The System consists of a Surface Water Treatment Plant (SWTP) and associated low lift pumping station (LLPS), 12 groundwater wells, 3 in-ground storage facilities, 7 booster stations, and 3 elevated storage towers.

Treatment at the SWTP consists of primary screening, flocculation, membrane filtration, granular activated carbon contactors (for taste and odour control), and disinfection with chlorine gas. Primary disinfection is achieved through chlorine contact time (CT) in the four baffled wall chlorine contact chamber and reservoir. Secondary disinfection is achieved by boosting the chlorine residual of the treated water upon entry into the distribution system from the SWTP's reservoir. Re-chlorination to maintain the chlorine residual in the distribution system is available at Harvie Road Booster Station/Reservoir and Mapleview Tower.

Treatment at each of the well stations consists of iron sequestration by addition of sodium silicate and disinfection with chlorine gas. Primary disinfection is achieved through CT prior to the first consumer, with the exception of Well 5, which uses ultraviolet disinfection. Secondary disinfection is maintained throughout the distribution system with booster chlorination applied at 7 locations throughout the distribution system.

The distribution system consists of approximately 4,052 hydrants and approximately 672 kilometers of watermain and transmission main ranging in sizes from 32mm to 1200mm and as of January 2023, delivering drinking water to a population of approximately 155,137 residents.

3.3 Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Polyaluminum Chloride – Pre-filtration Coagulant – SWTP
- Chlorine – Primary and Secondary Disinfection – SWTP and Wells
- Sodium Silicate – Iron and Manganese Sequestration – Wells

3.4 Significant Expenses Incurred

A summary of the major expenses incurred during the reporting period to install, repair or replace required equipment, and value of each, is included in Table 1.

Table 1 – Summary of Expenses Incurred

Activity	**Costs Incurred (2022)**
Reservoir repairs (Harvie Rd. Reservoir)	$125,000
Internal and Exterior Repairs (Mapleview Water Tower)	$25,000
Pump #2 bowl replacement (Innisfil Booster Pumping Station)	$27,000
Pump bowl replacement (Sarjeant Well #7)	$25,250
Primary membrane permeate pump replacement	$35,000
Watermain break repairs (36)	$235,000
Hydro excavation contractors for water infrastructure repairs	$45,290
Advanced Metering Infrastructure (AMI) Service Agreement & Tower maintenance	$122,619
Meter replacement program	$522,318

3.5 Operational Checks, Sampling and Testing

In general, during the reporting period, operational checks were completed and drinking water samples were collected in accordance with O.Reg. 170/03 and the MDWL, with one exception of Well 3A which was not in service; therefore, only sodium samples were collected at that location. The Branch utilizes a subcontracted laboratory to analyze drinking water samples that have been collected throughout the system. The subcontracted laboratory switched in July of 2022 resulting in some differences in the Method Detection Limits (MDL). The laboratory results for all analyzed samples regulated by O.Reg. 170/03 and the MDWL are summarized in Table 2 through Table 10, included in Appendix A for reference. All results from samples collected and analyzed during the reporting period met the regulatory requirements.

Details of the sampling and testing conducted in 2022 are discussed below in Section 3.5.1 through 3.5.4, inclusive.

3.5.1 Schedule 7 – Operational Checks – O.Reg. 170/03

Operational checks including free chlorine in treated water and free chlorine in distribution water, and raw water and treated water turbidity were conducted in accordance with Schedule 7 of O.Reg.170/03, except

for Well 3A which was not in service. The data summarized in the table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water.

The operational checks conducted during this reporting period are summarized in Table 2, included in Appendix A for reference.

3.5.2 Schedule 10 – Microbiological Sampling and Testing – O.Reg. 170/03

Raw, treated, and distribution water samples were analyzed for microbiological parameters specified in Schedule 10-2, 10-3 and 10-4 of O.Reg. 170/03 and Heterotrophic Plate Count (HPC), and Background bacteria (Background) pursuant to the Public Health Inspector's Guide (PHIG), dated 2021.

Laboratory results for most samples analyzed for *E.coli*, Total Coliforms and Background met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03 and the PHIG. There were several raw water samples collected before treatment that indicated the presence of bacteria. On occasion raw water samples yielded a NDOGT (No Data Overgrown with Target) result. A NDOGT result indicates that the test has a large number of bacteria present and Total Coliform and/or E. Coli are visible to the analyst, but it is difficult to determine exactly how much is present. There were no instances of treated distribution samples that yielded Total Coliform or E. Coli counts.

The samples analyzed for microbiological and bacteriological parameters during this reporting period are summarized in Table 3, included in Appendix A for reference.

3.5.3 Schedule 13 – Chemical Testing – O.Reg. 170/03

Treated water samples collected from the Water Distribution and Supply Subsystem were analyzed for organic and inorganic chemical parameters in accordance with O.Reg. 170/03, Schedule 13, Section 13.2 (Schedule 23), Section 13.4 (Schedule 24), Section 13.8, and Section 13.9. Analytical results for all samples analyzed for organic and inorganic chemical parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

Treated water samples collected from the distribution system were analyzed for Trihalomethanes (THMs) and Haloacetic Acids (HAAs) in accordance with O.Reg. 170/03, Schedule 13.6 and 13.6.1. Treated water samples collected from the well stations and SWTP were analyzed for nitrates, nitrites, fluoride and sodium in accordance with Schedules 13.7, 13.8 and 13.9 of O.Reg.170/03 respectively. Laboratory results for all samples analyzed for THMs, HAAs, fluoride, nitrate and nitrite met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03 and 170/03. Samples analyzed for sodium did exceed the applicable standards stipulated in O.Reg. 170/03; however, there were no reporting requirements of the results to the MECP during the 2022 reporting period.

The above noted results are summarized in Tables 4, 5, and 6 in Appendix A for reference.

If analysis required under O.Reg. 170/03 with respect to an analytical parameter was not required during the reporting period; the most recent analytical results for that parameter was included in this report, in accordance with O.Reg. 170/03, s.11 (6) (b).

3.5.4 Schedule 15.1 – Lead – O.Reg. 170/03

Lead samples are collected from the plumbing at industrial and commercial locations and several hydrants within the distribution system during the winter and summer sampling period in accordance with Schedule 15.1. Amendments made under the MDWL requires the collection of five (5) Industrial, Commercial & Institutional (ICI) samples and ten (10) Distribution samples to be collected during the reporting periods of December 15th, 2021 to April 15th, 2022 and June 15th, 2022 to October 15th, 2022.

Pandemic related temporary Lead Sampling Regulatory Relief was requested and granted for the five (5) ICI samples for the first sampling period of 2022 (December 15th, 2021 to April 15th, 2022). Lead sampling from the five (5) ICI locations was not required, and samples were only collected from the ten (10) distribution locations.

Analytical results indicated lead concentrations below the established limit of 10ug/L (0.01 mg/L) for all the locations sampled.

The samples analyzed for lead during this reporting period are summarized in Table 7 and included in Appendix A for reference.

3.5.5 Municipal Drinking Water Licence

In addition to the sampling and monitoring required by O.Reg. 170/03, specific conditions within the City's MDWL required additional sampling and monitoring at select locations for select Volatile Organic Compounds (VOC), sodium, and UV disinfection at Well 5. Analytical results for all samples analyzed for select VOCs were below the applicable standards stipulated in O.Reg. 169/03. Samples analyzed for sodium did exceed the applicable standards stipulated in O.Reg. 170/03; however, there were no reporting requirements of the results to the MECP during the 2022 reporting period.

The samples analyzed for select VOCs and sodium during the reporting period are summarized in Table 8 and Table 9, respectively, and included in Appendix A for reference. UV monitoring documented during this reporting period is summarized in Table 10 and included in Appendix A for reference.

3.6 Reporting and Corrective Actions

3.6.1 Schedule 16 – Reporting of Adverse Test Results and Other Problems

There were zero (0) AWQIs reported during the 2022 reporting period.

3.6.2 Schedule 17 – Corrective Actions

No corrective actions were necessary as related to reporting AWQI's during the 2022 reporting period.

4 Closure

It is the belief of the Branch that this report satisfies the requirements of Section 11 of O.Reg. 170/03. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support at the Branch.

Appendix “A” - Tables

Table 2 – Schedule 7 Operational Checks*

Sample Location	Sample Count	Free Chlorine		Turbidity			
		(min)	(max)	(min)	(max)	(min)	(max)
		Treated Water		Raw Water		Treated Water	
Well 5	**8760	0.00	5.00	0.00	9.90	--	--
Well 7	**8760	0.25	1.61	0.01	2.81	--	--
Well 9	**8760	0.48	4.13	0.00	2.35	--	--
Well 11	**8760	0.59	1.76	0.02	8.47	--	--
Well 12	**8760	0.12	3.28	0.01	1.45	--	--
Well 13	**8760	0.5	4.13	0.01	8.94	--	--
Well 14	**8760	0.13	4.81	0.02	10.00	--	--
Well 15	**8760	0.30	2.75	0.02	2.13	--	--
Well 16	**8760	0.37	1.61	0.01	6.66	--	--
Well 17	**8760	0.08	3.91	0.01	10.00	--	--
Well 18	**8760	0.28	5.00	0.00	7.85	--	--
Surface Water Treatment Plant	**8760	0.00	4.97	0.00	114.11	0.00	3.32
Bayfield Tower	**8760	0.00	4.67	--	--	--	--
Ferndale Tower	**8760	0.00	3.92	--	--	--	--
Mapleview Tower	**8760	0.01	2.36	--	--	--	--
Anne Reservoir	**8760	0.00	2.93	--	--	--	--
Harvie Reservoir	**8760	0.00	1.66	--	--	--	--
Sunnidale Reservoir	**8760	0.00	5.00	--	--	--	--

Notes:

** 8760 - Represents continuous monitoring
-- - Analysis not required
NTU - Turbidity measured in Nephelometric Turbidity Units
mg/L - Free Chlorine measured in milligrams per litre
* Data used to populate this table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water

Table 3 – Schedule 10 Microbiological Sampling and Testing

Sample Location	E. Coli		Total Coliform		Background		HPC		Sample Count
	(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)	
Distribution									
North Sampling Points	0	0	0	0	--	--	<10	600	758
South Sampling Points	0	0	0	0	--	--	<10	50	767
Other (i.e., main breaks, maintenance)	0	0	0	0	0	0	--	--	13
								Sub-Total Distribution Samples	1538
Treated Water									
Well 5	0	0	0	0	0	2	10	20	53
Well 7	0	0	0	0	0	0	10	30	44
Well 9	0	0	0	0	0	0	10	40	51
Well 11	0	0	0	0	0	2	10	30	50
Well 12	0	0	0	0	0	2	10	80	52
Well 13	0	0	0	0	0	5	10	60	50
Well 14	0	0	0	0	0	3	10	20	52
Well 15	0	0	0	0	0	0	10	50	52
Well 16	0	0	0	0	0	1	10	80	51
Well 17	0	0	0	0	0	0	10	40	50
Well 18	0	0	0	0	0	0	10	50	42
Surface Water Treatment Plant	0	0	0	0	0	66	10	240	52
								Sub-Total Treated Samples	599
Raw Water									
Well 5	0	0	0	0	0	1	--	--	52
Well 7	0	0	0	0	0	12	--	--	44
Well 9	0	0	0	0	0	>200	--	--	51
Well 11	0	0	0	0	0	>200	--	--	50
Well 12	0	0	0	0	0	0	--	--	52
Well 13	0	0	0	4	0	83	--	--	50
Well 14	0	0	0	0	0	3	--	--	52
Well 15	0	0	0	0	0	2	--	--	52
Well 16	0	0	0	0	0	0	--	--	51
Well 17	0	0	0	0	0	0	--	--	50
Well 18	0	0	0	1	0	15	--	--	42
Surface Water Treatment Plant	0	NDOGT	0	NDOGT	0	NDOGT	--	--	52
								Sub-Total Raw Samples	598

Notes:

CFU/100mL - E. coli, Total Coliform and Background results are expressed as Colony Forming Units (CFU)/100mL
CFU/1mL - Heterotrophic Plate Count (HPC) results are expressed as CFU/1mL
-- - Analysis not required

