



# 2023 DWQMS Management Review Meeting

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# Element 20—Management Review

At least once every calendar year, the DWQMS is reviewed by Top Management, to stay informed and to ensure :

- Deficiencies are identified
- Adequately managing quality issues and meeting the DWQMS and internal requirements, performing this management effectively, and
- Adequate resources are provided.
- If Top Management does not feel the DWQMS is meeting these criteria, changes are recommended and resources are allocated to make improvements. The Internal Auditor and operations staff may participate in the meetings at the request of the DWQMS Rep



# What is Covered in the Management Review?

DWQMS Items to be Reviewed at Least Annually	
Incidents of regulatory non-compliance	Follow-up on action items from previous management reviews
Incidents of adverse drinking-water tests	The status of management action items identified between reviews
Deviations from critical control point limits and response actions	Changes that could affect the Quality Management System
The efficacy of the risk assessment	Consumer feedback & complaints
Internal and third-party audit results	The resources needed to maintain the Quality Management System
Results of emergency response testing	Results of the infrastructure review
Operational performance	Operational Plan currency, content and updates
Raw water supply and drinking water quality trends	Staff suggestions



# Incidents of Regulatory Non-Compliance:

- 1) Middlesex Centre Distribution System - Does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit?
  - The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system'.

Our records that were provided did not meet the requirements of Condition 2.7 Schedule B of the DWWP.

- 2) Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change
  - The Municipality did not provide updated information within ten (10) day of the change.
  - ▶ Melrose Drinking Water System – No incidents of non-compliance.
  - ▶ Birr Drinking Water System - No incidents of non-compliance



# Incidents of adverse drinking water tests:

## Summary of AWQI's

- ▶ **AWQI # 159493** – Middlesex Centre Distribution System 1 CFU /100ml of Total Coliform at the Komoka Water Tower (August 10, 2022)
- ▶ **AWQI # 159981** – Middlesex Centre Distribution System 3 CFU /100ml of Total Coliform at the Denfield Sample Station (September 12, 2022)
- ▶ **AWQI # 162956** – Middlesex Centre Distribution System high lead result from hydrant Ki-59 at Jefferies Drive in Kilworth (August 8, 2023)
- ▶ **AWQI # 161979 – Birr Water.** A drinking water sample result had a NDOGN for both E. coli and Total Coliform resulted in a Boil Water Advisory for the Birr Water System. (May 18, 2023)
- ▶ **AWQI # 160588** - Birr Water. Low chlorine residuals as low as 0.04 mg/l while water was being pumped to the distribution system (November 7, 2022)
- ▶ **AWQI # 16389** - Birr Water. Low chlorine residuals as low as 0.05 mg/l while water was being pumped to the distribution system (July 2, 2023)
- ▶ **AWQI # 161493** – Melrose Water. Low pressure event below 40 psi in the distribution system. (March 15, 2023)
- ▶ **AWQI # 161701** – Melrose Water. Low pressure event below 40 psi in the distribution system. (April 7, 2023)

**All required AWQI Form 2A & 2B were completed and closed with MECP (SAC office and Local Medical Officer of Health).**



# Deviations from critical control point limits and response actions

- AWQI forms were reviewed, compared AWQI to Critical Control Points (CCP)
- No deviations to report



# Effectiveness of the Risk Assessment Process

The annual risk assessment and annual review was conducted June 14, 2023. The risk assessment process looks at typical hazardous events, possible outcomes, and existing control measures to determine whether a critical control limit is needed.

During the annual risk assessment review staff considered the MECP potential hazardous events and mitigation strategies for items such as system security, water treatment, and the impacts of climate change. The MECP document lists the potential hazardous events and associated hazards that are, at a minimum, required to be assessed as part of these risk assessments.

Each risk is assigned a:

Likelihood rating (with a value between 1 and 5)

Severity rating (with a value between 1 and 5)

Detectability & response rating (with a value between 1 and 5)

Risk Value is calculated by adding these numbers.

High risks are considered at a score of 9 or above.

Risk Values above 9 include: All disinfection requirements, leaks and breaks, contamination, salt and run off.





