ENVIRONMENTAL SERVICES - DRINKING WATER DIVISION

DRINKING WATER QUALITY MANAGEMENT SYSTEM
ELEMENT 20 MANAGEMENT REVIEW
MEETING SUMMARY

DATE: Wednesday, October 5, 2022
TIME: 9:00 am
VENUE: Microsoft Teams

ATTENDEES:

Rob Walton – General Manger of Operations
Alex Davidson - Director of Environmental Services
Mike Biggin – Environmental Services Manager
David Stevenson – Water Technologist/QMS Representative
Scott MacDonald – Environmental Services Superintendent
Kristina Hall – Water Quality Technician

1. Incidents of Regulatory Non-Compliance

a. Airport:

The Airport Drinking Water System met all requirements of *the Safe Drinking Water Act*, provincial regulations, Drinking Water Works Permit, Municipal Drinking Water Licence, and the Permit to Take Water for the 2021 - 2022 reporting period.

Action Item: None

b. Cainsville:

The Cainsville Distribution System met all requirements of *the Safe Drinking Water Act*, provincial regulations, Drinking Water Works Permit, and Municipal Drinking Water Licence for the 2021 - 2022 reporting period.

Action Item: None

c. Mt. Pleasant:

The Mt. Pleasant Drinking Water System met all requirements of *the Safe Drinking Water Act*, provincial regulations, Drinking Water Works Permit, Municipal Drinking Water Licence, and the Permit to Take Water for the 2021 - 2022 reporting period.

Action Item: None

d. Paris:

The 2020-2021 inspection of the Paris Drinking Water System noted one (1) non-compliance. The Inspector noted that Logbooks were not properly maintained and/or did not contain the required information. There were three (3) occasions during the inspection period where logbook entries did not meet the standards prescribed by *O. Reg 128/04 CERTIFICATION OF DRINKING WATER SYSTEM OPERATORS AND WATER*

QUALITY ANALYSTS, Subsection 27(5). These incidents occurred on August 19, 2021 at the Bethel and Telfer Water Treatment plants and on November 19, 2021 at Telfer Water Treatment plant.

Moving forward the County of Brant (the County) was reminded that adequate record keeping demonstrates the operators' level of care, diligence and skill required to protect human health.

Action Item: None - During the inspection process the County provided a detailed response to address this non-compliance. Corrective actions included: revising four SOP's; updating the Telfer Operations manual and a training session with all certified operators on the revisions to the SOP's and Operations Manual and on the relevant sections of O. Reg. 170/03 Drinking Water Systems and O. Reg. 128/04 Certification of Drinking Water System Operators and Water Quality Analysts.

e. St. George:

The St. George Drinking Water System met all requirements of *the Safe Drinking Water Act*, provincial regulations, Drinking Water Works Permit, Municipal Drinking Water Licence, and the Permit to Take Water for the 2021 - 2022 reporting period.

Action Item: None

2. Incidents of Adverse Drinking Water Tests

a. Airport

No adverse test results have been reported since the last Management Review in October 2021.

Action Item: None

b. Cainsville:

No adverse test results have been reported since the last Management Review in October 2021.

Action Item: None

c. Mt. Pleasant:

No adverse test results have been reported since the last Management Review in October 2021.

Action Item: None

d. Paris:

AWQI# - 156522 (November 10, 2021) - The Telfer WTP Point of Entry (POE) chlorine analyzer reported a free chlorine residual of 0.03 mg/L. As this is less than the regulatory limit of 0.05 mg/L SAC and BCHU were notified. No consumers received water not meeting regulatory requirements.

After maintenance, the POE chlorine analyzer was inadvertently left in the "calibrate" or "hold" mode. As control of the chlorine dosage was set up on a compound loop this condition allowed the station to operate for two (2) hours with declining chlorine residual. The controls thought the residual was that last recorded before maintenance (1.35 mg/L) and therefore did not dose to maintain the target residual of 1.07 mg/L. After two (2) hours, the "calibrate" or "hold" function automatically turned off in SCADA. When the analyzer came off "calibrate" or "hold", the chlorine analyzer registered 0.03 mg/l. An alarm was immediately sent to the On-call Operator and the pumps, which had already switched off due to achieving a level setpoint, were interlocked in the off mode.

Upon receiving the alarm, the Operator attended the Telfer WTP. The Operator tested for chlorine residuals at nearby hydrants on West River Road. Residuals before the first customer were above the regulatory minimum.

The Operator rectified the situation by running fully chlorinated water from the Gilbert WTP through the long dead end watermain on West River Road toward Telfer. Water was flushed through Telfer until the chlorine residual in the contact tanks was the same as that in the water coming from Gilbert. Telfer was then placed in manual off until satisfactory bacti samples could be obtained. Bacti samples from the POE were taken on November 11 and 12, 2021 Results were 0 E.coli and 0 total coliform for both samples.

After the incident, to ensure due diligence and continental improvement, staff reviewed and revised SOP's for online analyzers and low chlorine residuals in a distribution system and Section D.10 (Chlorination) of the Telfer O&M Manual. The updated documents were provided to all certified Water Operators for review prior to a meeting/training session on November 23, 2021. The meeting/training session was chaired by Mike Biggin (Primary ORO). The session included a debrief of the events leading to the low chlorine residual, actions taken in response, review of the revised documentation, and actions to be taken by Operators moving forward. The meeting summary is provided as an attachment.

At the conclusion of the meeting, the three (3) SOP's and Section D.10 of the O&M Manual was finalized, the chlorine dosage was adjusted so it no is longer controlled by a compound loop, and an alarm was built into the system monitoring program to activate at pre-set intervals (every 10 minutes) whenever a chlorine analyzer is placed in "calibrate" or "hold" mode.

