

Ministry of the Environment,
Conservation and Parks

Drinking Water and Environmental
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Ministère de l'Environnement, de la
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July 26, 2021

File no. SI-MI-MC-WY-540

The Municipality of Middlesex Centre
R.R. #2, 10227 Ilderton Road
Ilderton, ON N0M 2A0

Attention: Mr. Eric Joudrey, Manager of Water and Wastewater Operations

Re: Melrose Drinking Water System Inspection Report (WW# 260002915)
Inspection conducted on June 16, 2021

Dear Mr. Joudrey,

The enclosed Drinking Water Inspection Report outlines non-compliance, if any, with Ministry legislation, and policies for the above noted water system. Violations noted in this report, if any, have been evaluated based on community risk. These violations will be monitored for compliance with the minimum standards for drinking water in Ontario as set forth under the *Safe Drinking Water Act* and associated regulations. Where risk is deemed to be high and/or compliance is an ongoing concern, violations will be forwarded to this Ministry's Investigation and Enforcement Branch.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Summary Rating Record (IRR) provides the Ministry, the system owner and the local Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance.

Section 19 of the Safe Drinking Water Act (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems. Please be aware that the Ministry has encouraged such individuals, particularly municipal councillors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and a review of its findings. Further information about Section 19 can be found in "*Taking Care of Your Drinking Water: A guide for members of municipal council*" found under "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

Please note the attached IRR methodology memo describing how the risk rating model has improved to better reflect the health related and administrative non-compliance found in an inspection report. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. **Please note that due to a change in IT systems, the Inspection Rating Report (IRR) cannot be generated at the same time as the inspection report. The IRR will be sent separately and prior to any public release (typically within 1-2 month of the completion of the inspection).**

If you have any questions regarding the report, please feel free to call me at (519) 281-2237.

Yours truly,

A handwritten signature in black ink, appearing to read "N. Rising".

Neville Rising, P.Eng.
Provincial Officer
London District Office

cc. Middlesex London Health Unit
Upper Thames River Conservation Area
London District File



MELROSE DRINKING WATER SYSTEM
7 WYNFIELD GATE, MIDDLESEX CENTRE, ON, N6H 5L2
Inspection Report

System Number: 260002915
Inspection Start Date: 06/16/2021
Inspection End Date: 07/26/2021
Inspected By: Neville Rising
Badge #: 1039

A handwritten signature in black ink, appearing to read "N. Rising".

(signature)

NON-COMPLIANCE/NON-CONFORMANCE ITEMS

The following item(s) have been identified as non-compliance/non-conformance, based on a "No" response captured for a legislative or best management practice (BMP) question (s), respectively.

Question Group: Treatment Processes

Question ID	MRDW1038000		
Question	Question Type	Legislative Requirement	
Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format?	Legislative	SDWA O. Reg. 170/03 6-5 (1)1-4	
Observation/Corrective Action(s)			
<p>Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was not performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and/or was not recording data with the prescribed format.</p> <p>Generally stated, the Owner / Operating Authority provided online data including readings of free chlorine, well flow rates, distribution flow rates, reservoir depth, turbidity and pressure. The aforementioned data was provided in one minute time intervals to corresponding with the polling rate of the equipment.</p> <p>It should be noted on August 5, 2020, 52 minutes of online data was lost from the SCADA recording system. The lost data is understood to be the result of a manual adjustment to the PLC clock which resulted in data that could not be recovered.</p> <p>Corrective Action:</p> <p>From herein, the Owner / Operating Authority shall ensure that all continuous monitoring data is measured and recorded as prescribed by the minimum requirements presented within Table 6 of Ontario Regulation 170/03. Compliance with this requirement will be assessed during the next inspection of the water system.</p>			

Question ID	MRDW1025000		
Question		Question Type	Legislative Requirement
Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?		Legislative	SDWA 31 (1)
Observation/Corrective Action(s)			
All parts of the drinking water system were not disinfected in accordance with a procedure listed in			

Schedule B of the Drinking Water Works Permit.

