

MINUTES

Municipality of Thames Centre – Environmental Services

DWQMS – 2024 Management Review Meeting

August 12th, 2024 11:00am

Meeting Attendees: Jarrod Craven, Director of Public Works
Kevin Willson, Environmental Services Superintendent

The following are Management Review agenda items that were discussed/addressed during the meeting.

1. **OVERVIEW and HIGHLIGHTS OF DWQMS PERFORMANCE** – last 12 months

The DWQMS Operational Plan was endorsed by Council on May 8, 2023. There was zero (0) Preventive and Corrective Action Request (PCAR) items and seven (7) Opportunities for improvement (OFI) identified during the September 2023 Re-certification Audit. The municipality was awarded a three (3) year re-accreditation of the Quality Management System (QMS) on January 18, 2023.

2. **REVIEW OF MANAGEMENT REVIEW** – required inputs

a) Incidents of regulatory non-compliance in 2023

* There was one (1) incident of regulatory non-compliance (NC) and one (1) Best Management Practice (BMP) identified in the Thorndale Drinking Water System. There were two (2) incidents of regulatory non-compliance (NC) and (1) Best Management Practice (BMP) identified in the Dorchester Drinking Water System in 2023 as indicated in the Ministry of Environment, Conservation and Parks (MECP) Inspection Reports.

Thorndale Drinking Water System – MECP Inspection Report (June 15, 2023)
NC
“The owner was not in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water License issued under Part V of the SWDA.”
Resolution
The Municipal Drinking Water License (MDWL) was updated and issued on October 18, 2023 with increased flow rate capacities from 630 m ³ /day to 1641.6 m ³ /day.

**Thorndale Drinking Water System – MECP Inspection Report (June 15, 2023)
BMP**

“With respect to the continuous chlorine analyzers installed at the water tower, it is recommended that: (1) Chlorine test results are recorded at least every 15-minutes and (2) Test results are reviewed by a certified operator within 72 hours of the test.”

Resolution

September 19, 2023, the contractor updated the Supervisory Control and Data Acquisition (SCADA) to record the Thorndale water tower inlet and outlet chlorine residuals for data downloading. Operators review these data trends during the daily inspections.

**Dorchester Drinking Water System – MECP Inspection Report (Dec 14, 2023)
NC**

“The operations and maintenance manuals did not meet the requirements of the Drinking Water Work Permit and Municipal Drinking Water License issued under Part V of the SWDA. The system owner’s Operation and Maintenance Manual did not include a contingency plan and procedures with respect to the UVT malfunction event that occurred in September 2023.”

Resolution

The UVT Failure Response Procedure ES-DWS-SOP-004-004 was created in October of 2023, this procedure coincides with the use of the Real UV254 Meter which was purchased for use in this procedure and regular maintenance procedures.

**Dorchester Drinking Water System – MECP Inspection Report (Dec 14, 2023)
NC**

“The owner and operating authority did not ensure that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment. The Dorchester Drinking Water System is equipped with Ultraviolet (UV) treatment equipment as part of the primary disinfection water treatment process. The Ultraviolet Transmittance (UVT) monitoring equipment test water quality and relays information to a central computer that automatically adjusts UV dosage depending on the quality of incoming water. In September 2023 the UVT equipment malfunctioned and was unable to perform tests at least every five minutes as required by Condition 1.6 of the MDWL. Certified operators performed mitigating actions to ensure water quality was maintained during this event.”

Resolution

The UVT system was replaced October 20, 2023. The UVT Failure Response Procedure ES-DWS-SOP-004-004 was created on October 26, 2023 and implemented in case of a future failure.

**Dorchester Drinking Water System – MECP Inspection Report (Dec 14, 2023)
BMP**

“It is strongly recommended that the individuals who exercise decision-making authority over the Dorchester Drinking Water System implement further disinfection byproduct reduction measures forthwith. In 2020 the Province of Ontario implemented sampling and testing requirements for haloacidic acids (HAA). The Ontario Drinking Water Quality Standards prescribes a Running Annual Average (RAA) limit for HAA. To reduce disinfection by-products in the Dorchester Drinking Water System, the services of third-party consultants were obtained to evaluate source water, operational, and treatment options. At the time of the site inspection, exploratory wells have been drilled in search of improved source water quality, operations staff implemented recommended operational changed, and a bench style study that included new filtration treatment equipment was performed. Test results demonstrate that the RAA for HAA during this inspection period were marginally below this limit prescribed by the Ontario Drinking Water Quality Standards.”