Action Item: None

e. St. George:

No adverse test results have been reported since the last Management Review in October 2021.

Action Item: None

3. Deviations From Identified Critical Control Limits and Actions Taken

[redacted]

SCADA alarm set points ensure the safety of the drinking water systems and are used as critical control limits (CCL). The CCL's are set up within the limits of regulation and best practices to provide Operators time to respond and take corrective action before things migrate to a regulatory noncompliance. e.RIS documents when these deviations occur. The OIC reviews and comments daily on these deviations as part of the SCADA data daily review. Typical deviations for the past year involve spikes related to equipment start up, maintenance and calibrations. Operators follow SOP-55-11 Procedure for Review and Retrieval of Operational Data Stored by the SCADA Historian on e.RIS and the Regeneration of Dream Reports.

The following deviations from the facility CCL's were noted since the last management review.

Airport – There were two (2) CLL's exceedances.

a) 3/10/2022 - Airport POE chlorine (AIT3004A) ~~chlorine~~ over 1.50 mg/L. Occurred during maintenance on the equipment after cleaning injectors and primed the pumps to clear air from the lines.
b) 7/5/2022 - Airport POE chlorine (AIT3004A). The OIC was trouble shooting pump issues. Priming the pump to expel trapped air resulted in the exceedance.
c) 09/26/2022 - Airport POE chlorine (AIT3004A). The OIC was making changes to the chlorine delivery on number 1 pump (1.52 mg/L).

Cainsville – No CCL's for the elevated storage facility or meter chamber.

Mt. Pleasant - No CCL's for the drinking water facility.

Paris - There were twenty-six (26) CLL's exceedances for the Bethel, Gilbert and Telfer Facilities.

a) 10/21/2021 - Gilbert pre-reservoir chlorine analyzer (AIT6201) out of calibration causing 260 events (60 second recording frequency). This also caused the POE analyzer (AIT7701) to have 267 events. The OIC calibrated analyzer AIT6201 to resolve the issue. This was a non-adverse event.
b) 10/22/2021 - Gilbert pre-reservoir chlorine analyzer (AIT6201) out of calibration causing 155 events. This also caused the POE analyzer (AIT7701) to have four (4) events. The OIC advised the calibrated analyzer from the previous day caused the exceedances. This was a non-adverse event.
c) 11/10/2021 - Telfer POE chlorine analyzer (AIT02) recorded low of 0.03 mg/L due to analyzers being on hold while wells were running. This caused the compound loop to lower the chlorine dose. Issue was reported to SAC and BCHU. Distribution chlorine residual remained above minimum requirement of 0.05 mg/L. Lowest reported grab sample at POE was 0.23 mg/L.
d) 11/18/2021 - Gilbert POE chlorine analyzer AIT7701 exceeded the control limit of 1.3 mg/L. The daily report noted one (1) exceedance event. The Operator noted that they believed to be an analyzer error will confirm accuracy and monitor.

[redacted]

e) 1/1/2022 - Telfer daily max fluoride 0.80 mg/L AIT03 due to air bubble in the probe.
f) 1/4/2022 - Telfer daily max fluoride 0.82 mg/L AIT03. The OIC calibrated and adjusted the flow.
g) 1/6/2022 - Bethel turbidity spike AIT418 when the well pumps started. OIC noted that the facility had not ran since service to the turbidity analyzer. Turbidity levels came down quickly to normal levels.
h) 1/7/2022 - Telfer daily max fluoride 0.85 mg/L AIT03. Paris Operators trouble shooting why the probe climbs when the station is off. When the facility starts the fluoride returns to accurate normal readings.
i) 1/10/2022 - Bethel turbidity spike AIT418 when the well pumps started. OIC noted that that it was a possible flow issue.
j) 1/13/2022 - Bethel turbidity spike AIT418 when the well pumps started. OIC noted flow to the analyzer was adjusted.
k) 1/18/2022 - Bethel fluoride analyzer AIT677 max of 0.97 mg/L. OIC noted a faulty probe. Probe was changed out.
l) 1/19/2022 - Bethel fluoride analyzer AIT677 max of 2.0 mg/L. OIC noted an air bubble in the probe. Air bubble was removed.
m) 1/20/2022 - Bethel fluoride analyzer AIT677 max of 2.0 mg/L. OIC noted an air bubble in the probe. Air bubble was removed.
n) 2/1/2022 - Gilbert turbidity high AIT7703 due to maintenance by the Water Quality Technical Specialist.
o) 2/14/2022 - Telfer fluoride AIT03 0.93 mg/L. OIC noted an air bubble was removed from the line. The plant was offline.
p) 3/19/2022 - Gilbert signal fault on UVT AIT3003. OIC noted shut upper aquifer wells down and caused UVT to Read 70%. UVT read became unstable at 7:05:47 hrs. and shut down at 7:08:33 according to trending. This also caused the UV dose to fluctuate and reach a dose under 40 mJ/cm2 for about 10 seconds. Amount of flow from upper aquifer wells during off spec event 5.88m3.
q) 3/25/2022 - Telfer fluoride analyzer AIT03 max of 1.51 mg/L noted as air bubble in the probe. The OIC noted the wells were offline, upon arrival, the OIC removed the air bubble and the reading returned to 0.60 mg/L and confirmed the accuracy of the probe with a SPADNS test.
r) 3/30/2022 - Bethel turbidity analyzer AIT418 max of 2.26 NTU noted by the OIC as air in the feed lines exceedance was during well start up.
s) 3/30/2022 - Bethel Lo UVT UV609 and UV610. OIC noted that the low UVT was due to a flow adjustment on analyzer cleared at 10:00 hrs. The OIC noted received alarm at 10:05 hrs due to poor cell phone reception in basement of Bethel WTP. The OIC noted the UVT event did not take place during the high turbidity event.
t) 6/27/2022 - Bethel POE fluoride AIT618. OIC noted fluoride low was 0.48 mg/L. Possibly due to air. The OIC investigated and corrected.
u) 6/29/2022 - Bethel POE fluoride AIT618. OIC noted fluoride low was 0.49 mg/L. The OIC primed the pumps/lines for air and checked the pump stroke.