Drinking Water Works Permit #052-203 - Section 2.3 stipulates minimum requirements related to disinfection of parts associated with the drinking water system. Generally stated, all parts of the drinking water system that come in contact with the drinking water shall be disinfected in accordance with a procedure approved by the Director or in or in accordance with the applicable provisions of the following documents:

- a) The ministry's Watermain Disinfection Procedure, effective December 30, 2016;
- b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
- c) AWWA C653 – Standard for Disinfection of Water
- d) AWWA C654 – Standard for Disinfection of Wells.

As part of this inspection the Owner / Operating Authority provided two disinfection records related to High Lift Pump #1 within the Treatment Plant. The records associated with this pump indicate maintenance was completed on the pump and the disinfection of the pump followed the procedures presented within AWWA C653-03. However, these forms and supplemental information provided by the Operating Authority did not consistently include the concentration of sodium hypochlorite used in the spray application, the contact time given for the sodium hypochlorite to disinfect the pump, or that verification bacteriological samples for total coliform were collected for testing.

Corrective Action:

From herein, the Owner / Operating Authority shall ensure that all procedures prescribed by Section 2.3 of Drinking Water Works Permit #052-203 are met with as related to the disinfection of the water system. Compliance with this requirement will be assessed during the next inspection of the water system.

INSPECTION DETAILS

This section includes all questions that were assessed during the inspection.

Ministry Program: Regulated Activity: DRINKING WATER : DW Municipal Residential

Question ID	MRDW1001000		
Question	Question Type	Legislative Requirement	
What was the scope of this inspection?	Information	Not Applicable	
Observation			
<p>The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.</p> <p>This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.</p> <p>This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.</p> <p>As part of the inspection, several documents were reviewed to support the conclusions and inferences presented within this report. Generally, these include but are not limited to:</p> <ol style="list-style-type: none">1. Melrose Water Treatment System, Operations and Maintenance Manual – System Description and Unit Operations dated May 2020.2. Permit to Take Water PTTW # P-300-807238149 dated 14 March 20203. Drinking Water Works Permit #052-203, Issue #2 dated June 30, 20164. Municipal Drinking Water License #052-103, Issue #5 dated October 26, 20175. Municipal Drinking Water License #052-103, Issue #6 dated April 23, 2021 <p>Other documents reviewed include microbiological and chemical testing results, logsheets, etc. It should be noted that this inspection covers the period from July 1, 2020 to May 31, 2021. The physical inspection was conducted on June 16, 2021 and included a site visit to the water treatment plant and wells. There are no other outstations associated with this water system.</p>			

Question ID	MRDW1000000		
Question	Question Type	Legislative Requirement	
Does this drinking water system provide primary	Information	Not Applicable	

disinfection?		
Observation		
<p>This Drinking Water System provides for both primary and secondary disinfection and distribution of water.</p> <p>The water system provides primary disinfection through the injection of liquid sodium hypochlorite and sufficient contact time by way of reservoirs. Critical parameters associated with primary disinfection include the measurement of the concentration of free chlorine, the reservoir water levels, and the flow rate through the system.</p>		

Question ID	MRDW1007000	
Question	Question Type	Legislative Requirement
Is the owner maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials?	Legislative	SDWA O. Reg. 170/03 1-2 (1)
Observation		
<p>The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials.</p> <p>At the time of the site inspection, both wells were observed to be securely locked and raised above the ground surface at a sufficient height. There were no depressions around the wells into which water could pond, and screens were present on the vents of each of the wells. The conduit connection on both wells were in good condition and sealed to the underside of the well cap.</p> <p>It is recommended that the Owner / Operating Authority review the contents of the Well Inspection and Maintenance Plan to ensure that the conditions noted within the plan are implemented and the wells are maintained in a secured state.</p>		