Resolution

The Municipality monitors THM/HAA levels and has implemented precautionary measures to reduce THM/HAA levels as a best operating practice. The municipality is also working with a third party to identify the organics that are causing the higher levels of disinfection by-products. Reservoir and chlorine levels are adjusted in relation to seasonal water usage in an effort to optimize the retention time in the system. Reservoir volumes are maintained at higher levels during summer months and at lower levels during winter months.

- b) Incidents of adverse drinking water tests
 - * There were no adverse water quality result (samples) for both drinking water systems in 2023.

- c) Deviations from Critical Control Point (CCP) limits & response actions
 - * There were no deviations from any CCP limits that required response actions or were not associated with general maintenance in both drinking water systems.

- d) Efficacy of the risk assessment process
 - * The risk assessment process is operating as designed.

- e) Internal and Third Party audit results
 - * There was zero (0) Preventive and Corrective Action Request (PCAR) items and seven (7) Opportunity for Improvement (OFI) identified during the 2023 Third Party Surveillance Audit. The 2023 Internal Audit was completed on December 21, 2023. There were four (4) PCAR items and one (1) OFI identified during the 2023 Internal Audit.

Action Items from 2023 External Audit			
Related Element	Issue Identified	Suggested Resolution	PCAR/OFI #
Element 5 – Document and Records Control	Reflect current dates pertaining to ES-DWS-FRM-004-001 DWQMS Risk Assessment Matrices. File dated '2022' and 'Date of Assessment' for Thorndale DWS indicates 'November 25, 2021.	Input the correct date and save the file.	OFI 2023-001 (closed October 12, 2023)
	Minimize documentation duplication be eliminating list procedures to monitor, respond to and report and recording deviations in CCLs from ES-DWS-OP-001-001 Element 8.	No action required.	OFI 2023-002 (closed May 17, 2024)
	Summarize rather than list all changes within 'Revision History' to ensure efficiency.	A review of the revision history concluded that summarizing past changes are not required and that moving forward changes to serial numbers may be summarized in future revisions	OFI 2023-003 (closed May 17, 2024)
	Correctly reflect titles (e.g., Director of Environmental Services still mentioned in PW-ES-010-23).	Update titles and save file.	OFI 2023-004 (closed November 16, 2023)
Element 7 – Risk Assessment	Update DWQMS Risk Assessment to reflect MECP Cyberthreat hazard revision to the '2017 MECC Potential Hazardous Events for	Cyberthreats were added to the 2022 Risk Assessment for Dorchester and Thorndale Drinking Water Systems.	OFI 2023-005 (closed November 29, 2023)

	Municipal Residential Drinking Water Systems to Consider in the DWQMS Risk Assessment.		
Element 21 – Continual Improvement	Identify internal personnel in the 'Verified By' and 'Closed By' columns for external audit findings on the Continual Improvement Tracking Form, as Internal verification and closure is not an external auditor responsibility.	Update and revise the Continual Improvement Tracking Form ES-DWS-FRM-017-002.	OFI 2023-006 (closed November 16, 2023)
	Ensure verification of completed corrective and preventive actions is completed and documented before closing off PCARS and consider more frequent Continual Improvement Review Meetings to confirm completion of MECP and Audit findings.	A review of closing off PCARs will take place in 2024. Current frequency of Continual Improvement Meetings meets the standard.	OFI 2023-007 (closed May 17, 2024)

Action Items from 2023 Internal Audit			
Related Element	Issue Identified	Suggested Resolution	PCAR/OFI #
Element 5 - Documents and Record Control	In Dorchester there are multiple entries for different alarms (Res #1 chlorine High and Res #2 chlorine High) on the same line on the Alarm Log Record ES-DWS-FRM-013-001. In Dorchester there is a dual entry on the same line for	Discuss with operators' standard form filling to ensure clear and concise documentation on plant log forms. This includes one entry per line on the form.	OFI 2023-008 (closed May 17, 2024)

	times on the Dorchester Analyzer Calibration Record ES-DWS-FRM-013-006. Both instances are explained in detail in the logbook.		
	Various missed entries of maintenance activities on QMS forms and log books for both Dorchester and Thorndale Drinking Water systems – these include Chemical Pump & Injector maintenance, Water Tower Monthly inspections and Well and Drivepoint Monitoring Program.	Conduct on the job training to review related Standard Operating Procedures.	PCAR 2023-008
Element 15 – Infrastructure Maintenance, Rehabilitation and Renewal	The new pump for the clearwell Chlorine and pH analyzer in the Thorndale WTF is not listed in the Infrastructure Maintenance, Rehabilitation & Renewal ES-DWS-PRO-011-001 procedure for maintenance.	Update Procedure.	PCAR 2023-011 (closed June 5, 2024)
Element 16 – Sampling, Testing and Monitoring	At the Dorchester EST there is no recorded entry for the chlorine residual and time on the EST Inspection Form ES-DWS-FRM-011-003 on March 9th 2023.	Review with operators the Monthly Elevated Storage Tank (EST) Inspection Procedure ES-DWS-SOP-011-017.	PCAR 2023-009
Element 17 – Measurement and Recording Equipment	The Handheld Turbidimeter at the Dorchester WTF is missing a calibration	Verify calibration with third party records and add required information to	PCAR 2023-010