# ANNUAL RISK ASSESSMENT

System Type	Description of Hazardous Event / Hazard
All systems	Long Term Impacts of Climate Change
All systems	Water supply shortfall
All systems	Extreme weather events (e.g., tornado, ice storm)
All systems	Sustained extreme temperatures (e.g., heat wave, deep freeze)
All systems	Chemical spill impacting source water
All systems	Terrorist and vandalism actions
All systems	Cybersecurity threats
Distribution Systems	Sustained pressure loss
Distribution Systems	Backflow
Treatment Systems	Sudden changes to raw water characteristics (e.g., turbidity, pH)
Treatment Systems	Failure of equipment or process associated with primary disinfection (e.g., coagulant dosing system, filters, UV system, chlorination system).
Treatment Systems and Distribution Systems providing secondary disinfection	Failure of equipment or process associated with secondary disinfection (e.g., chlorination equipment, chloramination equipment)
Treatment Systems using Surface Water	Algal blooms

Process step	Aspect of process step	Hazardous event (MECP #)	Likelihood	Consequence	Detectability & Response	RPN (CCP -)	Prevent / Control Measures	Response Procedure Reference
Treatment	Chemicals supply and receiving	Inadequate chemical supply – impacting primary disinfection (#10, 11)	1	5	1	7	Main and back-up suppliers ID'd Staff verify quality / quantity of supplies Minimum stock levels (very little chlorine stock required, i.e. 5 gallon jugs)	ERP- Contact Information, Emergency Contact List If no chemical supply, local MOH would issue BWA (Melrose & Birr)
	Primary disinfection	Chlorination system failure or operational issues (#10)	3	5	1	9	<b>CCP limit based upon individual facility's alarm set-point</b> Preventive maintenance for pumps Daily checks, alarms Maintain redundancies in chlorine pumps (e.g. 2 at Birr, 6 at Melrose – 2 in use, 4 on PM's)	ERP-60 Inadequate or Potential for Inadequate Disinfection Alternate water source
Distribution system	Chlorine residual	AWQI (less than 0.05 mg/L) (#11)	1	5	1	7	<b>CCP limit set at 0.3 mg/L</b> online analyzers at the facilities Residual with grab samples in distribution Residuals at auto-flushers in system	Increase chlorine Flushing ERP-60 Inadequate or Potential for Inadequate Disinfection
	Contamination within distribution system	General backflow (also via water theft) (#8)	3	5	5	13	Backflow device installed for watermain commissioning and new subdivisions Customers shouldn't be hooked up to private wells + system By-law support – 2018-028 Regulation of Water Supply	ERP, involve flushing activities and AWQI reporting, sampling, etc.
Storage	Chlorine residual	Lower residual (<0.30 mg/L) (#11)	3	2	3	8	<b>CCP limit based upon individual facility's alarm set point</b> <b>CCP Limit at 0.30 mg/L</b> - inline monitoring Updated standpipe with dosing and analyzers; redundancy in chlorine dosing in distribution; testing on towers Bi-weekly monitoring at storage sites and increase chlorine dosages as needed	Increase chlorine Flushing in distribution or drain reservoir partway ERP-60 Inadequate or Potential for Inadequate Disinfection

MECP – POTENTIAL HAZARDARS EVENTS FOR RESIDENTAL WATER SYSTEMS

MIDDLESEX CENTRE CRITICAL CONTROL POINTS FROM RISK ASSESSMENT



# Internal and Third-party Audit Results

The external audit for 2023 is being conducted by NSF on October 5, 2023. The 2022 audit was completed on September 13 & 14, 2022. There were no Non-Conformance identified with during this re-accreditation audit.

Internal audit was conducted within the calendar year. The 2023 internal audit was performed by Acclains Environmental on September 1 and 5, 2023.

- Acclains Environmental Inc. Performed the internal audit to determine whether it conforms to the requirements of the DWQMS 2.0; and to assess whether the DWQMS is effectively implemented. There were no Non-Conformance identified with during this audit.



# Internal and Third-party Audit Results Cont.....

There were eight (8) opportunities for improvement during the audit. Opportunities for Improvement do not undermine the positive programs in place among the Municipality of Middlesex staff:

Reference	Opportunity for Improvement – Description
<u>Director's Directions for OP's</u>	In a future version of the OP, the date should be added to the title page.
Document & records control (EI. 5)	Opportunity was identified for reviewing document references in the Operational Plan to reflect current information and document numbering.
Drinking water system (EI. 6)	Opportunity to reference process flow diagrams – previously included as Appendix B in the Operational Plan, but now included only in Operations & Maintenance manuals.
Minimum training for all staff (EI. 10)	Consideration should be given to developing a list of “mandatory” training staff need to maintain competency such as record keeping, sampling, watermain disinfection, etc.
Onboarding new staff (EI. 10)	Consideration should be given to developing an onboarding program for new operators covering all operational duties.
Competencies (EI. 10)	Periodic checks on the progress of Operators’ ongoing training could be improved.