Table 4 – Schedule 13 Chemical Sampling and Testing – Inorganics and Organics

Sample Location	Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Date Sampled	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-08-30
MDL	Analytical Result											
Treated Water - Inorganic Parameters												
Antimony	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Arsenic	0.001	0.0003*	0.0003*	<MDL	0.0001*	0.0002*	0.0002*	0.0001*	0.0004*	0.0003*	0.0003*	0.0004*	<MDL
Barium	0.001	0.179	0.27	0.104	0.235	0.401	0.267	0.108	0.281	0.105	0.294	0.255	0.032
Boron	0.005	0.021	0.013	0.010	0.016	0.025	0.018	0.014	0.012	0.013	0.015	0.017	0.018
Cadmium	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Chromium	0.002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	0.002*
Mercury	0.00002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Selenium	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Uranium	0.001	0.00039*	0.00028*	0.00099*	0.00086*	0.00036*	0.00146*	0.0009*	0.00015*	0.001*	0.00033*	0.0002*	<MDL
Treated Water - Organic Parameters												
Alachlor	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Atrazine+metabolites	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Azinphos-methyl	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Benzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Benzo(a)pyrene	0.00001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Bromoxynil	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbaryl	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbofuran	0.004	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbon Tetrachloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Chlorpyrifos	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diazinon	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dicamba	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,4-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-dichloroethane	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1-Dichloroethylene (vinylidene chloride)	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dichloromethane	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4-Dichlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4-Dichlorophenoxy acetic acid (2,4-D)	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diclofop-methyl	0.0009	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dimethoate	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diquat	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Diuron	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Glyphosate	0.025	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Malathion	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
MCPA	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Metolachlor	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Metribuzin	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Monochlorobenzene	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Paraquat	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Pentachlorophenol	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Phorate	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Picloram	0.015	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Polychlorinated Biphenyls (PCB)	0.00006	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Prometryne	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Simazine	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Terbufos	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Tetrachloroethylene (perchloroethylene)	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,3,4,6-Tetrachlorophenol	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Triallate	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trichloroethylene	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	0.0014	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4,6-Trichlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trifluralin	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Vinyl Chloride	0.002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

Notes:

mg/L - All units presented in milligrams per litre
MDL - Method Detection Limit for laboratory analysis
<MDL - Analytical Result did not exceed the laboratory Method Detection Limit (MDL)
SWTP - Surface Water Treatment Plant
* - Sample analyzed at a lab with a lower MDL than listed

Table 5 – Schedule 13 Chemical Sampling and Testing – Trihalomethanes & Haloacetic Acids

Parameter	Running Annual Average
	2022
Trihalomethanes	0.0360
Haloacetic Acids	0.0287

Notes:

mg/L - Reported in milligrams per litre

Table 6 – Schedule 13 Chemical Sampling and Testing – Sodium, Fluoride, Nitrite and Nitrate

Parameter	MDL	Date Sampled	Analytical Results											
		Sample Location	Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Sodium	0.1	2019-09-16	17.8	10	43.7	94.2	140	54.2	61.9	22.7	--	--	9.9	--
		2019-12-09	--	--	--	--	--	--	--	--	10.4	--	--	--
		2020-03-02	--	--	--	--	--	--	--	--	--	9.9	--	--
		2021-08-30	--	--	--	--	--	--	--	--	--	--	--	32.0
Fluoride	0.2	2019-09-16	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--	--	<MDL	--
		2019-12-09	--	--	--	--	--	--	--	--	<MDL	--	--	--
		2020-03-02	--	--	--	--	--	--	--	--	--	<MDL	--	--
		2021-08-30	--	--	--	--	--	--	--	--	--	--	--	<MDL
Nitrite	0.1	2022-01-17	--	--	--	<MDL	--	--	--	--	--	--	--	--
		2022-02-22	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2022-03-07	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--	--
		2022-05-02	--	--	--	--	--	--	--	--	--	--	<MDL	--
		2022-05-24	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2022-06-06	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--
		2022-07-04	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2022-08-22	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2022-09-06	<MDL	--	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--
		2022-10-24	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2022-11-28	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2022-12-05	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--
Nitrate	0.1	2022-01-17	--	--	--	0.2	--	--	--	--	--	--	--	--
		2022-02-22	--	--	--	--	--	--	--	--	--	--	--	0.4
		2022-03-07	<MDL	<MDL	3.8	0.5	<MDL	1.8	0.1*	<MDL	1.1	<MDL	--	--
		2022-05-02	--	--	--	--	--	--	--	--	--	--	<MDL	--
		2022-05-24	--	--	--	--	--	--	--	--	--	--	--	0.2
		2022-06-06	<MDL	<MDL	5.9	0.7	<MDL	2.6	<MDL	<MDL	1.8	<MDL	<MDL	--
		2022-07-04	--	--	--	--	--	--	--	--	--	--	--	0.32
		2022-08-22	--	--	--	--	--	--	--	--	--	--	--	0.48
		2022-09-06	0.16	--	3.82	1.32	1.17	1.92	0.93	0.31	1.08	0.06*	<MDL	--
		2022-10-24	--	--	--	--	--	--	--	--	--	--	--	0.2
		2022-11-28	--	--	--	--	--	--	--	--	--	--	--	0.1
		2022-12-05	0.13	0.11	4.08	0.57	0.76	1.84	0.31	0.16	1.04	0.27	<MDL	--

Notes:

-- - Analysis not required
MDL - Method Detection Limit for laboratory analysis
<MDL - Analytical Result did not exceed the laboratory Method Detection Limit (MDL)
mg/L - All units reported in milligrams per litre
SWTP - Surface Water Treatment Plant
* - Sample analyzed at a lab with a lower MDL than listed

Table 7 – Schedule 15.1 – Lead

Parameter	MDL	Sample Count	Range of Results	
			(min)	(max)
Lead (Plumbing)**	0.0001	12	0.0001	0.0030
Lead (Distribution System)		21	<MDL	0.00452

Notes:

mg/L - All units reported in milligrams per litre

MDL - Method Detection Limit for laboratory analysis

** - Regulatory Relief for lead plumbing samples was granted by the MECP during 1st round of sampling in 2022

Table 8 – Municipal Drinking Water Licence – Raw Water Sampling and Testing – Volatile Organic Compound

Parameter	MDL	Analytical Results							
		(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)
Sample Location		Well 11		Well 12		Well 14		Well 15	
Benzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbon Tetrachloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,4-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichloroethane	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,1-Dichloroethene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Cis-1,2-Dichloroethene	0.0005	0.0004*	<MDL	<MDL	<MDL	<MDL	0.00124	<MDL	0.00144
Dichloromethane	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Monochlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Tetrachloroethylene	0.0005	0.0003*	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trichloroethylene	0.0005	0.0004*	<MDL	<MDL	<MDL	<MDL	0.000700	<MDL	<MDL
Vinyl Chloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL

Notes:
mg/L - All units reported in milligrams per litre
MDL - Method Detection Limit for laboratory analysis
<MDL - Analytical result did not exceed the laboratory Method Detection Limit (MDL)
* - Sample analyzed at a lab with a lower MDL than listed

Table 9 – Municipal Drinking Water Licence – Raw Water Sampling and Testing - Sodium

Sample Location	Sodium	
	(min)	(max)
*Well 3A	40.0	47.9
Well 9	39.0	54.1
Well 11	61.7	100.0
Well 12	120.0	151.0
Well 13	31.3	58.6
Well 14	52	63.9

Notes:
mg/L - All units reported in milligrams per litre
* - Although 3A was not in service, analytical results required as a condition of the MDWL

Table 10 – Municipal Drinking Water Licence – Ultraviolet Monitoring

Parameter	Minimum	Well 5	
		(min)	(max)
UV Dosage *Monitored Continuously*	40	0	85.8
UVT *Monitored Weekly*	85	83.8	99.1

Notes:
(mJ/cm^2) - UV Dosage measured in millijoules per centimeter squared
% - UVT measured in percent
* Data used to populate this table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water

Schedule “C”

2022 Municipal Summary Report, Schedule 22

Ontario Regulation 170/03

City of Barrie
Water Operations Branch

Drinking Water System
2022 Municipal Summary Report
Schedule 22. O.Reg. 170/03

For the Period of

JANUARY 1ST, 2022 TO DECEMBER 31ST, 2022

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 6

Effective Date: 2023-02-15

CONTENTS

Municipal Summary Report – Schedule 22-2, O.Reg. 170/03

1 Introduction

The City of Barrie Water Operations Branch (the Branch) has prepared this summary report to satisfy the requirements of Schedule 22-2 of Ontario Regulation 170/03 (O.Reg.170/03). Schedule 22-2 (1) and (1)(a) require that the owner of a drinking water system ensure that a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year. The summary report must be provided to the members of the municipal council, in the case of drinking water systems owned by a municipality and must be available no later than March 31st of each year.

This report includes the period from January 1st to December 31st, 2022, and the information provided complies with the reporting requirements outlined in Schedule 22-2 (2) and (3) of O.Reg.170/03.

2 Schedule 22-2 Reporting Requirements

Schedule 22-2 requires that the report include the following:

- Schedule 22-2 (2) requires:
    - List the requirements of the Safe Drinking Water Act (SDWA), the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at the time during the period covered by the report; and
    - For each requirement referred to above that was not met, specify the duration of the failure and the measures that were taken to correct the failure.
- Schedule 22-2 (3) requires:
    - A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows; and
    - A comparison of the summary referred to above to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence.

3 Evidence of Compliance

3.1 Compliance with Schedule 22-2 (2)

The following sections discuss the requirements in Schedule 22-2 (2).

3.1.1 Orders

The Branch was not issued any orders during the 2022 reporting period.

3.1.2 Ministry of Environment, Conservation and Parks (MECP) Drinking Water System Inspection

The MECP conducted one (1) detailed inspection of the Municipal Drinking Water System (the System). The inspection was from September 2021 to November 2022. Following the System inspection, the MECP issued a report summarizing the findings, including regulatory non-compliances, best practice issues, and recommendations.

3.1.2.1 2022 Drinking Water System Inspection Findings

There were zero (0) non-compliances with regulatory requirements and zero (0) recommendations reported in the 2022 MECP Inspection Report (Report) issued on December 7th, 2022.

A copy of the MECP Drinking Water System Inspection Summary is included in Appendix A for reference.

3.1.2.2 Historical Drinking Water System Inspection Findings

The Branch summarized the regulatory non-compliances and MECP recommendations for best practices that were presented in the historical Drinking Water System Inspection Reports, along with actions taken

by the Branch in response to inspection findings on the MECP Drinking Water System Inspection Summary, which spans the 2018 to 2022 reporting periods, inclusive.

A copy of the MECP Drinking Water System Inspection Summary is included in Appendix A for reference.

3.2 Compliance with Schedule 22-2 (3)

3.2.1 Drinking Water System Production and Flow Rates

In accordance with Schedule 22-2 (3) and to assist the Owner in assessing the capability of the system to meet existing and planned uses of the system, the Branch prepared a summary of the quantities of water supplied during the reporting period, including monthly average and maximum daily flows in comparison to the rated capacities. The flows presented below are reported in Megalitres (ML) to reflect the large quantities of water produced by the system.

The Branch supplied 13,732 ML of water in the reporting period. The average monthly flow from all sources within the drinking water system was 1,144 ML, which ranged from 535 ML (SWTP) to 25 ML at Well 5.

The Branch was approved to supply a total of 148.26 ML (148,264,000 L) of water per day from fifteen (15) sources, with approved capacity of each source ranging from 6.55 ML/day (various sources) to 65 ML/day (SWTP). The maximum volume of water supplied in any day (maximum day flow) from each source ranged from 3.97 ML (Well 5) to 26.91 ML (SWTP) during the reporting period, as illustrated in the Flow Summary graph included in Appendix B. Each source was operated within its respective permitted capacity during the reporting period, except for Well 3A, 4A and 19 which were not operated in 2022.

4 Closure

It is the belief of the Branch that this report satisfies the requirements of O.Reg. 170/03, Schedule 22. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support.