Question ID	MRDW1009000	
Question	Question Type	Legislative Requirement
Are measures in place to protect the groundwater and/or GUDI source in accordance with any MDWL and DWWP issued under Part V of the SDWA?	Legislative	SDWA 31 (1)
Observation		
<p>Measures were in place to protect the groundwater and/or GUDI source in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.</p> <p>As required by Municipal Drinking Water License #052-103 - Issues #5 and #6, a well inspection and maintenance plan has been prepared for the Melrose Production Wells and includes the following: an inspection schedule for all wells associated with the water treatment system(s); defined well inspection and maintenance procedures for the entire well structure of each well, including all above and below grade well components; and remedial action plans for situations</p>		

where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality. The Owner / Operating Authority conduct monthly inspections of each of the wells and maintains records related to the inspections.

In addition, bollards are in place in the vicinity of both Production Wells to protect against vehicular traffic in the area.

Question ID	MRDW1014000		
Question		Question Type	Legislative Requirement
Is there sufficient monitoring of flow as required by the MDWL or DWWP issued under Part V of the SDWA?		Legislative	SDWA 31 (1)
Observation			
There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.			
Municipal Drinking Water License #052-103 – Issues #5 and #6, Section 2 of Schedule C, stipulates that the flow entering the Treatment Plant, and leaving the Treatment Plant to the distribution system must be measured and recorded. At the time of the site visit, there were individual flow meters for both of the production wells, in addition to a flow meter used to measure the treated water entering into the distribution system.			
In addition, the system is equipped with a filter and backwash flow meter.			

Question ID	MRDW1016000		
Question	Question Type	Legislative Requirement	
Is the owner in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the MDWL issued under Part V of the SDWA?	Legislative	SDWA 31 (1)	
Observation			
The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.			
Municipal Drinking Water License #052-103 – Issue #5 and #6, Section 1 of Schedule C stipulates that the maximum flow of treated water from the Treatment Plant to the distribution system must not exceed 277 cubic meters per day. Over the course of the inspection period, this maximum daily flow was not exceeded.			
The Owner / Operating Authority is reminded that regardless of the daily rated capacity / flow rate, adequate primary disinfection must always be maintained.			

Question ID	MRDW1030000		
Question	Question	Legislative	

	Type	Requirement
Is primary disinfection chlorine monitoring being conducted at a location approved by MDWL and/or DWWP issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved?	Legislative	SDWA O. Reg. 170/03 7-2 (1), SDWA O. Reg. 170/03 7-2 (2)
Observation		
Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.		
The online free chlorine analyzer draws water for measurement from a location just downstream of the reservoir, and just before the water enters into the distribution system. This is the location where the calculated contact time should be achieved.		
It should be noted that there is an additional online chlorine analyzer located just downstream of the filtration system, and immediately upstream of the contact reservoirs; this analyzer is used for operational purposes.		

Question ID	MRDW1034000	
Question	Question Type	Legislative Requirement
Is the secondary disinfectant residual measured as required for the small municipal residential distribution system?	Legislative	SDWA O. Reg. 170/03 7-2 (5), SDWA O. Reg. 170/03 7-2 (6)
Observation		
The secondary disinfectant residual was measured as required for the distribution system.		
According to the documentation provided for review, the Operating Authority collects at least two samples per week for free chlorine residual testing. Generally stated, these samples are collected according to the requirements prescribed by Ontario Regulation 170/03 – Schedule 7-2 (5) where one sample is collected on one day in a week and another sample is collected later in the same week, at least 48 hours from when the first sample was collected.		

Question ID	MRDW1037000	
Question	Question Type	Legislative Requirement
Are all continuous monitoring equipment utilized for sampling and testing required by O. Reg.170/03, or MDWL or DWWP or order, equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6?	Legislative	SDWA O. Reg. 170/03 6-5 (1) 1-4,SDWA O. Reg. 170/03 6-5 (1)5-10,SDWA O. Reg. 170/03 6-5 (1.1)
Observation		

All continuous monitoring equipment utilized for sampling and testing required by O. Reg. 170/03, or Municipal Drinking Water Licence or Drinking Water Works Permit or order, were equipped with alarms or shut-off mechanisms that satisfy the standards described in Schedule 6.