[redacted]

v) 7/27/2022 - Gilbert UV 2 (UV3201). Minimum dose 1.80 mJ/cm^2. Power loss due to generator coming online. OIC noted plant shut down with only P29 running. Once generator shut off, the plant restored back to normal. The OIC noted that UV went below minimum dose requirement for approximately nine (9) minutes while the wells were shutting off and approximately 102 L/sec. was flowing while the wells shut down untreated by UV.

w) 8/29/2022 - Gilbert UVT AIT3003. UVT under 90% for 67 events. Minimum UVT was 70%. OIC noted a power bump caused off spec on UVT (20:49 hrs to20:51 hrs). Calculated flow for off spec time 4m^3.

x) 8/31/2022 - Telfer POE chlorine AIT01. High chlorine max. 1.31 mg/L. The OIC noted this resulted from adding fresh sodium hypochlorite to the day tanks. The OIC adjusted the set point.

y) 9/12/2022 - Gilbert AIT3201 UVT under 90% for 28 events (70%). And UV3201 below 40.0 mJ/cm2 for two (2) events (2.2mJ/cm^2). The OIC noted that at 11:47 hrs, a power surge hit Gilbert causing the diesel to run. When the surge happened, multiple alarms occurred. The UVT and the UV units both went into alarm. UVT dropped to 70% and the UV unit that was running at the time showed a low dose of 2.2 mJ/cm^2 on the report and in the raw data. However due to the power surge the trending has a gap lasting from 11:47hrs to 11:51 hrs. When checking the raw data for flows, while the UVT was showing 70% the flows for all upper wells show 0.0 L/s. Due to raw data being pulled every min. For cautionary purposes the OIC calculated that the flow at 11:47:50 hrs was 27.27 L/s over 60 seconds is 1636 litres that potentially went through the UV units. However, run status of all upper wells is 0 at 11:49 hrs according to the raw data. It is very unlikely that this much water went through. After power surge all alarms cleared, and minor alarms reset. UV units began to run normal as well as UVT went to 100%"

St. George - No CCL's for the drinking water facility.

Distribution system chlorine residual (secondary disinfection) - CCLs are documented in SOP-14-09 "Procedure for Required Action in the Event of a Low Chlorine Residual in a Distribution System". There was one deviation noted on January 4, 2022, in the Cainsville Distribution System. The regulatory secondary chlorine residual was below the CCL. Free - 0.01 Total - 0.50 Combined - 0.49. The CCL for combined chlorine residual for Cainsville is 0.90 mg/L. The requirements of SOP-09-09 were not followed. Training on SOP-09-09 and SOP-14-09 was provided at the February DWQMS meeting. This low chlorine residual was not a regulatory non-compliance and at no time were the users of the system at risk.

Weekly distribution pressure - Checked and recorded weekly by an OIC. There were no pressure CCL deviations.

Action Item: None

4. The Effectiveness of the Risk Assessment Process

[redacted]

The Environmental Services Manager, Water Technologist, Environmental Services Superintendent and Water Lead Hand will be meeting in October 2022 to complete the 12-month risk assessment review as required by the County's risk assessment procedure (noted in Element 7). The review will consider the MOECC February 2017 guidance document titled "Potential Hazardous Events for Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment".

Environmental Services Drinking Water staff have been made aware of their roles and responsibilities and the procedures to be followed in the event of an incident occurring noted as a risk in the risk assessment. A review of the Risk Assessment and Outcomes (Elements 7 & 8) is provided annually to all Environmental Services Drinking Water staff at monthly DWQMS meetings.

Action Item: None

5. *Results of Internal and 3rd Party Audits*

a. Surveillance Audit and Reaccreditation Audit (Third Party) - The Surveillance Audit was a desk top review, by a third party, to ensure the County's documented Operational Plan met the requirements of the DWQMS. The County submitted its Operational Plan and accompanying documentation to the auditor on August 8, 2022. The Surveillance Audit formed part of the Three-Year Reaccreditation Audit.

The Audit Report will be provided to the Owner in a future report.

The Audit Report was reviewed with Water Division Staff at the September 2022 DWQMS Meeting.

The audit found four (4) Opportunities for Improvement.

- Element 3 / 11: Opportunity to improve the scheduling of project work requiring water quality staff verifications (e.g., commissioning, disinfection, sampling activities) – relating to multi-departmental and multi-stakeholder projects, opportunity to review the allocation of tasks, roles and responsibilities (even on a temporary basis to cover the construction season). (Closing meeting notes: Planning to address this with the added water operators, allocation of shared responsibilities with training completed).

  Action Item: Develop roles, responsibilities and schedule for all Water Staff that attend water commissioning projects.

  Lead: Director of Environmental Services, Environmental Services Manager, Environmental Services Superintendent and Water Quality Technical Specialist.

  Target Completion Date: May 31, 2023

- Element 10: As the highest class of system potentially operated is Class III WD&S, consider confirming the annual hours of training required for all operators holding certification (as per O. Reg. 128/04).