Appendix “A” MECP Drinking Water System Inspection Summary

Ministry of Environment, Conservation & Parks
Drinking Water System Inspection Summary

Item No	Applicable Requirement	MECP Non-Compliance With Regulatory Requirements	Actions Taken	MECP Recommendations and Best Practice Issues	Actions Taken	Status
2022						
1		Not Applicable		Not Applicable		
2021						
1		Not Applicable		Not Applicable		
2020						
1	Subsection 1-2 (2)4 of Schedule 1 of O. Reg. 170/03	Records did not confirm that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/L free, or 0.25 mg/L combined	Residuals were verified, and water was able to mix in the reservoir with water of acceptable residual and microbiological samples collected			Complete
2019						
1	Schedule E of Drinking Water Licence #014-101, Issue Number 6	All UV Sensors were not checked and calibrated as required	Created a recurring work order within the municipal maintenance management system to ensure that the reference sensors are checked and calibrated as required. A work order was also created for the Master Reference Assembly to be checked and calibrated at a minimum frequency based on the manufacturer's recommendations			Complete

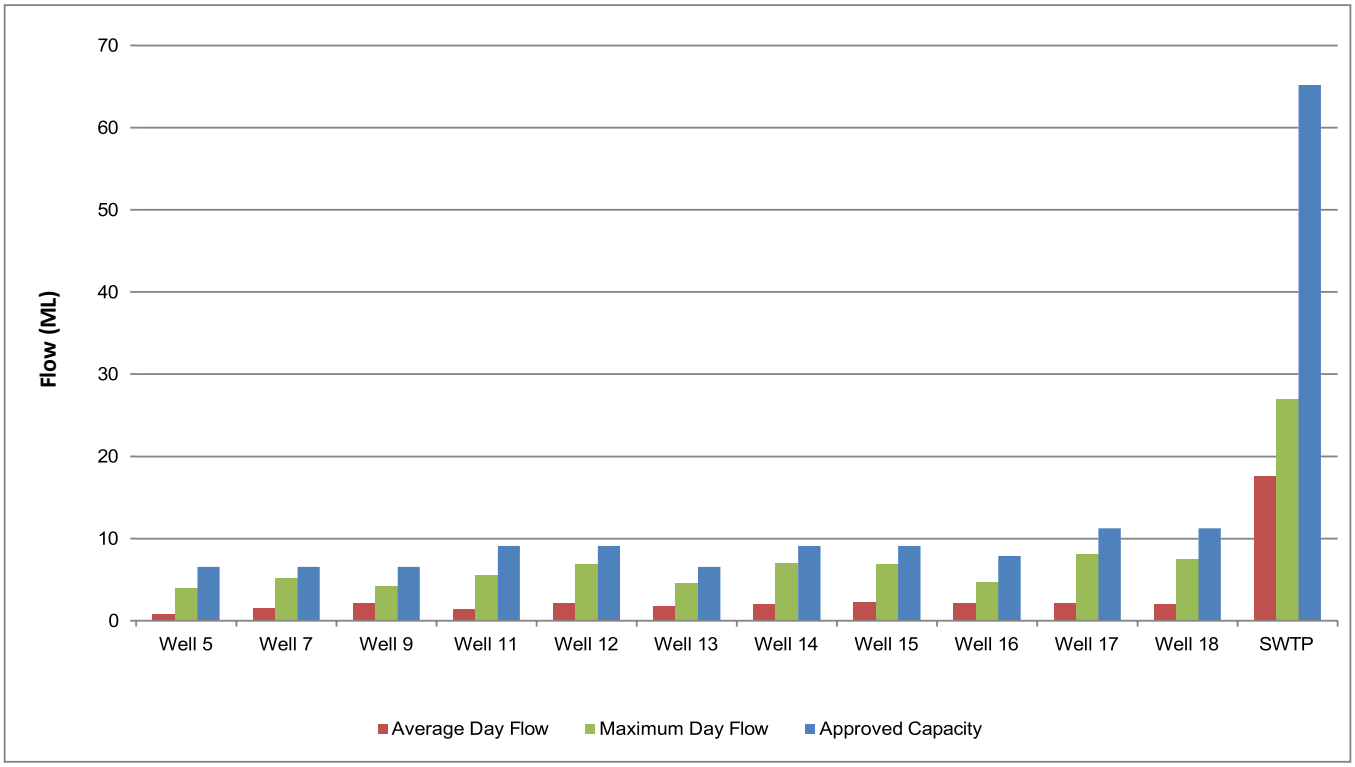
Item No	Applicable Requirement	MECP Non-Compliance With Regulatory Requirements	Actions Taken	MECP Recommendations and Best Practice Issues	Actions Taken	Status
2	Condition 5 of Schedule C of Drinking Water Licence #014-101, Issue Number 6	All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were not being met	Notified the MECP officer upon identification of all instances of non-compliance and applied appropriate corrections at the time of the incident			Complete
3				Owner did not have a harmful algal bloom monitoring plan in place (requirement to be in place on or before April 1, 2020)	Microsystin samples were being collected at the low lift pumping station and the highlift pumping station during the months of July and August. Plan was implemented in Spring 2020	Complete
2018						
1	Subsection 10-2 (1) of Schedule 10 of O. Reg. 170/03	All microbiological water quality monitoring requirements for distribution samples were not being met (25% HPC on distribution samples monthly)	Sampling locations were reviewed – 5 new sample stations were added, and a couple of locations were removed. Now complete 30 distribution samples (15 North, 15 South) on a weekly basis. We also request 10 samples to have HPC analysis done each week (33% of samples). Chain of custodies set up on a 3-week cycle.			Complete

Item No	Applicable Requirement	MECP Non-Compliance With Regulatory Requirements	Actions Taken	MECP Recommendations and Best Practice Issues	Actions Taken	Status
2				Several typographical errors and omissions within source descriptions of the PTTW, expiring April 20, 2021	A reminder has been set internally to correct these errors at the time of the PTTW renewal	Complete

Appendix “B” Tables and Figures

Drinking Water System Usage

Source	Approved Daily Capacity (ML/day)	Maximum Day Flow (ML/day)	Average Day Flow (ML/day)	Monthly Average Flow (ML/month)	Annual Total Volume (ML)
Well 5	6.55	3.97	0.83	25.25	302.99
Well 7	6.55	5.20	1.56	47.52	570.29
Well 9	6.55	4.20	2.07	62.82	753.82
Well 11	9.10	5.52	1.34	40.88	490.60
Well 12	9.10	6.91	2.13	64.93	779.20
Well 13	6.55	4.51	1.76	53.64	643.66
Well 14	9.10	6.99	1.96	59.57	714.83
Well 15	9.10	6.86	2.22	67.39	808.68
Well 16	7.86	4.67	2.11	64.05	770.80
Well 17	11.23	8.05	2.09	63.66	763.88
Well 18	11.23	7.44	1.95	59.28	711.32
SWTP	65.20	26.91	17.59	535.12	6,421.46
System	158.12	91.23	37.61	1,144.11	13,731.53



Schedule “D”

Ministry of Environment, Conservation and Parks

Standard of Care

TAKING CARE OF YOUR DRINKING WATER

A Quick Guide For Members Of Municipal Councils

If you are a municipal councillor, this quick guide is intended to help you better understand the Safe Drinking Water Act, 2002 (SDWA) and provide information about your statutory standard of care responsibilities. You are encouraged to also read ***Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils***. It provides more details about these responsibilities as well as information about how Ontario's drinking water is protected.

Ontarians expect safe, high quality drinking water. It is a matter vital to public health. As a member of a municipal council, you have an important role to play to ensure that your community has access to safe, high quality drinking water — and you are legally obliged to do so.

THREE THINGS TO REMEMBER AS A MUNICIPAL COUNCILLOR:

It's Your Duty. The Safe Drinking Water Act, 2002 includes a statutory standard of care for individuals who have decision-making authority over municipal drinking water systems or who oversee the operating authority of the system. This can extend to municipal councillors. There are legal consequences for not acting as required by the standard of care, including possible fines or imprisonment.

Be Informed. Ask questions. Get answers. You don't have to be an expert in drinking water operations, but you do need to be informed about them. Your decisions can have an impact on public health. Seek advice from those with expertise and act prudently on that advice.

Be Vigilant. Complacency can pose one of the greatest risks to drinking water systems. It is critical that you never take drinking water safety for granted or assume all is well with the drinking water systems under your care and direction. The health of your community depends on your diligent and prudent oversight of its drinking water.

> *"Water is unique as a local service. It is, of course, essential to human life and to the functioning of communities, (and) the consequences of a failure in the water system (are) most seriously felt by those who depend on it locally. Municipal ownership, and the ensuing responsibilities, should provide a high degree of public accountability in relation to the local water system."*
> — Justice Dennis O'Connor,
> 2002 Report of the Walkerton Inquiry

Legal Disclaimer – This quick guide should not be viewed as legal or other expert advice. For specific questions regarding the legal application of the Safe Drinking Water Act, 2002 and its regulations, please consult a lawyer and/or consult the text of the Act at ***www.e-laws.gov.on.ca***.

Ontario

Key Sections of the SDWA for Municipal Councillors

Section 11: Duties of Owners and Operating Authorities

Section 11 of the SDWA describes the legal responsibilities of owners and operating authorities of regulated drinking water systems. It is important for you to understand the scope of your municipality or operating authority's day-to-day responsibilities.

Owners and operators are responsible for ensuring their drinking water systems:

- provide water that meets all prescribed drinking water quality standards
- operate in accordance with the act and its regulations, and are kept in a fit state of repair
- are appropriately staffed and supervised by qualified persons
- comply with all sampling, testing, and monitoring requirements
- meet all reporting requirements

Examples of actions required of owners and operators under Section 11:

- Sampling and testing of drinking water with a frequency appropriate to the type, size and users of the system in accordance with the act and corresponding regulations
- Using an accredited and licensed laboratory for drinking water testing services
- Reporting of adverse test results that exceed any of the standards in the Ontario Drinking Water Quality Standards Regulation, both verbally and in writing, to the local medical officer of health and the Ministry of the Environment and Climate Change (MOECC)
- Obtaining a drinking water licence for a municipal residential drinking water system from the MOECC, which includes a financial plan
- Ensuring the drinking water system is operated by an accredited operating authority
- Hiring certified operators or trained persons appropriate to the class of the system
- Preparing an annual report to inform the public on the state of the municipality's drinking water and the system providing it, and an annual summary report for the owners of the drinking water system

Section 19: Your Duty and Liability – Statutory Standard of Care

Section 19 of the SDWA expressly extends legal responsibility to people with decision-making authority over municipal drinking water systems and those that oversee the accredited operating authority for the system. It requires that they exercise the level of care, diligence and skill with regard to a municipal drinking water system that a reasonably prudent person would be expected to exercise in a similar situation and that they exercise this due diligence honestly, competently and with integrity.

Meeting your statutory standard of care responsibilities

Meeting the statutory standard of care is the responsibility of:

- the owner of the municipal drinking water system
- if the system is owned by a municipality, every person who oversees the accredited operating authority or exercises decision-making authority over the system – **potentially including but not limited to members of municipal councils**
- if the municipal drinking water system is owned by a corporation other than a municipality, every officer and director of the corporation

Maintaining an Appropriate Level of Care

Standard of care is a well-known concept within Ontario legislation.

For example, the Business Corporations Act requires that every director and officer of a corporation act honestly and in good faith with a view to the best interests of the corporation and exercise the care, diligence and skill that a reasonably prudent person would in comparable circumstances.

Statutory standards of care address the need to provide diligent oversight. What is considered to be an appropriate level of care will vary from one situation to another. As a municipal councillor, it is important to educate yourself on this statutory requirement and to gain an understanding of the operation of drinking water systems in your community to help you meet the standard of care requirements.

You are not expected to be an expert in the areas of drinking water treatment and distribution. Section 19 allows for a person to rely in good faith on a report of an engineer, lawyer, accountant or other person whose professional qualifications lend credibility to the report.

Enforcing the Statutory Standard of Care

As a municipal councillor, you need to be aware that not meeting your statutory standard of care responsibilities comes with serious consequences. Section 19 provides the province with an enforcement option when needed.

A provincial officer has the authority to lay a provincial offence charge against a person to whom the standard applies. The range of penalties includes maximum fines of up to $4 million for a first offence and provision for imprisonment for up to five years. No minimum penalties are established. Actual penalties would be decided by the courts depending on the severity and consequences of the offence.

It is important to note the difference between the provision of the Municipal Act, 2001, that limits the personal liability of members of municipal councils and officials, and the standard of care imposed under the SDWA. Under sections 448-450 of the Municipal Act, 2001, municipal council members and officials have relief from personal civil liability when they have acted in good faith. However, despite that protection, municipal councillors and officials that are subject to the duty imposed by Section 19 of the SDWA could be penalized if a prosecution is commenced and a court determines they have failed to carry out the duty imposed under that section.

0 Actions You Can Take — to be better informed about your drinking water oversight responsibilities.

General

- ☐ Read ***Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils,*** which provides more details about your responsibilities as well as information about how Ontario's drinking water is protected and reference material on drinking water.
- ☐ Consider taking the Standard of Care training with the Walkerton Clean Water Centre. Get course details and session offerings at **www.wcwc.ca** or by phoning toll free 1-866-515-0550.
- ☐ Learn about drinking water safety and its link to public health. Speak to water system and public health staff to learn more.
- ☐ Become familiar with your municipal drinking water system. Ask your water manager to give a presentation to council and/or arrange a tour of your drinking water facilities.
- ☐ Review the reports of the Walkerton Inquiry, specifically sections related to municipal government (Chapter 7 in Report I, Chapters 10 and 11 in Report II). The reports are available online at **www.attorneygeneral.jus.gov.on.ca/english/about/pubs/walkerton**.
- ☐ Become further acquainted with drinking water legislation and regulations, available on the Ontario Government e-Laws website at **www.e-laws.gov.on.ca**.

Drinking Water Operational Plan

- ☐ Ask your operating authority to speak to your municipal council about your operational plan.
- ☐ Consider and act on any advice (including identified deficiencies and action items) identified during the annual management review process.
- ☐ Review the Quality Management System policy in your operational plan and its commitments.
- ☐ Ask your operating authority to show how it is meeting these commitments.