According to discussions with the Operating Authority, alarms and automatic shut off mechanisms are engaged within the Treatment Plant in the event of unusual activities.

The following alarm settings are programmed in the SCADA system:

1. Low Free Chlorine = 0.90 mg/L
2. Low Free Chlorine Lock Out = 0.21 mg/L
3. High Free Chlorine = 3.0 mg/L
4. Low Reservoir = 1.2 m
5. High Reservoir = 3.1 m

There are additional alarms including no chlorine flow, communication loss, turbidity, etc. which aid in the operation of the water system. It is understood that these alarm setpoints are subject to change depending on operating conditions.

Question ID	MRDW1038000	
Question	Question Type	Legislative Requirement
Is continuous monitoring equipment that is being utilized to fulfill O. Reg. 170/03 requirements performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format?	Legislative	SDWA O. Reg. 170/03 6-5 (1) 1-4
Observation		
<p>Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was not performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and/or was not recording data with the prescribed format.</p> <p>Generally stated, the Owner / Operating Authority provided online data including readings of free chlorine, well flow rates, distribution flow rates, reservoir depth, turbidity and pressure. The aforementioned data was provided in one minute time intervals to corresponding with the polling rate of the equipment.</p> <p>It should be noted on August 5, 2020, 52 minutes of online data was lost from the SCADA recording system. The lost data is understood to be the result of a manual adjustment to the PLC clock which resulted in data that could not be recovered.</p> <p>Corrective Action: From herein, the Owner / Operating Authority shall ensure that all continuous monitoring data is measured and recorded as prescribed by the minimum requirements presented within Table 6 of Ontario Regulation 170/03. Compliance with this requirement will be assessed during the next inspection of the water system.</p>		

Question ID	MRDW1035000	
Question	Question Type	Legislative Requirement
Are operators examining continuous monitoring test results and are they examining the results within 72 hours of the test?	Legislative	SDWA O. Reg. 170/03 6-5 (1) 1-4,SDWA O. Reg. 170/03 6-5 (1)5-10
Observation		
Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.		
The Operating Authority typically reviews the online data on a daily basis.		

Question ID	MRDW1040000	
Question	Question Type	Legislative Requirement
Are all continuous analysers calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation?	Legislative	SDWA O. Reg. 170/03 6-5 (1) 1-4,SDWA O. Reg. 170/03 6-5 (1)5-10
Observation		
All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.		
The Owner / Operating Authority indicated that the portable chlorine analyzers used at the Middlesex Centre Treatment Plants are calibrated on an annual basis by an outside contractor and were last calibrated in October 2019 and September 2020. The Operating Authority advised that the online continuous analyzers are calibrated / verified against the hand held portable meters on a daily basis. This information was also presented on the systems logsheets. Lastly, the Operating Authority conducts monthly checks of the portable chlorine meters against verification standards to ensure the accuracy of these meters is maintained.		

Question ID	MRDW1108000	
Question	Question Type	Legislative Requirement
Where continuous monitoring equipment used for the monitoring of free chlorine residual, total chlorine residual, combined chlorine residual or turbidity, required by Regulation 170, an Order, MDWL, or DWWP issued under Part V, SDWA, has triggered an alarm or an automatic shut-off, did a qualified person respond in a timely manner and take appropriate actions?	Legislative	SDWA O. Reg. 170/03 6-5 (1) 1-4,SDWA O. Reg. 170/03 6-5 (1)5-10,SDWA O. Reg. 170/03 6-5 (1.1)

Observation
Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.