[redacted]

Action Item: Develop a system to confirm and document annual hours of training required for all operators holding certification.

Lead: Director of Environmental Services, Environmental Services Manager, and the Water Division Clerk.

Target Completion Date: May 31, 2023

- Element 10: Consider having South Operators cross-trained in the North system to develop experiences of all operators in all DWS's. (Closing meeting notes: Planning to begin implementation of this initiative in the new year).

  Action Item: Develop a system and schedule for cross training Operators on all municipal residential drinking water systems, treatment facilities, storage facilities and pumping stations.

  Lead: Environmental Services Manager and Environmental Services Superintendent.

  Target Completion Date: December 31, 2023

- Element 11: Consider describing in OP s.11 the latest provisions and MECP requirements in the use of "emergency substitute operators" as per O. Reg. 128/04 and O. Reg. 129/04. Updated by the Water Technologist September 22, 2022.

  Action Item: None

b. Internal Audit –

The 2021 Internal Audit was conducted December 23, 2021. Due to Covid-19 restrictions, a virtual audit was conducted.

No non-conformities were found by the auditor and four (4) opportunities for improvement (OFI) were identified.

- **El. 2 Quality Management System Policy:** There is an opportunity for the Operating Authority (Water Division) to develop a system to ensure DWQMS and regulatory requirements are reviewed, considered and followed for all aspects of water operations.

  Action Item: Continue to promote awareness to regulatory requirements in the planning and operation of the County's drinking water systems, improve accurate and complete record keeping, and follow applicable standard operating procedures, regulations and legislation to ensure compliance.

  Lead: Director of Environmental Services, Environmental Services Manager, Environmental Services Superintendent and the QMS Representative.

  Target Completion Date: Ongoing

- **El. 4 Quality Management System Representative:** There is an opportunity for

[redacted]

the Quality Management Representative to develop a procedure to ensure electronic and hard copies of documentation are kept current.

Action Item: Develop a standard operating procedure for keeping electronic and hard copies of regulatory and QMS documentation current.

Lead: QMS Representative

Target Completion Date: March 30, 2023.

- **El. 5 Document and Record Control:** There is an opportunity to ensure regulatory and QMS documentation is accurately completed by all members of the Operating Authority.

  Action Item: Continue to raise awareness to Operators the importance of completing field documentation completely and accurately.

  Lead: Environmental Services Manager, Environmental Services Superintendent and QMS Representative.

  Target Completion Date: Ongoing

- **El.16 Sampling Testing and Monitoring**: There is an opportunity to include the requirements of daily chlorine residuals in SOP-57-12"Procedure for Sampling DWS". SOP was updated November 15, 2021 by the Water Technologist.

  Action Item: None

The Audit Report was provided to Council as part of January Quarterly Update on Municipal Water Systems Regulatory Requirements and Drinking Water Quality Management Standard.

The 2022 internal audit will be conducted in the fall/winter by the Water Quality Technical Specialist and/or Water Quality Technician. The audit will evaluate conformity to standard operating procedures, QMS documentation, and the Operational Plan. The auditor(s) will review non-conformances and opportunities for improvement from previous year's audits and Corrective Actions to determine if they are or have been being addressed.

The 2022 Internal Audit Report will be provided to Council in a 2023 Quarterly Update on Municipal Water Systems Regulatory Requirements and Drinking Water Quality Management Standard.

Action Item: Complete the Internal Audit and report to the Owners (Council).

Lead: Water Technologist

Target Completion Date: April 2023

6. Results of Relevant Emergency Response Testing

The Water Supply System's Emergency Response Contingency Plan is reviewed with all Environmental Services Drinking Water Staff annually at a Monthly DWQMS and Health

[redacted]

and Safety Meeting. Review of the Plan will be provided at the November 2022 DWQMS Meeting.

An emergency response mock scenario will be carried out at the November or December 2022 DWQMS Meeting.

The Water Division did not plan an in person mock scenario for 2022 due to Covid-19.

The General Manager of Operations recommended that the EOC be notified -of emergency events when required. The Water Technologist will review all emergency procedures and will update accordingly.

Action Item: Continue to conduct desk top emergency response exercises and review the Water Supply System's Emergency Response Contingency Plan with Water Division staff annually.

Lead: Water Technologist and Environmental Services Manager

Target Completion Date: December 31, 2022

Action Item: Update emergency procedures to identify notification to the EOC where required.

Lead: Water Technologist

Target Completion Date: May 31, 2023

7. Operational Performance and Water Quality Trends (Raw and Treated)

a) Operational Performance

Airport – There have been no operational performance issues with the Airport DWS. There are no operational changes planned for the Airport DWS.

Cainsville - There have been no operational performance issues with the Cainsville DS. There are no operational changes planned for the Cainsville DS.

Mt. Pleasant – Water use in the summer months continues to push the system close to the MDWL Rated Capacity. The Mt. Pleasant Water Conservation Program has worked well over the past two (2) summers. The County will continue to work with the City of Brantford to complete the transfer of the Tutela Heights area of the Mt. Pleasant DWS. Once this section of the distribution is disconnected, the high volume water use the system faces in the summer months will stop.

The unlined cast iron Burtch watermain is weakening and causes water quality issues. The County has received funding to decommission it and construct new watermain on on Burtch Road, Cockschutt Road, and Phelps Road.

Paris – The County is currently constructing the Southwest Paris Elevated Tank. This will provide increased storage and higher fire water flows to the new industrial developments in south Paris.

St. George – The County continues to plan for a new well field and water treatment facility for St. George. This will provide redundancy for the system and will increase quantity to support future development.

Action Item: Continue to monitor the systems.