Drinking Water Reports and Inspections

- ☐ Obtain and thoroughly review copies of the most recent annual and summary reports.
- ☐ Ask for explanations of any information you don't understand.
- ☐ Consider, act on and correct any deficiencies noted in the reports.
- ☐ Review your annual inspection results and ask questions if there is any indication of declining quality.
- ☐ Clarify any technical terms.
- ☐ Ask how deficiencies are being addressed.
- ☐ Review your system's standing in the ratings reported in the Chief Drinking Water Inspector's Annual Report. If your rating is less than 100 per cent, ask why.
- ☐ Consider, act on and correct any deficiencies highlighted in the inspection.

Infrastructure Planning

- ☐ Find out what maintenance, rehabilitation and renewal plans are in place for your drinking water system.
- ☐ Ask your operating authority to present the findings of its annual infrastructure review.

Communicating with Your Operating Authority

- ☐ Determine when and how your operating authority will communicate to you as an owner.
- ☐ Find out what information is made available to the public and how.

Emergency Planning for Drinking Water

- ☐ Ask your operating authority to review the drinking water emergency plan with council and to explain what responsibilities have been assigned to the owner.
- ☐ Know who will be the spokesperson during a drinking water emergency.
- ☐ Ensure critical staff have taken necessary training on emergency procedures and have participated in testing.

Drinking Water System Operators

- ☐ Ensure there are sufficient resources for appropriate levels of training for municipal staff involved in operating a drinking water system.
- ☐ Confirm that an overall responsible operator (ORO) has been designated and that procedures are in place to ensure all required staff and contractors are certified.
- ☐ Check to see if drinking water operator succession planning is being done and that measures are taken to address any current or anticipated challenges to recruiting skilled employees.
- ☐ Ensure your municipality or operating authority has contingency plans in place for situations where your certified operators may not be available (e.g. labour disputes, illnesses, vacancies, etc.) and, if activated, confirm that these contingency plans have been, where required, approved by the Ministry of the Environment and Climate Change and are working.

Source Protection Planning

- ☐ Review the source protection plan for your area and find out what actions are being taken to protect vulnerable areas around your drinking water sources.
- ☐ Find out if your municipality has appointed risk management officials and inspectors to support source protection planning and whether you are sharing these duties with other municipalities or delegating to a local source protection authority.

For more information, call the Ministry of the Environment and Climate Change at **1-800-565-4923**
Email: **drinking.water@ontario.ca**

PIBS 9810e

Schedule “E”

Quality Management System
Management Review Meeting Minutes

Meeting Minutes

Meeting Details

Date
2022-02-14
Start Time
9:30:00 AM
End Time
12:00:00 PM
Type
Management Review

Attendance

Attendee Role	Initials	Name
Facilitator	BAF	AstopFord, Brittany
Recorder	GG	Gilbank, Gwen
Attendee	DM	Moreau, Diane
Attendee	JA	Adams, Jamey
Attendee	BM	Miller, Brenden
Attendee	LH	Hywarren, Lenita
Attendee	MV	Vandergeest, Mark
Attendee	DS	Smith, Diana
Attendee	AIP	Inglis-Petahtegoose, Amanda
Regrets	JD	Dumais, Jeanette
Regrets	JG	Giffen, Jason
Attendee	SD	Diemert, Sherry

Meeting Minutes

Agenda Item	Action Item No	Description
01) 2021 Q3 Action Item Follow up	508	Analyze if there is a reduction in water used for flushing after we changed the NTU limit from >2 to >3 and compare with water loss from previous years. BAF reports that a new graph will be presented in later slides. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-02-14 Technical Lead: Completion Date: 2022-02-14
	511	For Q4 Management Review presentations going forward, continue using the new graph “Flushing Activity Summary” presented for Q4 2020. Include anything >100m3 in the new graph for the Q4 2021 presentation. BAF reports that additions to the graph will be presented in later slides. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-02-14 Technical Lead: Completion Date: 2022-02-14
	513	In the Flushing Activity Summary chart for Management Review, include what was planned, what was completed, and number of deviations. BAF reports that additions to the graph will be presented in later slides. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-02-14 Technical Lead: Completion Date: 2022-02-14
	518	Look into which WO activities are corrective and add more of a breakdown for the "Corrective" slice in the Work Order Summary pie chart for Management Review so it is clearer what WO types are included in the corrective category. DS reports that Sam Cuggy has made a draft report. DS will review with DM and implement changes. Will present in 2022 Q1. - The QMS Action Log was revised to reflect the following: OPC Responsible: DS Due Date: 2022-04-01 Technical Lead: Completion Date:
	523	For the Operational Performance - Locates slides in the Management Review presentation (slide 43 in Q4), remove the monthly year-over-year comparison (light orange bars from Q4 presentation) from the graph. BAF reports that changes to the graph will be presented in later slides. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-02-14 Technical Lead: Completion Date: 2022-02-14
	566	In Q4 Management Review, include a graph of historical sodium sample results over the last few years in addition to the quarterly results GG reports that additional graphs will be presented in later slides. - The QMS Action Log was revised to reflect the following: OPC Responsible: GG Due Date: 2022-02-14 Technical Lead: Completion Date: 2022-02-14
	570	Top Management to provide another update on the plan to address VOCs in the next quarterly Management Review - consider implementing recommendations presented from Golder Associates Inc. when developing the plan

	BAF reports that an update of VOC recommendations from the Golder Report and discussions on implementation of these recommendations were outlined in the Q3 Management Review Meeting. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead: MV	Due Date: 2022-02-14 Completion Date: 2022-02-14
608	Incorporate a year-over-year table for the Flushing Activities (>3NTU Turbidity at Start Up) slide in the Management Review presentation to determine if the number of deviations are reducing over time. BAF reports that a new graph will be presented in later slides. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-02-14 Completion Date: 2022-02-14
629	Review sampling site locations map in the Q4 Management Review presentation. A comprehensive review of the THM/HAA, and Auto Flusher locations will also take place to determine if locations should be updated. GG reports the following: -Sampling sites: Please see map in presentation. -THM/HAA: A review of current THM/HAA locations is complete. Sampling investigation to commence in June 2022 (same time as the 2016 investigation) and will be sampling all auto flushers and flush boxes again (same approach as previous investigation). Subsequent rounds of sampling may follow, to be determined at a later date. -Auto Flushers & Flush boxes: A review of auto flushers and flush boxes took place. Auto flusher locations based on recommendations from Al Miller for new development projects. Seasonal flush box locations are reviewed annually in February based on previous years water quality complaints and expansion in the city. - The QMS Action Log was revised to reflect the following:	OPC Responsible: GG Technical Lead:	Due Date: 2022-02-14 Completion Date: 2022-02-14
630	Review the saved search or query that is set up for the quarterly reports for outstanding work orders for each Section that are run by the UPCs from CMMS and emailed out to Lead Hands/Supervisors. DS reports that saved searches were reviewed. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead:	Due Date: 2022-01-01 Completion Date: 2022-02-14
631	Review the saved searches that are used for the “Status” Inbox for SWS on CMMS and compare to what is used as the criteria for the quarterly reports that are run by the UPCs and emailed out to supervisors. Determine if any changes are required to either of the quarterly reports or the “Status” Inbox and implement the changes. DS reports that all changes have been implemented. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead:	Due Date: 2022-01-01 Completion Date: 2022-02-14
632	Set up “Status” Inbox for GWS (Lead Hand/Supervisor) similar to SWS once review of searches/queries and updates to reports/inbox have been completed. DS reports that inboxes have been set up for GWS and the SWS ones updated per discussions with Supervisor/Lead Hand. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead:	Due Date: 2022-01-01 Completion Date: 2022-02-14
633	Add the auto flushers as assets in Cityworks. BAF reports that this Action Item remains open and is currently with Dan Williams and John Cochrane. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-02-14 Completion Date:
634	Reach out to the MOE to confirm that AWQI 155317 for Sodium has been closed out. Sodium had been previously reported in April 2021 and the AWQI number was generated in error by the external laboratory. The AWQI number did not appear in the 2021 MOE inspection report and WOB would like clarification on the status of this number. LH reports the following: -The sodium exceedance on April 14, 2021, AWQI # 153870, is our new 57-month clock. -This sodium exceedance was documented and then subsequently dismissed or closed out as having not needed to be reported and not reflected within the inspection report. - The QMS Action Log was revised to reflect the following:	OPC Responsible: LH Technical Lead:	Due Date: 2021-12-01 Completion Date: 2022-02-14

02) New Action Items		No additional action items were generated.
03) Incidents of Adverse Drinking Water Tests		There were 2 Adverse Water Quality Incidents (AWQIs) from October 1st, 2021, to December 31st, 2021 (#155984 & #156072). A review of all AWQIs for the year 2021 took place. The following New Action Item was created:
	668	Consider making improvements to the Operations Report (for Annual Report) to provide more details on the nature of any AWQI's that took place during the year (per Sherry Diemert's comment in Q4 Management Review). - The QMS Action Log was revised to reflect the following: OPC Responsible: DS Due Date: 2023-01-01 Technical Lead: Completion Date:
4) CIPs from AWQIs		A review of the following CIPs from AWQIs took place: 134, 141, 147, 148, 149, and included a summary of the root cause analysis, actions generated, and outcomes were included.
5) Deviations from SCADA Critical Control Limits - SWS		Nothing to report for SWS in 2021 Q4.
6) Deviations from SCADA Critical Control Limits - GWS		Nothing to report for GWS in 2021 Q4.
7) Deviations from SCADA Critical Control Limits - WDS / WCS		One deviation occurred on 2021-10-14 related to low chlorine residual.
8) Deviations from Critical Control Limits - Flushing Activities (>100m3)		For this category, 21% of Work Orders deviated from the established limit.
9) Deviations from Critical Control Limits - Flushing Activities (>3NTU Turbidity at Start Up)		For this category, 12.3% of Work Orders deviated from the established limit.
10) Deviations from Critical Control Limits - Flushing Activities (<0.2 Cl (F) at Start Up))		For this category, 0.84% of Work Orders deviated from the established limit.
11) Annual Summary of Flushing Activities (>100m3)		In this category, 30.2% of Work Orders deviated from the established limit; which was a decrease from 2020.
12) Annual Summary of Flushing Activities (>3NTU Turbidity at Start Up)		In this category, 18.3% of Work Orders recorded deviations. This was a decrease from the 2020 results. This was expected due to the increased threshold for turbidity.
13) Annual Summary of Flushing Activities (<0.2 Cl (F) at Start Up)		In this category, 0.51% of Work Orders recorded deviations. This was a decrease in comparison to 2020.
14) 2021 Flushing Activity Summary		Zone 3S shows the least deviations, however, has fewer Work Orders associated with it. Zone 2N had the most number of Work Orders associated with it.
15) Cyclical Flushing Activity Summary		Year to year comparisons of flushing activities for Zone 1 and 2N could not be made due to variations and incomplete work orders relating to COVID-19. Zone 3N showed decreased deviations in flushing activities this year
16) Water Loss Changes (>2NTU to 3NTU Turbidity at Start Up)		Water Loss from 2019 to 2021 exhibits a downward trend, which is visible even when then change from >2 NTU to >3 NTU is excluded.