Question ID	MRDW1018000		
Question	Question Type	Legislative Requirement	
Has the owner ensured that all equipment is installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit?	Legislative	SDWA 31 (1)	
Observation			
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.			
As noted in the 2020 inspection of the water system, the Owner / Operating Authority was requested to submit a Director's Notification associated with chemical storage at the Treatment Plant. Generally stated, the Drinking Water Works Permit currently identifies one 100 litre chemical tank, when there are actually two 60 litres tanks present. The Director's Notification form was submitted on July 15, 2020, and this change to the is expected to be reflected within Section A upon the next issuance of the Drinking Water Works Permit.			
All other equipment noted within Schedule A and C was present at the time of the inspection.			

Question ID	MRDW1021000		
Question	Question Type	Legislative Requirement	
Is the owner/operating authority able to demonstrate that, when required during the inspection period, Form 2 documents were prepared in accordance with their Drinking Water Works Permit?	Legislative	SDWA 31 (1)	
Observation			
The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.			
As noted in the 2020 inspection of the water system, the Owner / Operating Authority was requested to submit a Form 2 associated with chemical storage at the Treatment Plant. Generally stated, the Drinking Water Works Permit currently identifies one 100 litre chemical tank, when there are actually two 60 litres tanks present. The Form 2 document was submitted on July 15, 2020, and this change to the Permit is expected to be reflected within Section A upon the next issuance of the Drinking Water Works Permit.			
There were two additional Form 2 documents submitted over the inspection period associated with the replacement of a Verbatim Dialer system, and suction and drain lines from the online chlorine analyzers.			

Question ID	MRDW1023000	
Question	Question Type	Legislative Requirement
Do records indicate that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a DWWP and/or MDWL issued under Part V of the SDWA at all times that water was being supplied to consumers?	Legislative	SDWA O. Reg. 170/03 1-2 (2)
Observation		
<p>Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Drinking Water Works Permit and/or Municipal Drinking Water Licence issued under Part V of the SDWA at all times that water was being supplied to consumers.</p> <p>According to the contents of the Operations and Maintenance Manual, discussions with the Operating Authority and a CT document dated August 18, 2017, the Owner has provided calculations for two different operating conditions associated with maintaining adequate primary disinfection. These operating conditions are described below:</p> <p>Normal Operations – CT is achieved in both Reservoir Cells:</p> <ul style="list-style-type: none"> - CT = 4 - Maximum Flow Rate < 38 L/sec - Minimum Reservoir Depth for Cell 1 and 2 > 0.84 m - Total Reservoir Volume > 99.036 m³ - Baffling factor = 0.7 - Minimum Required Chlorine Concentration > 0.13 mg/L <p>CT is achieved in Cell 2 (Cell 1 not in service):</p> <ul style="list-style-type: none"> - CT = 4 - Maximum Flow Rate < 38 L/sec - Minimum Reservoir Depth for Cell 1 and 2 > 0.84 m - Total Reservoir Volume > 49.53 m³ - Baffling factor = 0.7 - Minimum Required Chlorine Concentration > 0.26 mg/L <p>According to the Operating Authority, the Treatment Plant ran under normal operating conditions over the inspection period. The minimum concentration of free chlorine was consistently greater than 0.13 mg/L, and the flow was almost always less than 38 L/sec with minor exceptions (i.e flow meter calibration). In addition, the water level in the reservoir was consistently greater than 0.84 metres based on the reviewed data. As such, it is inferred that the Treatment Plant was operated in a manner that met with adequate primary disinfection over the course of the inspection period.</p> <p>NOTE – The maximum flow rate of 38 L/sec noted in the aforementioned calculations is based on the Fire Pump rated capacity. The Owner / Operating Authority has advised that the PLC for the</p>		

system is configured such that when the Fire Pump is operational, all other high lift pumps cannot be called into duty. As such, this represents the highest flow rate for the system.

Question ID	MRDW1024000	
Question	Question Type	Legislative Requirement
Do records 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?	Legislative	SDWA O. Reg. 170/03 1-2 (2)
Observation		
Records confirmed 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.		