Lead: Environmental Services Manager, Environmental Services Superintendent and Water Lead Hand

Target Completion Date: Ongoing

b) Water Quality Trends

The Water Quality Technical Specialist and Water Quality Technician monitor and report on the raw and treated water quality trends for the County's drinking water systems. Any changes to water quality are immediately reported to the Environmental Services Manager and the Director of Environmental Services.

An overview was provided prior to the management review meeting by the Water Quality Technical Specialist.

a. Paris (Gilbert)

Since 2016, nitrate levels in the Gilbert upper aquifer wells continues to trend upward. The upward trend has been noted in the Annual Groundwater Reports completed by a third-party hydrogeologist since 2017. Blending with the two (2) bedrock wells continues to keep nitrate levels below the allowable regulatory concentrations.

The Director of Environmental Services informed that the GRCA, through Source Protection, are assisting the County identify possible sources, developing and analyzing mapping, and determining land use in the capture zones.

The Water Quality Technical Specialist recommended the County drill a third bedrock well for redundancy in the event of one of the bedrock wells at Gilbert is offline for an extended period.

Action Item: Identify possible sources of nitrates, develop, and analyze mapping, and determine land use in the capture zones.

Lead: Director of Environmental Services, Water Quality Technical Specialist and GRCA

Target Completion Date: Ongoing

Action Item: Consider third bedrock production well for the Gilbert Well Field.

Lead: Director of Environmental Services, Environmental Services Manager and Water Quality Technical Specialist

Target Completion Date: December 31, 2026

[redacted]

Paris (Bethel)

Chloride and sodium levels have been trending up since 2015 but have remained stable over the past three (3) years. The trend has been noted in the Annual Groundwater Reports completed by a third-party hydrogeologist.

The Director of Environmental Services informed that the GRCA, through Source Protection, are assisting the County identify possible sources.

The General Manager of Operations requested the Environmental Services to continue to monitor this issue to ensure water quality. The GM requested the Director develop 23-a business plan for 2023-2024.

The Water Quality Technical Specialist expects an adverse sodium result when the South Paris Elevated Tank is brought online.

Action Item: Identify possible sources of chloride and sodium, develop and analyze mapping, and determine land use in the capture zones and develop business plans for 2023-2024.

Lead: Director of Environmental Services, Water Quality Technical Specialist and GRCA

Target Completion Date: Ongoing

Action Item: Prepare for a sodium adverse when the South Paris Elevated Tank is brought online.

Lead: Water Quality Technical Specialist

Target Completion Date: Ongoing

b. Mt. Pleasant

Sodium levels continue to decrease. This is likely due to improved salt storage at the County Roads facility on Pleasant Ridge Road. The concentrations still exceed allowable regulatory limits and notification continues to be made to all customers of the Mt. Pleasant system annually.

Action Item: Continue to monitor sodium levels.

Lead: Director of Environmental Services and Water Quality Technical Specialist

Target Completion Date: Ongoing

c. General

i. There have been no significant changes to water quality trends for the Airport, Cainsville and St. George municipal residential drinking water systems for 2020-2021.

ii. Raw and treated water quality trends are provided annually in the Ontario Regulation 170/03 Annual Reports. The reports are provided to the Owners (Council) annually and are made available to the public via the County's web site.

iii. At the request of the Brant County Health Unit, the Water Division issues notices annually to the customers of municipal water in the Mt. Pleasant Drinking Water System and the Cainsville Distribution System advising them of elevated sodium concentrations. The notices are also provided to the Owners and are posted on the County's website for the public.

Action Item: Continue to monitor raw and treated water quality parameters.

Lead: Water Quality Technical Specialist/Technician

Target Completion Date: Ongoing

8. Follow-Up/Status of Action Items from Previous Management Reviews

The minutes and action items from the 2020-2021 and previous Management Review's were reviewed.

Follow-up items or status of action items from previous Management Reviews have either been addressed, are being addressed through a Corrective Action, or are ongoing items that appear annually.

The Operating Authority reviews ongoing action at the monthly DWQMS meeting.

Action Item: Continue to track, monitor, and close ongoing action items from the previous year's Management Review and continue to review these items at DWQMS meetings.

Lead: Water Technologist

Target Completion Date: Ongoing

9. Changes in Resource Requirements, Infrastructure, Process, Personnel, Drinking Water Quality Management Standard (DWQMS) or Regulations

a. Resource Requirements:

i. There have been no significant changes in resource requirements for the County's drinking water systems that could affect the County's Quality Management System as documented in the Operational Plan.

ii. There is potential to develop and implement a quality management system for the County's wastewater, storm water and solid waste systems. Specifically for the new requirements documented in the new CLI-ECA's for sanitary and storm systems. The General Manager of Operations requested Environmental Services to develop a business case for 2023 as to how to implement within 3-5 years.

Action Item: Develop a business case for a QMS system for the County's sanitary, storm and solid waste systems.

[redacted]

Lead: Director of Environmental Services, Solid Waste/Wastewater Operations Manager and Water Technologist

Target Completion Date: September 30, 2023

b. Infrastructure:

i. Several Form 1 and 2's were completed in 2021-2022 for County of Brant municipal residential drinking water systems. All completed forms are on file in Environmental Services with the system specific DWWP. Owners are made aware through the quarterly compliance reports.

ii. New elevated storage is being constructed in south Paris.

iii. St. George new water facility and well field.

iv. Butch watermain replacement.

v. Paris Zone 1/2PRV's.

vi. New pressure zones in areas of new development (e.g., Nith Peninsula).