17) Preventative vs. Corrective Flushing Work Orders		In 2021, more corrective and preventative Work Orders were completed in comparison to 2019 and 2020.		
18) Operational Performance - System-wide Production		In October, production was above average at 107%. In November and December of 2021, the SWTP produced more water than GWS. The annual production trendlines appear to be approaching and may intercept by Q4 of 2022. The following New Action Item was created:		
	664	Confirm if the Monthly Water Production (5 year average) chart on slide 34 is showing 6 years, or 5 years worth of data. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-05-01 Completion Date:
19) Operational Performance - Water Loss Summary		In 2021, 88.67% of water production was billed to customers. Other accounted water was attributed to bulk water filling station, flush boxes, flushing, GWS Maintenance, etc. 2021 saw an increase in water loss percentage. The following New Action Item was created:		
	665	Recalculate the Billed Water once all billing for 2021 is finalized as some of the December water may not have been accounted for in the graph on slide 39 of the Q4 Management Review presentation. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-05-01 Completion Date:
20) Operational Performance - Average Monthly Efficiency of the SWTP		The SWTP efficiency has been continually increasing overall.		
21) Operational Performance Work Order Summary - GWS		The following summary of Work Order progress for GWS was reviewed: 15 of 22 Emergency Maintenance are outstanding. 1828 out of 4701 Corrective Maintenance are outstanding. 488 out of 905 Customer Service are outstanding. 72 out of 5223 Preventative Maintenance are outstanding.		
22) Operational Performance Work Order Summary - SWS		The majority of SWS Work Orders have been completed for 2021. Approximately 96% of Corrective Maintenance Work Orders were completed for the SWS section.		
23) Operational Performance Work Order Summary - WCS		Since WCS is not mobile, there is a backlog of work orders that need to be entered into CMMS, and therefore, makes it appear that there is a lot of outstanding work. This issue should resolve itself after WCS goes mobile in February 2022		
24) Operational Performance Work Order Summary - WDS		Some of the outstanding work can be attributed to WDS not being mobile yet. Since this group is still working with paper-based Work Orders, there is a delay between when the work is completed, and when it appears “complete” in Cityworks. A review of all Sectional WO summary took place. The following New Action Item was created:		
	666	Update the Sectional Work Order Summary graph on slide 45 to a bar graph to more clearly illustrate what this data represents. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2023-02-01 Completion Date:

25) Operational Performance - Call Outs Q4 - GWS	There were 94 callouts for GWS, which is a decrease from Q4 of 2020. Callouts from Bayfield tower are consistently decreasing. The highest number of callouts remains at Sunnidale.
26) Operational Performance - Call Outs Q4 - SWS	There were a total of 71 callouts in Q4, which is an increase from 2020.
27) Operational Performance - Yearly Comparison	In GWS, the total number of callouts each year overall has decreased since 2013. In SWS, the total number of callouts appear to be increasing since 2018.
28) Operational Performance - Backflow Prevention Program	As of January 25, 2022, 87% of backflow testing is considered complete. There are currently 5633 backflow prevention devices.
29) Operational Performance - Locates	In October and December, WOB exceeded the 5-year average, and was on par with the average for November. Overall, WOB has been completing more locates annually since 2017, with the exception of 2020, due to the pandemic.
30) Operational Performance - Watermain Breaks	In Q4 2021, WOB experienced 9 watermain breaks. Overall for the year, WOB is on par with the average number of watermain breaks per year, with a total of 34 main breaks for 2021.
31) Operational Performance - Valve Exercising	The KPI to exercise 50% of non-critical valves in the NW quadrant by Q4 has been successfully completed. The KPI to exercise 100% of critical valves by the end of Q3 is currently at 59% completion. WDS, in collaboration with GIS, now has 5 additional coding selections to categorize valve turning issues.
32) Operational Performance - Action Item Summary	A review of open action items took place and determined that 81% of action items generated since 2019 have been closed. Of the 19% still outstanding, 74% of the action items were generated in 2021.
33) Operational Performance - Action Item Summary (>2 years old)	A review of action items >2 years old took place to determine if they are still relevant. The following items were discussed: 19-128 - The water modelling position has not yet been filled. 19-148 - WOB is on target to meet the deadline of May 1, 2022. 19-151 - MV would like to push this action item until the end of 2022 and reassess. This action item may not be required anymore, but MV or DS will set up a meeting for May 2022 to discuss further. 19-158 - This action item is related to determining level of service for water quality complaints. Consider closing out this action item. BM will provide an explanation to close this out. 19-159 - There have been some delays due to Covid, and this item was put on pause. It was not clear if we were required to upgrade the generators. WOB will continue with installing an external tap box. Wait to see if the Risk Management group will redo this assessment and see if this is still identified as a concern. 19-179 - On schedule to be completed 19-180 - On schedule to be completed 19-181 - On schedule to be completed 19-193 - This a placeholder action item 19-203 - JA would like to push this action item to 2024 19-209 - Reassign to BAF (currently assigned to DSM)
34) Operational Performance - Action Item Closure Rate	A review of the action item closure rate revealed that 63% of action items are completed within the first 5 months of being created.
35) CIP Summary	A review of open CIPs revealed that 7 CIPs are >1 year old. Of these 7 CIPs, 4 were categorized as Preventative, while the remaining 3 were Corrective.
36) Raw Water Supply and Drinking Water Quality Trends - Sodium	From 2020 to Q4 2021, each of the Wells demonstrated a gradually increasing trend for sodium, with the exception of Anne 3A, which appeared to remain stable over the last couple of years overall. While looking at the long-term trending for sodium, it is clear that each of the Wells demonstrate an increase in sodium, with Centennial 12 being the most dramatic increase, and also the closest to the 200 mg/L Aesthetic Objective.

Meeting Details

Meeting Date	2022-02-14
Meeting Type	Management Review

37) Raw Water Supply and Drinking Water Trends - THMs	The data for Trihalomethanes (THMs) shows some fluctuations, however, continues to increase overall.
38) Raw Water Supply and Drinking Water Trends - HAAs	The data for Haloacetic Acids (HAAs) shows some fluctuations, however, continues to increase overall, but much more gradual than THM's.
39) Raw Water Supply and Drinking Water Trends - General Chemistry	No comments were received.
40) Sampling Review	All parameters in the Sampling Review were found to be in compliance for Q4 2021. There were a few instances where some samples were delayed as a result of a well being Out of Service.
41) Sampling Review - Health Canada Guideline Technical Documents	No new drinking water Guideline Technical Documents were proposed in Q4.
42) Sample Site Location Review - Weekly Microbiological	A map of the current weekly North/South Microbiological sampling sites was presented.
43) Summary of Consumer Feedback	An error was found in the Cityworks report from the latest upgrade that was completed in April 2021. The number reported for Q2 and Q3 were not accurate. The error has been corrected and the reports were re-run and updated numbers were presented for 2021.
44) Water Operations KPIs	The following KPIs were reviewed: WDS: 1a. 100% of critical valves (400mm and greater) by end of Q3: progress was 59% complete 1b. 50% of noncritical valves located in the NW quadrant of City by Q4: This KPI was achieved. 1c. 3. Address and turn 100% of valves listed in "complications": This KPI is still in progress. 2. 100% air valve and chamber inspections completed annually: This KPI was achieved. GWS: 1. Reduce # of callouts annually: KPI was achieved 2.Reduce % well station downtime: 8 Wells were able to operate without any downtime. Therefore, this KPI was not achieved. SWS: 1. Average monthly efficiency 98% or greater: For 2021, the SWTP reached 97.18%, therefore the KPI was not achieved. WCS: 1. # of meters replaced annually: Reached 82% of the KPI 2. Volume of water consumed and accounted for: 89% of water was accounted for. This KPI was achieved. CTS: KPI's coming soon
45) Operational Plan, Currency and Updates	All System Procedures have been updated for the year.
46) 2021 SOP Review	A review of SOPs took place, and it was determined that not all SOP's were reviewed for the year.
47) Results of Infrastructure Review - City Capital / Reconstruction Projects	A new "Drawing Review" phase has been added to the legend.

48) Results of Infrastructure Review - Subdivision Projects	No comments were received.

Meeting Details | Meeting Date: 2022-02-14 | Meeting Type: Management Review

49) Results of Infrastructure Review - ICI Projects		No comments were received.		
50) Internal Audit Results		An Internal audit took place for the year. A total of 61 responses to the audit survey were received. 1 non-conformance was identified for T16-01 table.		
51) Summary of MOE Inspection		The MOE inspection took place between 2021-10-06 and 2021-10-07. No non-compliances were identified.		
52) External Audit Results		The Systems Audit took place on 2021-11-11 by SAI Global. No non-conformances were identified and no OFIs were noted in the report.		
53) Resources Needed to Maintain the QMS		No comments were received.		
54) Review of Asset Calibration		No comments were received.		
55) Staff Suggestions		No staff suggestions were received this year.		
56) ORO Qualified Staff List		A list of ORO Qualified staff was presented; no additional comments received.		
57) Changes Affecting QMS (Q4)		The following changes affect the QMS: 1. Amendments to O. Reg 128/04 2. Cityworks upgrade this year negatively impacted reporting. BMT decided that we would not develop an in-house protocol but some discussions could take place with Rob Emerson to get an understanding of what is done prior to a Cityworks upgrade to mitigate any negative impacts to the users. 3. CTS OPC team requests that BMT considers providing additional devices to assist with technical support for staff. 4. New PTTW has been received and is currently being reviewed. The following New Action Item was created:		
	667	Set up a discussion with Rob Emerson to understand what is involved during Cityworks upgrades to mitigate any negative impacts to the reports. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-08-01 Completion Date:
58) New Business		No new business was discussed.		

Note:
These meeting minutes have been reviewed an approved by the meeting attendees noted at the top of the document.

Meeting Minutes

Meeting Details

Date
2022-05-20
Start Time
9:00:00 AM
End Time
12:00:00 PM
Type
Management Review

Attendance

Attendee Role	Initials	Name
Facilitator	BAF	AstopFord, Brittany
Recorder	GG	Gilbank, Gwen
Attendee	DM	Moreau, Diane
Attendee	LH	Hywarren, Lenita
Attendee	JA	Adams, Jamey
Attendee	JG	Giffen, Jason
Regrets	BM	Miller, Brenden
Regrets	MV	Vandergeest, Mark
Attendee	SD	Diemert, Sherry

Meeting Minutes

Agenda Item	Action Item No	Description		
01) Review of Previous Meeting Minutes		Previous minutes were reviewed and accepted with minor revisions.		
02) 2021 Q4 Action Item Follow up		The progress of Action Items carried over or created from the previous quarter were reviewed. The following action items were discussed:		
	518	Look into which WO activities are corrective and add more of a breakdown for the "Corrective" slice in the Work Order Summary pie chart for Management Review so it is clearer what WO types are included in the corrective category. This action item is complete. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead:	Due Date: 2022-04-01 Completion Date: 2022-05-20
	527	Ensure that all Sample Stations (including THM sampling) are labelled correctly to indicate which tap is used for sampling. This action item is complete. - The QMS Action Log was revised to reflect the following:	OPC Responsible: GG Technical Lead:	Due Date: 2022-04-01 Completion Date: 2022-05-20
	633	Add the auto flushers as assets in Cityworks. This action item is currently on the Agenda to discuss during the GIS Liaison meetings. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-07-02 Completion Date:
	664	Confirm if the Monthly Water Production (5 year average) chart on slide 34 is showing 6 years, or 5 years worth of data. This action item is complete. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-05-01 Completion Date: 2022-05-20
	665	Recalculate the Billed Water once all billing for 2021 is finalized as some of the December water may not have been accounted for in the graph on slide 39 of the Q4 Management Review presentation. This action item is complete. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-05-01 Completion Date: 2022-05-20
03) New Action Items	720	Update all CMMS Lead Hand and Operator Manuals to include how to update the work order category and include the category definitions (Preventative, Corrective, Emergency and Urgent) in the manuals. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead:	Due Date: 2022-09-01 Completion Date:
	721	Ensure WDS Mobility Lead Hand and Operator Manuals include how to update the work order category and the category definitions (Preventative, Corrective, Emergency and Urgent) in the manuals. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF	Due Date: 2022-09-01

			Technical Lead:	Completion Date:
	722	Review work order categorization for all WDS work orders - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead: JG	Due Date: 2022-09-01 Completion Date:
	723	Review work order categorization for all WCS work orders - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead: BM	Due Date: 2022-09-01 Completion Date:
	724	Review work order categorization for all SWS work orders - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead: JA	Due Date: 2022-09-01 Completion Date:
	725	Review work order categorization for all GWS work orders - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead: MV	Due Date: 2022-09-01 Completion Date:
04) Incidents of Adverse Drinking Water Tests		There were zero Adverse Water Quality Incidents (AWQIs) reported in Q1 2022. A graph was presented which compares the historical number of AWQIs reported by the City of Barrie with other regions in Ontario (excluding City of Toronto). It was suggested by BMT that going forward, this information could be presented while reviewing the results in Benchmarking with the use of the PowerBI tool.		
5) Deviations from SCADA Critical Control Limits - SWS		There were zero deviations to report for SWS in Q1 2022.		
6) Deviations from SCADA Critical Control Limits - GWS		There were zero deviations to report for GWS in Q1 2022.		
7) Deviations from SCADA Critical Control Limits - WCS/WDS		There were zero deviations to report for WDS/WCS in Q1 2022.		
8) Deviations from Critical Control Limits - Flushing Activities (>100m3)		For this category, 5.2% of Work Orders deviated from the established limit. This is an improvement in comparison to the 15-42% deviation results observed in 2021. There is a hotspot located in the downtown core of the City.		
9) Deviations from Critical Control Limits Flushing Activities (>3NTU Turbidity at Start Up)		For this category, 20.5% of Work Orders deviated from the established limit. This is an increase in comparison with the 12.3% deviation result calculated in Q4 2021.		
10) Deviations from Critical Control Limits Flushing Activities (<0.2 Cl (F) at Start Up))		For this category, 6.9% of Work Orders deviated from the established limit. This is an increase in comparison with the <1% deviation result calculated in Q4 2021.		
11) Operational Performance - System-wide Production		Production in Q1 was slightly above the 5-year average.		
12) Operational Performance - SWS and GWS Production Trending		In the last 5 consecutive months, the SWTP has produced more water than the wells.		
13) Operational Performance - SWS vs GWS ICI and RES Production		A higher volume of SWS water was consumed by ICI locations, and consecutively increased each month in Q1 2022. For residential consumption, In January 2022 groundwater was producing a higher volume, which subsequently decreased in the months of February and March, closely aligning with the volumes produced by the SWTP.		
14) Operational Performance - Water Loss		The original (presented in Q4 2021) water loss summary was presented, followed by the revised calculations. The revised water loss was calculated as 4.9% (previous calculated loss was		