Calibration and Maintenance	<p>sticker for 2023. The new UVT and UVT Handheld analyzer at the Dorchester WTF are not listed in the DWQMS Measurement and Recording Equipment Calibration and Maintenance ES-DWS-PRO-013-001. New Clearwell chlorine and pH analyzers were not added to the DWQMS Measurement and Recording Equipment Calibration and Maintenance ES-DWS-PRO-013-001.</p>	procedure documents.	(closed June 5, 2024)
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The DWQMS representative will review any outstanding PCARS and ensure that necessary steps are taken to close each one by the next third-party audit, scheduled for October 18, 2024.

f) Results of Emergency Response Testing

* Emergency Response Testing was conducted on March 28, 2024. A table-top exercise of a low chlorine emergency at each water plant was tested. Testing Minuets are listed below:

Tabletop exercise of a low chlorine emergency at the Dorchester and Thorndale Water Treatment Facilities.

Low Chlorine at each plant effluent is defined as:

Dorchester WTF Chlorine effluent residual falls below 0.90 mg/l (internal operational guideline).

Low alarm set point – 1.00 mg/L, Low Low alarm setpoint – 0.80 mg/L

Thorndale WTF Chlorine effluent residual falls below 0.90 mg/l (internal operational guideline).

Low alarm set point – 0.90 mg/L, Low Low alarm set point – 0.60 mg/l

Results from Exercise:

- The goal is for operators to ensure no possibly untreated water leaves the Water Treatment Facility (WTF) and High Lift Pumps (HLPs) are to be shut down immediately upon a low chlorine emergency discovery.

- It was determined if the low chlorine is due to the effluent analyzer probe failure that operators can use a probe from one of the 2 reservoirs in Dorchester until a replacement can be purchased.
- Questions weather adding chlorine directly into the reservoirs/clearwells would affect CT calculations.
- Testing to take place to ensure post pumps will activate on the Low alarm and HLPs will shut down on a Low Low alarm.
- Change Thorndale WTF chlorine effluent low and low low alarm set points to match the Dorchester WTF.
- Testing of post pumps and HLP shut off was completed on April 3rd 2024. Results from both plants indicated the post pumps do not engage on the effluent chlorine Low alarm. The post pumps will engage when the analyzer reading is below a set point – Thorndale is 0.70mg/l and Dorchester is TBD by DataSoft. When the Low Low alarm is triggered the HLPs automatically shut down and lockout. They will not reengage until the effluent chlorine analyzer reads above the Low Low set point. Review of the Low Chlorine Emergency Response Procedure ES-DWS-SOP-004-003 and discuss operator experience and possible changes/additions to the Standard Operating Procedure (SOP).

Items resulting from SOP discussion:

- Revisions will be made to the current SOP to cover the following items:
 - When Overall Responsible Operator (ORO) must be contacted during a low chlorine emergency
 - Addition of Thorndale WTF.
 - Revision of the Adverse Response Procedure ES-DWS-SOP-012-001 to include Low Chlorine in the distribution system and plant effluent.
 - Addition of checking PRV (pressure reducing valve) and Injectors on chemical pumps.
 - Finding the formula for the correct amount of chlorine added when manually adding to the Reservoirs/Clearwells under ORO direction.

g) Operational Performance

* The Dorchester Drinking Water System is performing as per design. The Thorndale Drinking Water System had exceeded capacity rating several times in 2023. Thames Centre has had the MDWL amended on October 18, 2023 to increase the permitted capacity rating.

h) Raw water supply and drinking water quality trends

* Fluoride (F-) and Sodium (Na) are naturally occurring ground water characteristics in the area and are closely monitored by Municipal staff.

Thorndale DWS – Sodium (February 15, 2022)

The sodium sample returned with a concentration result of 28.7 mg/L. The reportable level for sodium is 20 mg/L and must be reported every 60 months.

Annually, Thames Centre send a Middlesex London Heath Unit (MLHU) fact sheet to its customers informing them about elevated sodium levels in the drinking water.

Thorndale DWS – Fluoride (February 15, 2023)

The fluoride sample returned with a concentration result of 1.44 mg/L. The reportable level for fluoride is 1.50 mg/L and must be reported every 60 months. Although this sample did not return an adverse result, Thames Centre sends a MLHU fact sheet to its customers informing them about elevated fluoride levels in the drinking water.