Action Item: None

c. Process:

i. Airport – Turbidity analyzers changed. Three were removed and replaced with one. O&M Manual was updated, and documentation submitted to MECP.

Action Item: None

d. Personnel:

i. Hired four (4) new Operators. All are OIT's and are Water and Wastewater Operators. Total Operator compliment has been increased by 2.

Action Item: Provide and document training on DWQMS and regulatory requirements for drinking water.

Lead: Water Technologist

Target Completion Date: October 31, 2022

Action Item: Provide training for each new Operator to progress their Certification to the highest level of classification of the County's facilities.

Lead: Environmental Services Manager and Water Division Clerk

Target Completion Date: Depends on start date of Operator. Generally, within four (4) to five (5) years of first obtaining OIT.

ii. Water Operations Superintendent title changed to Environmental Services Manager.

Action Item: Update QMS and regulatory documentation.

[redacted]

Lead: Water Technologist

Target Completion Date: December 31, 2022

iii. Environmental Services Superintendent – New position that reports to the Environmental Services Manager. Supervisor to the Water Operators. Similar roles, responsibilities, and authorities to the Manager.

Action Item: Update QMS and regulatory documentation.

Lead: Water Technologist

Target Completion Date: December 31, 2022

iv. The Director of Environmental Services will continue to work with the Administrative Coordinator to transfer the roles, responsibilities, and authorities for Water Records Management Clerk (WRMC) to other staff. Specifically, the records management aspect to ensure the requirements of Element 5 (Document and Record Control) are met. The roles, responsibilities and authorities for this position will need to be transitioned to an existing position(s) and documented in the Operational Plan. Filing electronically check with Heather Fair. Move away from “hard copies”.

Action Item: Filing electronically check with Heather Fair. Move away from “hard copies”. Document allocation of former roles of WRMC to other staff and consider how Operation Administration staff will be involved with the DWQMS.

Lead: Director of Environmental Services and Administrative Coordinator

Target Completion Date: May 31, 2023

v. Change in the appointment of the Overall Responsible Operator (ORO) – A rotating ORO schedule has been developed for the Environmental Services Manager Environmental Services Superintendent, and Water Lead Hand. The Director of Environmental Services can also be appointed as ORO if required.

Action Item: Develop a procedure that describes the process.

Lead: Water Technologist and Environmental Services Manager

Target Completion Date: December 31, 2022

vi. New vehicle for Water Quality staff – The Environmental Services Manager informed that water quality will be receiving a second vehicle to be used rather than a personal vehicle.

Action Item: None

e. DWQMS:

Operational Plan - The Operational Plan was updated numerous times in 2021-2022. Revisions are noted in Section 14 of the Management Review meeting summary. Revisions are being carried out to address the change in title of the Environmental Services Manager and the new position of Environmental Services Superintendent.

[redacted]

Action Item: Continue to keep the Operational Plan current.

Lead: Water Technologist (QMS Representative)

Target Completion Date: Ongoing

Regulatory Paperwork – In 2021, 77 regulatory forms required revisions by Operators once submitted. In 2022, is currently down to 26.

Action Item: Continue to monitor paperwork and provide training.

Lead: Environmental Services Superintendent and Water Technologist

Target Completion Date: Ongoing

f. Regulations:

O. Reg. 128/04 and O. Reg. 129/04: Update Element 11 to describe the latest provisions and MECP requirements in the use of “emergency substitute operators” as per O. Reg. 128/04 and O. Reg. 129/04.

Action Item: Update Element 11

Lead: Water Technologist

Target Completion Date: December 31, 2022

10. Consumer Feedback

Schedule B: Condition 16.2.7 of Municipal Drinking Water Licences require the County to have a procedure for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint. The County of Brant currently has approximately 8618 metered customers (8100 in 2021). Environmental Services recorded 235 calls from customers from October 1, 2021 to October 1, 2022. Down form the previous year.

Typical calls received include:

- general concerns regarding billing,
- inquiries regarding watering restrictions,
- water on/off requests,
- low pressure,
- water quality (odour, taste and colour), and
- general questions regarding municipal water service.

No calls were received regarding the County’s Quality Management System.

Staff made a request in 2021 to investigate a County service policy/guidance for dealing with the public. This continues to be developed.

The General Manager of Operations requested staff to work with GrandBridge Energy Inc (GBE) regarding calls and how and if calls for water, received by GBE are tracked.

Action Item: Work with GBE, Administrative Coordinator and Water Clerk regarding calls and how calls for billing are tracked. Also include good news calls moving forward. Also, continue to monitor the development of a service policy/guidance for dealing with the public for water system complaints.

Lead: Water Technologist and Administrative Coordinator

Target Completion Date: January 31, 2023

11. Resources Required to Maintain the Quality Management System (QMS)

a) Element 15 Infrastructure Maintenance, Rehabilitation and Renewal, Element 16 Sampling, Testing and Monitoring, and Element 17 Measurement and Recording Equipment Calibration and Maintenance - The County has purchased a software system to track and schedule maintenance (work order system). Business Solutions has the lead. This will facilitate the closing of a Corrective Action for with the implementation of an Asset Management Plan and electronic scheduling for calibrations and maintenance.

   Action Item: Continue to monitor the implementation of the asset management software.

   Lead: Environmental Services Manager

   Target Completion Date: Ongoing

b) Element 16 Sampling, Testing and Monitoring – In 2021, the Water Technologist, Water Quality Technical Specialist and Water Quality Technician viewed a demonstration of a software application that could be used to track regulatory sampling and other regulatory scheduling. It was requested at the 2021 Management Review Meeting that the Water Technologist and Water Quality Technical Specialist investigate the software program further, to consider waste and storm water, and associated costs to implement.