Summary		6.34%). This revision was requested as part of an action item where it was discovered that Water Billing tracks usage from the previous month, thus the original Water Loss calculation did not include the month of December. Interdepartmental billing has also been included in the calculation. The following new Action Items were created:
	737	For Water Loss Summary slides created for Management Review presentations, include a separate category for interdepartmental billing in the Billed Water Category. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: Completion Date:
	738	Create a standard minimum amount of water that the Fire Department uses to be included in the Water Loss Summary calculation, rather than 0%. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: DM Completion Date:
	739	See if Water Loss is something that can be compared with other Municipalities by using the PowerBI tool for Benchmarking. - The QMS Action Log was revised to reflect the following: OPC Responsible: GG Due Date: 2022-07-01 Technical Lead: Completion Date:
15) Operational Performance - Average Monthly Efficiency of the SWTP		In Q1 2022, the month of January saw the highest efficiency rating at the SWTP.
16) Operational Performance - Call Outs Q1 - GWS		In Q1 2022, GWS saw its lowest number of callouts in the last two years, with 63 callouts reported. Sunnidale callouts alone experienced a 50% decrease compared to the previous quarter.
17) Operational Performance - Call Outs Q1 - SWS		In Q1 2022, the SWTP reported a total of 104 callouts. It was noted that secondary membrane issues resulted in more than double the amount of the typical number of callouts. Further discussion about callouts took place. BMT discussed that the data contained in this table may not be an accurate representation as some events may be counted twice. Also, it appears that GWS does not use the callout label during working hours, and instead only appear to use the label after hours. In contrast, the majority of the SWS callout labels are added during working hours. DM suggests we remove this chart from the presentation for now and determine what we would like to present after confirming what the intent is. The following new Action Item was created:
	740	Discuss with BMT what callout information we'd like to capture (after-hours only, or all callouts). Identify what the intent is, and what should be presented in Management Review going forward. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: DM Completion Date:
18) Operational Performance - Locates		In comparison to the 5-year average, WOB has exceeded the number of locates completed each month in Q1 2022. There is likely a correlation between number of locates, and the growth within the City. In the future, WOB may need to consider hiring additional staff to complete this work.
19) Operational Performance - Watermain Breaks		January 2022 experienced more watermain breaks than the 5-year average, with 8 breaks. This can be attributed to colder weather in 2022 in comparison with the 5-year average mean temperature.
20) Operational Performance - Valve Exercising		WOB has established the following two valve turning goals: 1. A goal to complete valve turning at 100% of non-critical valves in the NE corridor. Currently, WOB has reached 56% of this goal. 2. A goal to complete valve turning at 50% of critical valves. Currently WOB has surpassed this goal and has completed 52% of the critical valves. It was discussed that WOB should consider defining a critical valve. BMT discussed that the City of Calgary completed a review of critical valves, and may be willing to share this information. The following new Action Item was created:
	741	On the valve turning slides for Management Review, include the percentage of inoperable valves.

		- The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-07-01 Completion Date:
21) Portable Equipment ELM Usage		While reviewing this slide, and the list of Work Orders that were selected for this project, BMT believes that many of the templates selected do not use colorimeters or turbidimeters to complete them. This list will need to be reviewed further before proceeding with the analysis. The following Action Item was created:		
	742	Review the list of WO templates that were used for the Portable Equipment ELM Usage project to ensure that the list only includes templates that would use a turbidimeter or colorimeter.		
		- The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-07-01 Completion Date:
22) CIP Summary		By the end of Q1 2022, seventeen CIPs remained open, with five being greater than one year old.		
23) Raw Water Supply and Drinking Water Quality Trends - Sodium		In Q1 2022, 5/6 wells monitored for sodium experienced an increase from the previous quarter.		
24) Raw Water Supply and Drinking Water Quality Trends - VOCs		In Q1 2022, zero VOC samples reached the established limits WOB set based on historical results.		
25) Raw Water Supply and Drinking Water Quality Trends - THMs		In Q1 2022, WOB saw a decrease in the quarterly average Trihalomethane (THM) result, yet overall, the running annual average still exhibits an increasing trend.		
26) Raw Water Supply and Drinking Water Quality Trends - HAAs		Similarly to THMs, in Q1 2022, Haloacetic Acids (HAAs) also experienced a decrease in the quarterly average result. However, the overall running annual average still exhibits an increasing trend. Consider displaying the x and y axis to more accurately show the slope of the trending increase.		
27) Sampling Review		The sampling review conducted for Q1 2022 concluded that all sampling parameters were found to be in compliance with the requirements.		
28) Sampling Review - Health Canada Guideline Technical Documents		No new drinking water Guideline Technical Documents were proposed in Q1. The following guidelines that were previously reviewed have been published: 1.Dicamba 2.Diquat 3.Guidance on Monitoring Biological Stability		
29) Summary of Consumer Feedback		Fewer calls were received in Q1 2022 in comparison with the previous quarter. It was noted that during covid WOB was particularly making an effort to try to resolve more calls over the phone to limit staff going into houses. The following Action Item was created:		
	743	Add a note to the Summary of Consumer Feedback slide to clearly state that the graph represents calls from water quality complaints only.		
		- The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead:	Due Date: 2022-07-01 Completion Date:
30) After-hours Water Quality Complaints		In Q1 2022, 100% of after-hours water quality complaints received were entered into CMMS. There was a total of 12 calls received.		
31) Water Operations KPIs		The following KPIs were discussed: WDS 1a. 100% of non-critical valves in the NE corridor: 56% complete 1b. 50% of critical valves City wide: This KPI was achieved and currently 52% of critical valves have been exercised 2. 100% valve/drain and chamber inspections completed annually: No update provided		

	3. Complete System Swabbing for Zone 3N: No update provided GWS 1. Reducing number of callouts annually: The target number is less than 300, and GWS has currently received 43 callouts. 2. Target of 0% well station down time annually: Currently three wells have experienced downtime in Q1 2022. SWS 1. Achieve average monthly efficiency of 98%: The Q1 average efficiency was 97.29%. Compared to the Q1 efficiency average in 2021 of 96.88%, WOB has increased efficiency since last year in Q1. WCS 1. Replace 900 meters annually: Currently achieved 5% of this goal 2. Ensure 90% of water consumed is accounted for: To be reported in Q4 CTS 1. Have renewals sent to OWWCO with 6 weeks lead time: Currently achieved goal 60% of the time 2. Increase QMS engagement by 5% by December 31, 2023: Update to be provided in Q1 2023.
32) Operational Plan, Currency and Updates	Currently 10/21 System Procedures have been reviewed for the year.
33) 2022 SOP Review	The current progress of SOP review for each section was presented. There are 117 SOPs across each section that still require review.
34) Internal Audit Plan (2022 - 2024)	The 2022-2024 proposed internal audit plan was presented. No comments were received.
35) Results of Infrastructure Review - City Capital /Reconstruction Projects	A progress update for City Capital/Reconstruction Projects was presented on a map. No additional comments were received.
36) Results of Infrastructure Review - Subdivision Projects	A progress update for Subdivision Projects was presented on a map. No additional comments were received.
37) Results of Infrastructure Review - ICI Projects	A progress update for ICI Projects was presented on a map. No additional comments were received.
38) Changes Affecting QMS	The following changes to QMS were noted in Q1, with no additional comments provided: 1. BMP from OACETT Electronic Signatures 2. Upcoming rollout of the modernized on the job (OTJ) Program 3. Upcoming rollout of the QMS SharePoint Homepage 4. New eRIS feature coming soon to help track hours an operator logged in a role 5. WCS Mobility launch 6. Cyber Security to be included in Risk Assessment 7. Expiry of Emergency Orders after April 27, 2022
39) New Business	No new business was discussed.

Note:
These meeting minutes have been reviewed an approved by the meeting attendees noted at the top of the document.

Meeting Minutes

Meeting Details

Date
2022-08-29
Start Time
9:00:00 AM
End Time
12:00:00 PM
Type
Management Review

Attendance

Attendee Role	Initials	Name
Attendee	DM	Moreau, Diane
Facilitator	BAF	AstopFord, Brittany
Recorder	GG	Gilbank, Gwen
Attendee	BM	Miller, Brenden
Attendee	JG	Giffen, Jason
Attendee	MV	Vandergeest, Mark
Attendee	LH	Hywarren, Lenita
Regrets	JA	Adams, Jamey

Meeting Minutes

Agenda Item	Action Item No	Description
01) Review of Previous Meeting Minutes		Previous minutes were reviewed and accepted with minor revisions.
02) 2022 Q1 Action Item Follow Up	512	Establish a benchmark for percentage deviation for the flushing activities. Consider reaching out to Peel Region to inquire about their flushing program. BAF reports that this action item is still ongoing. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: Completion Date:
	633	Add the auto flushers as assets in Cityworks. BAF reports that information has been sent via email with follow ups. Task has been added to list of GIS Meeting discussion points with LH. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: Completion Date:
	667	Set up a discussion with Rob Emerson to understand what is involved during Cityworks upgrades to mitigate any negative impacts to the reports. BAF reports that a discussion with Rob Emerson took place to understand what is included in the testing phase after each Cityworks upgrade. Recommendation was made to create a list of critical reports used for regulatory purposes, which would be tested after each major eRIS upgrade. No errors were found during the review of critical reports in the last upgrade; however, errors were found elsewhere by operators in the field. GG to discuss at next eRIS steering committee meeting as part of a similar action item. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-08-01 Technical Lead: Completion Date: 2022-08-29
	737	For Water Loss Summary slides created for Management Review presentations, include a separate category for interdepartmental billing in the Billed Water Category. Presented in Q4, so this has not yet been completed. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
	738	Create a standard minimum amount of water that the Fire Department uses to be included in the Water Loss Summary calculation, rather than 0%. DM reached out to the Fire Department, and they responded that further consideration is required. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-09-29 Technical Lead: DM Completion Date:
	739	See if Water Loss is something that can be compared with other Municipalities by using the PowerBI tool for Benchmarking. PowerBI can be used to compare Water Loss with other NWWBI participants. See slides later in the presentation. - The QMS Action Log was revised to reflect the following: OPC Responsible: GG Due Date: 2022-07-01 Technical Lead: Completion Date: 2022-08-29
	740	Discuss with BMT what callout information we'd like to capture (after-hours only, or all callouts). Identify what the intent is, and what should be presented in Management Review going

		forward. It was determined that the Call Out Slide does not provide enough context to accurately present the call outs that occurred. The slide will be removed from the presentation. The information will still be presented for GWS in the form of a KPI. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: DM Completion Date: 2022-08-29
	741	On the valve turning slides for Management Review, include the percentage of inoperable valves. Completed on valve turning slides. Please see presentation. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: Completion Date: 2022-08-29
	742	Review the list of WO templates that were used for the Portable Equipment ELM Usage project to ensure that the list only includes templates that would use a turbidimeter or colorimeter. BAF met with Supervisors to discuss templates. Supervisors approved of list of Work Order Templates that were used for the Internal Audit. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: Completion Date: 2022-08-29
	743	Add a note to the Summary of Consumer Feedback slide to clearly state that the graph represents calls from water quality complaints only. Completed on Consumer Feedback slide. Please see presentation. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-07-01 Technical Lead: Completion Date: 2022-08-29
03) Incidents of Adverse Drinking Water Tests		There were zero AQWI's reported in Q2 2022.
04) Deviations from SCADA Critical Control Limits - SWS		There were zero deviations to report for SWS in Q2 2022.
05) Deviations from SCADA Critical Control Limits - GWS		There were zero deviations to report for GWS in Q2 2022.
06) Deviations from SCADA Critical Control Limits - WCS / WDS		There were zero deviations to report for WCS/WDS in Q2 2022. The following new Action Item was created:
	759	Review changes to Critical Control Points in 2022 Risk Assessment to confirm if staff are aware of new Critical Control Point deviations that require labels in the eLogbook. Coordinate review with staff if applicable. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: BM Completion Date:
07) Deviations from Critical Control Limits - Flushing Activities (>100m3)		For this category, 22.5% of Work Orders deviated from the established limit. There are three large "hot spots" throughout the City. WCS will be adding more auto flushers in the future. There was discussion amongst BMT about whether or not WOB could determine if the use the Auto flushers has resulted in less water being sent to wastewater.
08) Deviations from Critical Control Limits - Flushing Activities (>3NTU Turbidity at Start Up)		For this category, 13.9% of Work Orders deviated from the established limit. There are also three hotspots for this category in the same areas as the previous category.
09) Deviations from Critical Control Limits - Flushing Activities (<0.2 Cl (F) at Start Up)		For this category, 0.37% of Work Orders deviated from the established limit.