# Internal and Third-party Audit Results Cont.....

Reference	Opportunity for Improvement – Description
Verifying quality of chemicals and parts (EI. 13)	Consider establishing a procedure for verifying the quality of chemicals and parts received; training staff on that process (incl. MDWL Schedule B s.14.0) and ensuring records of this process are consistently retained.
Measurement & recording equipment list (EI. 17)	Consider updating the list of measurement and recording equipment to include level milltronics (for checking and calibrating as necessary, as per MDWL Schedule C s.4.0 Calibration of CT Monitoring System).



# Management Review Requirements

## Results of emergency response training

- ▶ Completed on June 14<sup>th</sup> by Acclaims Environmental

## Operational performance

- ▶ All DWS performance is reviewed on a daily basis by the operations staff to check for chlorine residuals, water flow trends as identified on the daily work sheets and operational data sheets. There were no action items to follow up on from last Management meeting



# Management Review Requirements Cont.....

## Raw water supply and drinking water quality trends

- ▶ Raw water characteristics are reviewed on a quarterly basis at Birr and Melrose Water Systems. Annual well inspections are conducted at these treatment plants to evaluate the well pump performance. Water quality trends are monitored once the analytical data is received and tracked in our data base along with the newly developed sample results sheets that counts regulatory sample requirements, minimum & maximum bacteriologic results. There were no action items to follow up on from last Management meeting



# Management Review Requirements Cont.....

## Follow-up on action items from previous management reviews

- There were no action items to follow up on from last Management meeting

## Status of management action items identified between reviews

- Last management review meeting was October 18, 2022. There were no action items to follow up on from last Management meeting

## Changes that could affect the DWQMS

- New standpipe in Delaware, new Delaware supply. The new supply has been updated in the DWQMS –. All the documents related to the Authorization to Alter the Drinking Water System under Municipal Drinking Water Permit 052-201 have been issued to the MECF and inspected during the annual drinking water system inspection.





# Management Review Requirements Cont.....

## Consumer feedback

- All customer complaints are tracked with a Complaint form and saved at N:\ Public Works & Eng\Water & Wastewater Operations\Complaint Forms
- Total of 14 customer complaints since the last Management Review meeting on October 18, 2022
  - 1 Broken water service
  - 5 Pressure complaints
  - 4 Colour complaints
  - 3 Taste complaints
  - 1 General water inquire – where water comes from, types of chemicals added
- All complaints have been addressed and are closed.

## The resources needed to maintain the DWQMS / DWS

- 2023 O&M and Capital Budget Approve by Council.



# Management Review Requirements Cont.....

## The results of the infrastructure review

- Master Servicing Plan which will allow the Municipality to develop a 10-year planning period that will identify water, wastewater and stormwater upgrades as it relates to new pump stations, treatment needs, storage, conveyance/distribution upgrades.

## Operational Plan currency, content and updates

- Continual upgrades and improvements are completed in-order to ensure success of the operational programs and safety of the water system:
  - Debrief sessions are held following the occurrence of failures, emergencies and other issues encountered with the goal of continual improvement.
  - Corrective actions implemented to address system issues identified are verified for effectiveness at preventing recurrence prior to closing.
  - All opportunities for improvement identified in the previous internal and external audits have been verified as completed or are in progress.

## Staff suggestions

- Open door policy for suggestions from staff. Have also included an Employee Comment and Preventive Action Section within the Debriefing Form.



# Operational Performance

MECP performs annual inspections to determine the systems are achieving the requirements of all Regulations, Permits and Licenses

Operational performance at Middlesex Centre Distribution system, Birr Water System and Melrose Water System were measured during a detailed un-announced inspection by the MECP:

- Middlesex Centre Distribution onsite inspection was conducted July 20, 2023. The result of the inspection was a 97.11% rating. This was due to 2 items identified related to:
  - the DWS Licence and Permit and does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit
  - Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change



# Operational Performance

- ▶ Birr Drinking Water System onsite inspection was conducted May 4, 2023. The result of the inspection was a 100% rating. There were on non-compliance identified.
- ▶ Melrose Drinking Water System onsite inspection was conducted May 4, 2023. The result of the inspection was a 100% rating. There were on non-compliance identified.





QUESTIONS ?