   A presentation of the software was arranged with Top Management in 2022. The supplier submitted a proposal June 2022 that was provided to Top Management for review and comment. The Water Technologist checked references and both contacts were satisfied with the product.

   The Director of Environmental Services was requested to include a software purchase in the 2023 budget and this project will go out as an RFP in 2023.

   Action Item: Budget for a software purchase in 2023 and develop the RFP

   Lead: Director of Environmental Services

   Target Completion Date: January 31, 2023

12. Results of the Infrastructure Review

[redacted]

The previous 2021 Element 14 Infrastructure Review Report (PW-21-292) was received by the Owners at the November 2021 Council meeting.

For 2022, the Director of Environmental Services, Water Operations Superintendent and the Water Technologist reviewed the adequacy of the infrastructure necessary to operate and maintain the drinking water systems on July 19. 2022. On July 20, 2022, the Director of Environmental Services and Water Operations Superintendent met with General Manager of Operations, Director of Roads, Director of Infrastructure and Solid Waste/Wastewater Manager and others to coordinate capital projects.

Action Items: Provide the Element 14 Infrastructure Review report to Council prior to 2022 budget deliberations and prior to December 31, 2022. Meeting minutes must be recorded and filed. The County must consider the risk outcomes documented in Element 8 during the Element 14 review and document that Element 8 was considered in the report to the Owners.

Lead: Director of Environmental Services

Target Completion Date: November 30, 2022

13. Summary of the Effectiveness of the Maintenance, Rehabilitation and Renewal Program

The Water Division has documented maintenance procedures for watermain flushing and inspection of wells, valves and hydrants.

A leak detection program and reservoir/elevated tank inspection program are also conducted, but there are no documented procedures to address these items. The Operating Authority will be developing documented procedures for these activities.

If an issue is found during one of the above noted programs (leaking valve or leaking watermain), the issue is typically addressed as soon as possible by the Operating Authority. If the issue is one that cannot be addressed immediately, the Director of Environmental Services and Water Operations Superintendent develop an action plan to address the issue.

While Water Operators and Water Quality staff take great care for all drinking water infrastructure and treatment equipment (chlorine pumps, high lift pumps, analyzers, watermains and other aspects of the treatment and distribution systems), the Operating Authority does not have documented maintenance, rehabilitation and recording procedures (work order, tracking system) for these aspects of the County's drinking water systems to ensure manufacturer's specifications and/or regulatory requirements are being met. This was identified as a minor non-conformance during the 2019 Accreditation Audit and a Corrective Action Report remains open for this finding. The County has tendered an Asset Management software system that should address this item (refer to Item 11 a) above).

Infrastructure and equipment are typically repaired and/or replaced on an as needed basis.

Element 15 of the DWQMS requires the Operating Authority to communicate the summary of infrastructure maintenance, rehabilitation and renewal activities to the Owner (Council). This report along with the Element 14 Review and Provision of Infrastructure Report are currently provided to meet this requirement.

Action Item: Continue to communicate the summary of infrastructure maintenance, rehabilitation and renewal activities to the Owner (Council) in accordance with Element 15.

Lead: Director of Environmental Services and Environmental Services Manager,

Target Completion Date: Annually (Prior to budget deliberations).

Action Item: Develop a documented planned and/or preventative maintenance, rehabilitation and renewal program for all County of Brant drinking water related infrastructure as documented in Element 15 of the Operational Plan. Also consider the development and implementation of a work order type system for scheduling, documenting, and trending these activities to ensure compliance, conformance, and the delivery of safe drinking water.

Lead: Water Technologist, Environmental Services Manager and Environmental Services Superintendent

Target Completion Date: December 31, 2023

14. Operational Plan Currency, Content and Updates

The County of Brant's Operational Plan is a living document. Ongoing revisions are made throughout the year in response to staff recommendations, process changes, regulatory changes, staffing changes, etc. All revisions are documented in the revision table at end of each section.

The Director's Direction – Minimum Requirements for Operational Plans (May 2021) were completed and implemented in February 2022.

Various elements are being updated in the fall of 2022 to address the new Environmental Services Superintendent position and title change of the Environmental Services Manager.

Action Item: The Water Technologist and all Environmental Services Drinking Water staff will continue to review the Operational Plan and will keep the document current.

Lead: Water Technologist

Target Completion Date: As required

15. Staff Suggestions

Environmental Services Drinking Water staff are invited to submit suggestions for continuous improvement to the Quality Management System at any time. These suggestions are reviewed and considered by the QMS Top Management group.

[redacted]

An open forum is held at the Water Division's Monthly DWQMS and Health and Safety Meeting which allows staff to make suggestions regarding the County's Operational Plan and Quality Management System. Water staff were made aware of the Management Review meeting at the October 2021 DWQMS Meeting and were invited to bring forward any items prior to the Management Review meeting.

Members of the Environmental Services Drinking Water Staff have made requests to revise certain forms that are used to record parameters within the drinking water systems and to revise Environmental Services Drinking Water standard operating procedures. Staff have also requested the development of standard operating procedures for certain activities.

Staff suggestions, requests and/or concerns that have been received since the last Management Review have been addressed or are ongoing.

Action Item: Continue to encourage staff suggestions and consider them accordingly.

Lead: Water Technologist

Target Completion Date: Ongoing

The following recommendations were made during the Management Review meeting.

a) Element 12 QMS Communication – Develop a Regulatory and DWQMS report schedule. Opportunity to update 12.1.1 in the Operational Plan. Document a schedule, list the reports used to communicate and their frequency.
    - Annual Report
    - Summary Report
    - PTTW and Groundwater Monitoring report
    - Element 20,
    - Element 14
    - Audit reports
    - Inspection reports
    - Quarterly Compliance Reports

    Action Item: Document a reporting schedule and look for efficiencies in reporting.