Meeting Details

Meeting Date	2022-08-29
Meeting Type	Management Review

10) Operational Performance - System-wide	Production over Q2 has been higher than the 5-year average.

Production		The following new Action Item was created:
	760	Present the “Operational Performance – System-wide Production with Precipitation” slide on an annual basis rather than quarterly. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
11) Operational Performance - SWS and GWS Production Trending		The highest production volumes shuffled between GWS and SWS in Q2. There were 2/3 months in Q2 where GWS produced more water.
12) Operational Performance - SWS vs GWS ICI and RES Production		BMT requested that this slide is only produced annually, rather than quarterly. The following new Action Item was created:
	-	Present the “Operational Performance – SWS vs GWS ICI and RES Production” Management Review slide on an annual basis rather than quarterly. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
13) Operational Performance - Water Loss		A water loss comparison was conducted using the National Water and Wastewater Benchmarking Initiative (NWWBI) 2021 data. Out of 10 respondents, the City of Barrie reported the 4th lowest water loss.
14) Operational Performance - Average Monthly Efficiency of the SWTP		There was a quarterly low in May, and high in June, with the average efficiency for the quarter calculated at 97.88%.
15) Operational Performance - Locates		WOB exceeded the 5-year averages for locates each month this quarter.
16) Operational Performance - Watermain Breaks		In April and May, there were zero watermain breaks reported. In June, there was one break reported, which was slightly above the 5-year average.
17) Operational Performance - Valve Exercising		WOB has a goal to complete valve turning for 100% of non-critical valves in the NE corridor. The progress on this goal is currently at 70%. There are 8 inoperable non-critical valves. WOB also has a goal to complete valve turning for 50% of critical valves. Currently the progress on this goal is 31%.
18) CIP Summary		There are 7 CIPs that remain open which are greater than 1 year old.
19) Preventative CIPs >1 Year Old		There are currently 3 preventative CIPs open that are greater than 1 year old. Several outstanding action items associated with these CIPs were reviewed. See Q2 Management Review presentation for latest updates.
20) Corrective CIP Summary		There are currently 4 corrective CIPs open that are greater than 1 year old. Several outstanding action items associated with these CIPs were reviewed. See Q2 Management Review presentation for latest updates.
21) Raw Water Supply and Drinking Water Quality Trends - Sodium		Sodium monitoring results for Q2 indicated an increase in sodium at all locations except Well 14 which demonstrated a decrease from 63.9mg/L in Q1 to 53.7mg/L in Q2. Well 12 remained at 151mg/L for both Q1 and Q2.
22) Raw Water Supply and Drinking Water Quality Trends - VOC Monitoring		Golder Associates Ltd. provided some recommendations on the 2021 VOC Plume Monitoring Program document.
23) Raw Water Supply and Drinking Water Quality Trends - THMs		A THM/HAA investigation took place in Q2 2022. There were 45 locations sampled and analyzed. The average THM result for all locations combined was 28.1 ug/L, which brought the Running Annual Average (RAA) down to 42 ug/L in Q2.

24) Raw Water Supply and Drinking Water Quality Trends - HAAs	Likewise, for HAA's there were 45 locations sampled and analyzed as part of an investigation to determine if the two current locations are still adequate. The average HAA result for all locations combined was 19.5 ug/L. Despite the lower quarterly average, the RAA slightly increased by 0.1 ug/L with a total RAA of 26.7 ug/L.

25) Raw Water Supply and Drinking Water Quality Trends - THM/HAA Investigation 2022		Comment from BMT for WCS to consider only reviewing the top few results from the 2022 investigation in the future, instead of sampling at 40+ locations.
26) Sampling Review		A Q2 sampling review was conducted and there were zero compliance concerns identified.
27) Sampling Review - Health Canada Guideline		No new drinking water Guideline Technical Documents were proposed in Q2. The following guidelines that were previously reviewed have been published: -Bromoxynil -Iodide -4-Chloro-2-methylphenoxyacetic Acid (MCPA) There was discussion about WOB collaborating on a Manganese project with the University of Waterloo. Would like to provide a summary for next Management Review Meeting. The following new Action Item was created:
	762	Investigate the historical Manganese data WOB currently has to see where we stand. Look into what other municipalities may be doing to address manganese concerns. - The QMS Action Log was revised to reflect the following: OPC Responsible: GG Due Date: 2022-10-01 Technical Lead: Completion Date:
28) Summary of Consumer Feedback		In Q2 there was a decrease in the number of calls being resolved over the phone, resulting in an increase in the number of trucks being rolled out compared to the linear trending.
29) After Hours Water Quality Complaints		There were 18 after-hours water quality complaints logged in Q2 2022, all of which were entered into Cityworks.
30) Water Operations KPIs		WDS has the following KPIs: 1a. Exercise 100% of non-critical valves in the NE corridor: Currently 70% complete. 1b. Exercise 50% of critical valves Citywide: The progress is currently at 31% 2. 100% valve/drain and chamber inspections completed annually: Nothing to report yet. 3. Complete System Swabbing for Zone 3N: Nothing to report yet. GWS has the following KPIs: 1. Reducing number of callouts annually: The target number is less than 300, and GWS has currently received 80 callouts. 2. Target of 0% well station down time annually: No update received. SWS has the following KPIs: 1. Achieve average monthly efficiency of 98%: The Q2 average efficiency was 97.88%. WCS has the following KPIs: 1. Replace 900 meters annually: Currently at 8% of this goal, or 76 meters. There may be an issue with this report not capturing the numbers accurately. BAF to investigate further. 2. Ensure 90% of water consumed is accounted for: To be reported in Q4. CTS has the following KPIs: 1. Have renewals sent to OWWCO with 6 weeks lead time: Achieved 50% in Q2, 58% in 2022 so far. 2. Increase QMS engagement by 5% by December 31, 2023: Current view count is 327 since launch The following Action Item was created:
	764	Investigate the report used to determine number of meters replaced. This report is used for tracking a WCS KPI and there is concern that it is not capturing the numbers accurately. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: Completion Date:
31) Operational Plan, Currency and Updates		WOB is on track with reviewing System Procedures; currently 5 remaining.
32) 2022 SOP Review		Reviewed the current progress on SOP review for each section. Each section still has outstanding SOPs to review for the year.

33) Results of Infrastructure Review - City Capital/Reconstruction Projects		Discussion that WOB would like to consider changing the way we present this information. Idea was proposed to reach out to Al Miller to provide updates on projects and summarize capital/reconstruction projects. OPC to work with Al to create a list of updates twice a year. New format to be determined. MV proposed idea to create a memo to highlight projects we should consider for the capital budget for vertical infrastructure. The following Action Item was created:
	765	Consider changing the way the Results of Infrastructure information is presented in Management Review. BMT would like to move away from using the map format. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: DM Completion Date:
34) Results of Infrastructure Review - Subdivision Projects		A progress update for Subdivision Projects was presented on a map. No additional comments were received.
35) Results of Infrastructure Review - ICI and Multi-Residential Projects		A progress update for ICI and Multi-Residential Projects was presented on a map. No additional comments were received.
36) Changes Affecting QMS		The following changes to QMS were noted in Q2: 1. WDS Mobility project has begun. Cycle 1 is online now, and Cycles 2 and 3 have commenced. 2. WOB has a new contracted laboratory (Testmark). 3. A vacant permanent QMS Representative position was filled.
37) Results of Q2 Internal Audit		An internal audit of work orders requiring the use of colorimeters and/or turbidimeters was conducted to see if these units have been included under the Equipment, Labor, and Materials (ELM) section. Results: All calibration and verification work orders assessed in the internal audit were not documented as prescribed in WOB-QMS-17. CIP 155 was initiated. Discussion to clean up equipment in Cityworks that is no longer in use. Need to establish a plan for removing / adding equipment. Challenging though since we see all equipment from Roads and Wastewater. Consider adding this as another OFI for the internal audit.
38) Staff Suggestions		There were 2 suggestions received in Q2. Regarding the Job Posting bulletin board, HR no longer updates this and has no plan to resume this in the future. The following new Action Item was created:
	763	Find something to replace the old Branch picture that was hanging in the front entrance (e.g., tv, pictures, etc.). - The QMS Action Log was revised to reflect the following: OPC Responsible: GG Due Date: 2023-01-01 Technical Lead: DM Completion Date:
39) New Business		No new business to discuss.

Note:
These meeting minutes have been reviewed an approved by the meeting attendees noted at the top of the document.

Meeting Minutes

Meeting Details

Date
2022-11-14
Start Time
9:00:00 AM
End Time
12:00:00 PM
Type
Management Review

Attendance

Attendee Role	Initials	Name
Facilitator	BAF	AstopFord, Brittany
Recorder	GG	Gilbank, Gwen
Attendee	DM	Moreau, Diane
Attendee	LH	Hywarren, Lenita
Attendee	MV	Vandergeest, Mark
Attendee	BM	Miller, Brenden
Attendee	JA	Adams, Jamey
Regrets	JG	Giffen, Jason

Meeting Minutes

Agenda Item	Action Item No	Description
01) Review of Previous Meeting Minutes		Previous minutes were reviewed and accepted with minor revisions.
02) 2022 Q2 Action Item Follow Up	512	Establish a benchmark for percentage deviation for the flushing activities. Consider reaching out to Peel Region to inquire about their flushing program. BAF completed some statistical analysis on the data available via Cityworks. Currently data is compiled with all flushing zones, although in the future it will be divided out by Zone. To be presented in later slides during this meeting. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: Completion Date: 2022-11-14
	633	Add the auto flushers as assets in Cityworks. Auto flushers have been added to Cityworks as GWS Structures, however there may be an issue with the information being outdated. Action Item can be closed, and GG will discuss discrepancies identified with BM to determine if any further updates are required. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2022-10-01 Technical Lead: Completion Date: 2022-11-14
	720	Update all CMMS Lead Hand and Operator Manuals to include how to update the work order category and include the category definitions (Preventative, Corrective, Emergency and Urgent) in the manuals. Diana Smith and LH have been reviewing definitions from the Operations Manuals in comparison to National Water and Wastewater Benchmarking Initiative (NWWBI) definitions. Definitions are currently under review, but updates planned to occur after WOB's auditing period. - The QMS Action Log was revised to reflect the following: OPC Responsible: DS Due Date: 2023-01-01 Technical Lead: Completion Date:
	721	Ensure WDS Mobility Lead Hand and Operator Manuals include how to update the work order category and the category definitions (Preventative, Corrective, Emergency and Urgent) in the manuals. Diana Smith and LH have been reviewing definitions from the Operations Manuals in comparison to National Water and Wastewater Benchmarking Initiative (NWWBI) definitions. Definitions are currently under review, but updates planned to occur after WOB's auditing period. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
	722	Review work order categorization for all WDS work orders Completion of AI 22-720 is required before this Action Item can be closed. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: JG Completion Date:
	723	Review work order categorization for all WCS work orders Completion of AI 22-720 is required before this Action Item can be closed. - The QMS Action Log was revised to reflect the following: OPC Responsible: DS Due Date: 2023-01-01 Technical Lead: BM Completion Date:
	724	Review work order categorization for all SWS work orders

	Completion of AI 22-720 is required before this Action Item can be closed. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead: JA Due Date: 2023-01-01 Completion Date:
725	Review work order categorization for all GWS work orders Completion of AI 22-720 is required before this Action Item can be closed. - The QMS Action Log was revised to reflect the following:	OPC Responsible: DS Technical Lead: MV Due Date: 2023-01-01 Completion Date:
738	Create a standard minimum amount of water that the Fire Department uses to be included in the Water Loss Summary calculation, rather than 0%. DM worked with Ed Davis from the Fire Department to provide annual totals for the previous calendar year in January/February of the new year. He is currently providing rough estimates but will investigate the ability of the new trucks to determine water flow to provide more accurate data in the future. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead: DM Due Date: 2022-09-29 Completion Date: 2022-11-14
759	Review changes to Critical Control Points in 2022 Risk Assessment to confirm if staff are aware of new Critical Control Point deviations that require labels in the eLogbook. Coordinate review with staff if applicable. BAF completed some process mapping and held discussions with BM regarding the current status of the "CCP_Deviation" label use, and what direction and desired outcomes would be preferred moving forward. BAF to book meeting with DM to review WDS/WCS Critical Control Points. Once confirmed, information will be documented and communicated to staff. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead: BM Due Date: 2023-01-01 Completion Date:
762	Investigate the historical Manganese data WOB currently has to see where we stand. Look into what other municipalities may be doing to address manganese concerns. Historical review of WOB data was summarized and provided to DM. WOB has been working with the University of Waterloo on a Manganese project which is set to begin this month (November 2022). A summary of the project will be presented later in today's meeting. - The QMS Action Log was revised to reflect the following:	OPC Responsible: GG Technical Lead: Due Date: 2022-10-01 Completion Date: 2022-11-14
764	Investigate the report used to determine number of meters replaced. This report is used for tracking a WCS KPI and there is concern that it is not capturing the numbers accurately. Discussion occurred with Utilities Program Clerk (UPCs) to determine how they gather and report on data regarding meter replacements to BM. Report used called “Water Meter Replacement Details (WATER)”. For Management Review, report used is called “Water Meter Replacement (WATER)” and is currently generating inaccurate reports. Need to ensure it is not a report that Kelly Wagg is using. If not, can proceed with removing it. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead: Due Date: 2023-01-01 Completion Date:
765	Consider changing the way the Results of Infrastructure information is presented in Management Review. BMT would like to move away from using the map format. Discussions occurred with GG, BAF, and DM regarding the future of the Infrastructure Review Results slide. Changes were made to highlight requested projects submitted by WOB, infrastructure that resulted from our Risk Assessment, as well as the location of other Infrastructure Review Results. To be presented later in today's meeting. - The QMS Action Log was revised to reflect the following:	OPC Responsible: BAF Technical Lead: DM Due Date: 2022-11-14 Completion Date: 2022-11-14
03) Incidents of Adverse Drinking Water Tests	No AWQIs were reported in Q3. However, the External Laboratory contacted WOB regarding a SWTP General Chemistry Highlift sample in early July that had high sodium. Occurrence was not reportable due to previous sodium exceedance being reported in the preceding 57 months.	
04) Deviations from SCADA Critical Control Limits - SWS	There were zero deviations to report for SWS in 2022 Q3.	
05) Deviations from SCADA Critical Control Limits - GWS	There were zero deviations to report for GWS in 2022 Q3.	