Dorchester DWS – Sodium (February 14, 2020)

The sodium sample returned with a concentration result of 28.2 mg/L. The reportable level for sodium is 20 mg/L and must be reported every 60 months. Annually, Thames Centre send a Middlesex London Heath Unit (MLHU) fact sheet to its customers informing them about elevated sodium levels in the drinking water.

Dorchester DWS – Trihalomethane (THM) 2023

The 2023 THM running annual average (RAA) was 89 µg/L. The maximum allowable concentration (MAC) RAA is 100 µg/L. Environmental Services staff are working with the Walkerton Clean Water Centre and Stantec Engineering investigating process alternatives and design options to reduce THM levels.

Dorchester DWS – Haloacetic Acids (HAA) 2023

The 2023 HAA running annual average (RAA) was 75 µg/L. The maximum allowable concentration (MAC) RAA is 80 µg/L. Environmental Services staff are working with the Walkerton Clean Water Centre and Stantec Engineering investigating process alternatives and design options to reduce THM levels.

- i) Follow-up on Action Items from previous Management Review
 - * There were no action items from the previous Management Review

- j) Status of Management Action Items identified between reviews
 - * There have been no action items between Management Review meetings.

- k) Recent or upcoming changes that could affect the Quality Management System
 - * The Municipal Drinking Water License (MDWL) and Drinking Water Works Permit (DWWP) for Dorchester was renewed in November 2020 and October 2023 for Thorndale. The Financial Plan was renewed in November 2020. The MDWL and DWWP for Dorchester and Thorndale are to be renewed by November 23, 2025. The next third-party offsite surveillance audit is scheduled for October 18, 2024. The next DWQMS third party onsite verification audit will

be in 2025. The next DWQMS Operation Plan council endorsement is scheduled for 2027.

l) Customer Inquiries

* A summary of all 2023 Customer Inquiry Forms ES-DWS-FRM-019-001 (See Appendix A) were reviewed. It was recommended that possible water discoloration issues be added to the FAQ section of the Municipal website.

m) Resources needed to maintain the DWQMS

* An increase in internal operator training and time should be spent on the Thames Centre DWQMS to reduce the number of PCARs found in internal and external audits.

n) Results of annual DWQMS Infrastructure Review

* Results were reviewed and discussed, highlights include:

- Dorchester production wells 2PW1 and 3PW8 were repaired and rehabilitated in 2023 to increase production yield. Production wells 3PW1 and 3PW4A are scheduled to be rehabbed in 2024.
- The Dorchester Well Expansion project will proceed throughout 2024.
- Thorndale – Production Well #2 submersible pump was upgraded from a 7.5hp to a 20hp {DATE} to accommodate an increase in permitted flow capacity. A Variable Frequency Device (VFD) was installed for Well #2 in 2023.
- During the scheduled 2018 reservoir cleaning it was discovered that there was a structural weakness in the reservoir #1 baffling. The structure was repaired, but further repairs were required. In 2022, reservoir #1 was emptied for cleaning, baffle repair, and anode replacement. It was recommended by the manufacturer that the baffles were beyond repair and needed to be replaced. Reservoir #1 baffles were reinforced at that time. Replacement of reservoir #1 baffles is projected for 2025. In September 2023, reservoir #2 baffles were removed and replaced with Environetics baffle system and anodes replaced.
- New UVT Optiview was installed in October of 2023
- Porter's Subdivision Phase I Watermain Replacement was completed in 2022, Phase II Watermain Replacement was completed in 2023 and Phase III Watermain Replacement (Catherine St.) is anticipated to begin in 2025.

o) Operational Plan content and updates

* The Operational Plan was updated in 2023 and endorsed by Council, there were no 2024 updates.

p) Staff Suggestions

* Centralized Supervisory Control and Data Acquisition (SCADA) monitoring

system in the water operators office.

3. **ADDITIONAL ITEMS FOR REVIEW**

There were no additional items for review.

4. **WORD FROM TOP MANAGEMENT**

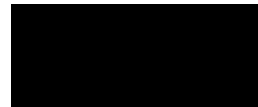
Top Management acknowledges the hard work and dedication of the staff of the Environmental Services Department. Top management recognizes the quality of the water treatment plants, the drinking water systems, and the level of customer service that is maintained.

5. **NEXT MEETING**

The next meeting is to be held in February 2025.

6. **ADJOURNMENT**

The meeting adjourned at 11:45 am.



Jarrod Craven
Director of Public Works



Kevin Willson
Environmental Services Superintendent