Question ID	MRDW1025000	
Question	Question Type	Legislative Requirement
Were all parts of the drinking water system that came in contact with drinking water (added, modified, replaced or extended) disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit?	Legislative	SDWA 31 (1)
Observation		
All parts of the drinking water system were not disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit.		
<p>Drinking Water Works Permit #052-203 - Section 2.3 stipulates minimum requirements related to disinfection of parts associated with the drinking water system. Generally stated, all parts of the drinking water system that come in contact with the drinking water shall be disinfected in accordance with a procedure approved by the Director or in or in accordance with the applicable provisions of the following documents:</p> <ul style="list-style-type: none"> a) The ministry's Watermain Disinfection Procedure, effective December 30, 2016; b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities; c) AWWA C653 – Standard for Disinfection of Water d) AWWA C654 – Standard for Disinfection of Wells. <p>As part of this inspection the Owner / Operating Authority provided two disinfection records related to High Lift Pump #1 within the Treatment Plant. The records associated with this pump indicate maintenance was completed on the pump and the disinfection of the pump followed the procedures presented within AWWA C653-03. However, these forms and supplemental information provided by the Operating Authority did not consistently include the concentration of sodium hypochlorite used in the spray application, the contact time given for the sodium</p>		

hypochlorite to disinfect the pump, or that verification bacteriological samples for total coliform were collected for testing.

Corrective Action:

From herein, the Owner / Operating Authority shall ensure that all procedures prescribed by Section 2.3 of Drinking Water Works Permit #052-203 are met with as related to the disinfection of the water system. Compliance with this requirement will be assessed during the next inspection of the water system.

Question ID	MRDW1062000	
Question	Question Type	Legislative Requirement
Do records or other record keeping mechanisms confirm that operational testing not performed by continuous monitoring equipment is being done by a certified operator, water quality analyst, or person who meets the requirements of O. Reg. 170/03 7-5?	Legislative	SDWA O. Reg. 170/03 7-5
Observation		
Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.		
All staff members working at the drinking water system are Certified Operators.		
The logbooks identify the ORO and the OIC for the day. In addition, the time at which the Operator conducted their duties, and the duties and checks performed were recorded within the logbooks. The Operating Authority also completed daily logsheets of standard activities including but not limited to: pump run time, raw and treated water flow, chlorine residual, turbidity and chlorine tank level.		
The system is equipped with a paperless recorder to log the data from the online meters. This information is reviewed on a daily basis, and Middlesex Centre utilizes an ERIS Reporting system which provides summaries of the online data on which the Operators can sign off on their review of the data and add comments in the event of any usual readings.		

Question ID	MRDW1060000	
Question	Question Type	Legislative Requirement
Do the operations and maintenance manuals meet the requirements of the DWWP and MDWL issued under Part V of the SDWA?	Legislative	SDWA 31 (1)
Observation		
The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.		

The Operations and Maintenance Manual is stored within the Melrose Treatment Plant and is also available in a digital file format for the Operating Authority. The most recent update to the manual occurred in May 2020.

Question ID	MRDW1071000	
Question	Question Type	Legislative Requirement
Has the owner provided security measures to protect components of the drinking water system?	BMP	Not Applicable
Observation		
<p>The owner had provided security measures to protect components of the drinking water system.</p> <p>The Treatment Plant remains locked at all times and is equipped with an entry alarm which is connected to a dialing system to alert the Operating Authority / Owner of unauthorized entry. In addition, the two wells have secured well caps with chained padlocks on them.</p>		

Question ID	MRDW1073000	
Question	Question Type	Legislative Requirement
Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?	Legislative	SDWA O. Reg. 128/04 23 (1)
Observation		
<p>The overall responsible operator has been designated for each subsystem.</p> <p>Middlesex Centre currently has one person designated as the Overall Responsible Operator for this water system. However, there are additional Operators adequately certified to act in the role of Overall Responsible Operator in the event of staff absence.</p>		

Question ID	MRDW1074000	
Question	Question Type	Legislative Requirement
Have operators in charge been designated for all subsystems for which comprise the drinking water system?	Legislative	SDWA O. Reg. 128/04 25 (1)
Observation		
Operators-in-charge had been designated for all subsystems which comprised the drinking water system.		