    Lead: Director of Environmental Services and Water Technologist

    Target Completion Date: December 31, 2022

b) Element 5 Document and Record Control – A recommendation to consider transitioning to an electronic system (GIS) for recording keeping and identifying work in the field by Operators. Similar to the transition of the hydrant inspection and flushing program. The current paper forms continue to work, but there is a lag at times for paperwork coming in from field, past work to water infrastructure would be more accessible to Operators and would reduce the time required to process and file paperwork.

[redacted]

Action Item: Work with the GIS group to determine what field work can be reported and recorded through the County's GIS system.

Lead: Environmental Services Manager, Environmental Services Superintendent and Water Technologist

Target Completion Date: December 31, 2023

c) Administration Support for the QMS Representative – The QMS Representative requested admin support when large quantities of QMS and regulatory documents need to be revised.

Action Item: Identify a member(s) of the Operations Administration team that can assist the QMS Representative update documentation.

Lead: Administrative Coordinator and Water Technologist

Target Completion Date: January 31, 2023

ATTACHMENT:

November 2023, 2021, Water Division Training Session, Online Chlorine Analyzers, Record Keeping, Regulatory Requirements, O&M Manuals and Standard Operating Procedures

[redacted]

Water Division Training Session

Online Chlorine Analyzers, Record Keeping, Regulatory Requirements, O&M Manuals and Standard Operating Procedures.

Tuesday November 23, 2021
Teams Meeting

ATTENDEES: Alex Davidson, Mike Biggin, Mike Mandell, Kristina Hall, Matt Blackwell, Jamie DeBlock, Ehren DeRosse, Chris McCormick, Jordan Corner, Ryan Connely, Chris Wiley, Scott MacDonald, David Stevenson

In response to a recent adverse water quality event at the Telfer Water Treatment Facility and the Paris distribution caused by an online chlorine analyzer not being returned to service after maintenance, a training session was conducted with all certified Water Operators and the Water Technologist.

Mike Biggin opened the training session by providing and overview of the events that caused adverse water quality event and the actions taken by Water Operators to return primary and secondary disinfection residuals back to regulatory free chlorine concentrations.

Mike advised the importance that Operators check and double check an online analyzer (and any other water infrastructure) to ensure is it placed back in regulatory, operational status when it is put into the calibrate or hold mode when doing maintenance, calibrations or verification to an analyzer.

Mike described the principals of a compound loop used for chlorination. That most systems, with the exception Mt. Pleasant, can be shut down while calibrations and verifications are carried out. That the Mt. Pleasant must continue to produce water while performing calibrations, maintenance and verifications to the chlorine analyzers.

Mike advised that if an Operator, other than the On-Call Operator, is required to conduct maintenance, or to do a calibration or verification, they must notify the On-Call Operator the work is being carried out.

Mike advised that if an online analyzer is put into hold or calibrate to conduct maintenance, calibrations, verifications, and the system is still transmitting treated water past the POE, Operators must take manual chlorine grab and test them for free chlorine residual every 5 minutes or less to ensure compliance with O. Reg. 170/03. All tests must be recorded in the facility logbook.

Mike told the Operators that anytime they are in a facility, they must make entries into the facility logbook and describe in detail what actions they took while in the facility so other Operators have a full description of what has always happened at a facility.

Mike talked to the Operators about the importance of reviewing, understanding and following all County of Brant SOP’s and Provincial legislation and regulations when working in a County of Brant drinking water system and when responding to abnormal events. Operations should always review and critique SOP’s to ensure they are

accurate and reflect the actions taken by Operators when dealing with the events the SOP describes. If Operators require new SOP's to be developed or require revisions to current SOP's, they should contact Dave.

Mike advised that County is working with Summa to have an alarm installed on all regulatory online chlorine analyzers (POE). The alarm will be activated once a regulatory analyzer is placed in calibration mode and will alarm every 10 minutes until the analyzer is taken out of calibration mode. **Update-As of November 29, 2021 this system has been implemented as described**.

Mike provided the Operators with examples of potential fines associated with the events that occurred at Telfer had consumers became ill form untreated water being transmitted to the distribution system.

Dave reviewed Section 27 from O. Reg. 128/04 as follow-up to the November DWQMS meeting.

Prior to the meeting, Dave provided all meeting attenders draft versions of 3 updated County of Brant SOP's and Section D.10 of the Telfer O&M Manual.

Dave reviewed the proposed updates to SOP-14-09 Actions Required for Low Chlorine Residual in the Distribution System. Dave advised that the entire procedure had an extensive update. The procedure describes the actions Operators are to take when a critical control limit is exceeded and when an adverse water quality event occurs related to low chlorine residuals in a distribution system. Record keeping requirements were expanded.

Dave reviewed the proposed updates to SOP-30-09 Maintenance and Calibration of Monitoring Equipment. Dave advised that this procedure also had extensive updates. Record keeping requirements were expanded and that Operators are to ensure equipment is returned to regular operational conditions prior to leaving a facility.

Dave reviewed the proposed updates to SOP-43-10 Actions When an Online Analyzer Fails. Dave advised that this procedure also had extensive updates. Record keeping and notification requirements were expanded. Regulatory chlorine analyzers were identified.

Dave reviewed the proposed updates to Section D.10 of the Telfer O&M Manual. Updates included references to the SOP's that were reviewed, record keeping requirements and grab sample requirements when an analyzer is offline.

The meeting concluded at 14:30.