06) Deviations from SCADA Critical Control Limits - WCS/WDS		There were zero deviations to report for WCS/WDS in 2022 Q3.
07) Deviations from Critical Control Limits - Flushing Activities (>100m3)		Discussion for Action Item 21-512: BAF compiled dataset from reliable years. Statistical analysis was completed on the data and there was a lot of quarterly variation. Established a quarterly range of what is typical for each quarter. Completed this work for each of the Critical Control Point Limits. 281 out of 1063 Work Orders (26.4%) were with deviations. Now able to compare current results with our typical standard deviation range. Currently not split by zone, but hopefully over the year we will be able to review each zone. Discussion that WOB should consider locking in the range, rather than having a moving target that changes each quarter. Decision to keep the range where we currently have it set.
08) Deviations from Critical Control Limits - Flushing Activities (>3NTU Turbidity at Start Up)		266 out of 1063 Work Orders (25.0%) were with deviations. This is considered to be within a normal range of deviation.
09) Deviations from Critical Control Limits - Flushing Activities (<0.2 Cl (F) at Start Up)		7 out of 1063 Work Orders (0.66%) were with deviations. Compared to previous years in Q3 this percent deviation is above our benchmark. There was discussion that next year WOB would be installing more auto flushers and will use this data to help determine appropriate locations.
10) Operational Performance - System-wide Production		In July 2022, System Production was on par with the 5-year average. August and September were slightly above average (1% each month).
11) Operational Performance - SWS and GWS Production Trending		Despite what had been hypothesized in Q2, in Q3 GWS produced more water than SWS.
12) Operational Performance - Average Monthly Efficiency of the SWTP		In Q3, the SWTP plant efficiency was as follows: July 97.8% Aug 97.1%, Sept 98.27% Thus, WOB was able to achieve the target of 98% efficiency in September.
13) Operational Performance - Closed Pressure Zones in Q3		Zone 3S: June 30, 2022 – Present (Expected completion November 2022) Mapleview Tower offline for new painter rail installation & interior liner replacement. Zone 2N: September 16, 2022 – October 12, 2022. Bayfield Tower was offline.
14) Operational Performance - Locates		For the first time in 2022, total locates were below our average for two months (July and September). August was only slightly (1%) above the 5-year average.
15) Operational Performance - Watermain Breaks		The number of watermain breaks in Q3 was higher than the 5-year average. In Q3 2022, there were a total of 11 watermain breaks. The follow new Action Item was created:
	786	On the Watermain Break slides for Management Review, instead of percentage of watermain breaks each month, include actual number of watermain breaks - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
16) Operational Performance - Valve Exercising		Northeast Quadrant: WOB's goal is to complete valve turning for 100% of non-critical valves in the NE corridor. Currently, this goal is 75% reached.

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Meeting Date	2022-11-14
Meeting Type	Management Review

Critical Valves: WOB's goal is to complete valve turning for 50% of the critical valves. Currently, this goal is 8% reached. Definition of 'critical' is solely based on size of the valve (>400mm).

		The following new Action Item was created:
	787	For the Valve Exercising slides in Management Review, include legends of what all the symbols mean on the Valve Exercising app. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
17) CIP Summary		There are 18 CIPs currently open; 9 are greater than 1 year old.
18) CIP Summary - Preventative		Currently 3 Preventative CIPs remain open that are greater than 1 year old. For 1 of the 3 CIP's, all Action Items are closed and the CIP is currently in the assessment period before it can be closed. The following Action Items associated with these CIPs remain open: 20-326: Due date set for December 2022 20-418: Due date set for December 2022. This is ongoing work with GIS. Propose that we say, "These action items have to moved to the agenda for GIS meetings". 20-419 and 20-440: same as above. 20-441: The updated Emergency Contact List will be updated and distributed soon.
19) CIP Summary - Corrective		Currently, 6 Corrective CIPs remain open that are greater than 1 year old. For 4 of the 6 CIP's, all Action Items are closed, and the CIP is currently in the assessment period before it can be closed. The following Action Items associated with the 2 other CIPs remain open: 21-498: Due date set for February 2023 21-581: Due date set for January 2023 21-582: Due date set for December 2023
20) Raw Water Supply and Drinking Water Trends		A quarterly review of raw water supply and drinking water trends was conducted for Q3.
21) Drinking Water Quality Trends - Sodium Trending		In Q3, all Wells monitored for sodium demonstrated a slight decrease with the exception of Well 13, which slightly increased back up towards the current trendline.
22) Drinking Water Quality Trends -THMs		The quarterly average from Q2 to Q3 saw an increase from 28.1 ug/L to 39.8 ug/L. However, the running annual average (RAA) decreased from 42 ug/L to 40 ug/L.
23) Drinking Water Quality Trends - HAAs		The Q3 HAA quarterly average results increased from Q2. A new quarterly average high was reached for the last 5 years with a result of 36.8 ug/L. The running annual average slightly increased from 26.7 ug/L in Q2 to 28 ug/L in Q3. It was noted in Q3 WOB moved to a different external laboratory.
24) Drinking Water Quality Trends - Lead		During the June 15th – October 15th lead sampling window, sampling was conducted at 5 ICI locations and 10 hydrants. There were zero exceedances at all locations. The highest result was 0.003 mg/L (MAC is 0.01mg/L).
25) Sampling Review		A quarterly sampling review was conducted and noted the following: New external laboratory did not analyze 1.4-Dichlorobenzene for September. This parameter was not on the list provided to the lab. Issue has since been resolved. There were a couple instances where a Well was Out of Service and thus some sampling events were unable to take place during that time.
26) Health Canada Guideline Technical Document Review		No new drinking water Guideline Technical Documents were proposed in Q3.
27) Drinking Water Quality Trends - Manganese		The City of Barrie is working on a manganese project with the University of Waterloo. They will be conducting a study on biofilters for efficient manganese removal. Main objectives: - Compare intermittently and continuously operated biofilters for efficient Mn removal - Study operational and water quality parameters that could potentially affect the filter performance WOB's involvement: - Provide them a location - Provide them raw water to allow them to run their pilot - Assist with sampling and send them media samples

28) Summary of Consumer Feedback - Response Efficiency		A new graph was presented to display this information. In Q3. 90% of calls were resolved over phone in July, 85% in August, and 78.5% in September. The following new Action Item was created:
	788	Update colours of the axis titles (e.g., Percent of Calls Resolved) to match the corresponding line on the Summary of Consumer Feedback graph. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Technical Lead: Due Date: 2023-01-01 Completion Date:
29) After-Hours Water Quality Complaints		In Q3, 27 calls were received in total and 12 were not registered into Cityworks. The following new Action Item was created:
	-	Investigate if report can be received from Service Barrie to compile all of the complaint data received each quarter. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Technical Lead: Due Date: 2023-01-01 Completion Date:
30) Water Operations KPIs		Water Distribution Services has the following KPIs: 1a. Exercise 100% of non-critical valves in the NE corridor: Currently 75% complete. 1b. Exercise 50% of critical valves Citywide: Currently 8% 2.100% valve/drain and chamber inspections completed annually: Inspections are currently underway 3. Complete System Swabbing for Zone 3N: Unlikely to complete this year, however trying to complete a few runs this year in 3N. Groundwater Supply has the following KPIs: 1. Reducing number of callouts annually: The target number is less than 300, and GWS has currently received 189 callouts for the year. 2. Target of 0% well station down time annually: In Q3 there were 3 Wells that experienced down time. Surface Water Supply has the following KPIs: 1. Achieve average monthly efficiency of 98%: The Q3 average efficiency was 97.72%. Water Customer Services has the following KPIs: 1. Replace 900 meters annually: Currently at 63% of this goal, or 563 meters. 2. Ensure 90% of water consumed is accounted for: To be presented in Q4 Compliance and Technical Support has the following KPIs: 1. Have renewals sent to OWWCO with 6 weeks lead time: Goal reached 100% in Q3, and 72% so far for the year. 2. Increase QMS engagement by 5% by December 31, 2023: Current view count is 2447 since launch. Discussion about how many of the views are OPC's vs. Operators.
31) Operational Plan, Currency and Updates		By the end of Q3, all Operational Plan documents had been reviewed.
32) SOP Review		Reviewed the current progress on SOP review for each section. There are still several SOPs to review in each group. Discussion about how WOB now has more instructions in Work Order templates. There is currently not a process in place for ensuring that these are being reviewed and updated for accuracy. The following new Action Item was created:
	790	Determine a process for reviewing both SOPs and WO templates, including the required frequency to review and update each. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Technical Lead: DM Due Date: 2023-04-01 Completion Date:
33) Results of Infrastructure Review		Discussion about Intake Forms for WOB infrastructure. DM is trying to get copies of the forms WOB submitted in 2022, and then in 2023 would be able to compare and see projects were approved and planned for future implementation. DM was in discussion with Bryan Kelly and he provided a spreadsheet recently that DM will review shortly. 2022 Risk Assessment High Risk/Low Detectability results were reviewed. There were 11 hazards that fell into this category.

34) RA CCPs to eLogbook CCP Label		There was an action item to see how staff use the Critical Control Point (CCP) label. BAF process mapped this and reviewed the process with BMT. The WCS and WDS groups currently do not have CCP Limits documented for their CCPs. For the CCP - Backflow Event, proposed CCP Limit for pressure when 25 psi is reached. Other CCP's prove to be more difficult to control. Discussion took place that if there's no reasonable controls that can be implemented, update the Risk Assessment Evaluation to say that the item is still High Risk, however a CCP Limit cannot be established. The following new Action Item was created:
	791	Meet with BMT to further discuss how WOB would like to proceed with the WDS and WCS Critical Control Points and associated Limits. - The QMS Action Log was revised to reflect the following: OPC Responsible: BAF Due Date: 2023-01-01 Technical Lead: Completion Date:
35) Efficacy of the Risk Assessment Process		There were a few changes to the 3-year review of Risk Assessment, including: - Addition of Detectability Variable for consideration - Addition of “Change in Risk”. - New “High Risk” hazards for consideration. - New Hazard requirement “Cyber Security”. Reviewed some of the lessons learned and future goals of the Risk Assessment process.
36) Internal Audit		Objective: An internal audit for this quarter was conducted to confirm that all references to the Director of Infrastructure were updated accordingly. Results: There were zero non-conformances and two Opportunities for Improvement identified.
37) Results of Emergency Response Testing		Emergency response testing was carried out during the Rogers Network Outage event. Several positive actions and Opportunities for Improvement were identified during the debrief meeting that took place on 2022-08-10.
38) Changes Affecting QMS (Q3)		The following items were identified as changes affecting QMS: - New External Auditor for 2022 - SharePoint Integration: OPC Team learning how to better serve the Branch Staff with Microsoft Forms and Workflows. - Lead Sampling: Resuming all lead sampling that WOB had relief from during Covid-19 restrictions (the 5 indoor ICI locations).
39) New Business		No new business to discuss.

Note:
These meeting minutes have been reviewed an approved by the meeting attendees noted at the top of the document.