Question ID	MRDW1075000	
Question	Question Type	Legislative Requirement
Do all operators possess the required certification?	Legislative	SDWA O. Reg. 128/04 22

Observation
All operators possessed the required certification.

Question ID	MRDW1076000		
Question		Question Type	Legislative Requirement
Do only certified operators make adjustments to the treatment equipment?		Legislative	SDWA O. Reg. 170/03 1-2 (2)
Observation			
Only certified operators made adjustments to the treatment equipment.			

Question ID	MRDW1099000		
Question		Question Type	Legislative Requirement
Do records show that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O. Reg.. 169/03)?		Information	Not Applicable
Observation			
Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).			

Question ID	MRDW1094000	
Question	Question Type	Legislative Requirement
Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?	Legislative	SDWA 31 (1)
Observation		
All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.		
Municipal Drinking Water License #052-103, Issue #5 and #6, Schedule D prescribes relief from regulatory lead sampling as prescribed by Ontario Regulation 170/03 – Schedule 15.1. The relief within the aforementioned license allows for the following sampling:		
1. 0 Private Residential Lead samples		
2. 0 Non-Private Residential Lead samples		
3. 1 Distribution Lead samples		
Over the course of the inspection period, there were two sampling periods including:		
1. June 15, 2020 to Oct 15, 2020		
2. Dec 15, 2020 to Apr 15, 2021		

During the aforementioned sampling periods, the Owner / Operating Authority collected and analyzed lead samples as prescribed by of Schedule D of the MDWL.

The Owner / Operating Authority is reminded that the sampling relief provided in Schedule D of the Municipal Drinking Water License expires on April 15, 2021. It is recommended that the Owner / Operating Authority assess their lead sampling results to determine the appropriate future sampling requirements for the system as related to lead.

Question ID	MRDW1096000		
Question		Question Type	Legislative Requirement
Do records confirm that chlorine residual tests are being conducted at the same time and at the same location that microbiological samples are obtained?		Legislative	SDWA O. Reg. 170/03 6-3 (1)
Observation			
Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.			

Question ID	MRDW1082000		
Question	Question Type	Legislative Requirement	
Are all microbiological water quality monitoring requirements for distribution samples prescribed by legislation being met?	Legislative	SDWA O. Reg. 170/03 11-2 (1),SDWA O. Reg. 170/03 11-2 (2),SDWA O. Reg. 170/03 11-2 (6)	
Observation			
All microbiological water quality monitoring requirements for distribution samples prescribed by legislation were being met.			
Ontario Regulation 170/03 – Schedule 11-2 stipulates that distribution water samples are required to be collected for testing every two weeks within the frequency prescribed by Ontario Regulation 170/03 – Schedule 6 1.1 (2). Testing of the samples collected from the distribution system must include E. coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count.			
Over the course of the inspection period, the Operating Authority collected a distribution water sample for microbiological testing every two weeks as prescribed by Ontario Regulation 170/03 – Schedule 11-2.			

Question ID	MRDW1084000		
Question	Question	Legislative	

	Type	Requirement
Are all inorganic water quality monitoring requirements prescribed by legislation conducted within the required frequency?	Legislative	SDWA O. Reg. 170/03 13-2
Observation		
<p>All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.</p> <p>Ontario Regulation 170/03 - Schedule 13-2 stipulates that Schedule 23 Inorganic water quality samples are required to be collected and tested every 60 months from the treated water within the required frequency as prescribed by Ontario Regulation 170/03 - Schedule 6-1.1(7). According to documentation provided for review from the Owner / Operating Authority, samples were collected from the Treatment Plant on the following dates:</p> <ol style="list-style-type: none"> 1. January 30, 2012 2. January 2, 2017 <p>Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting Schedule 23 Inorganic water quality samples as prescribed by Ontario Regulation 170/03 - Schedule 13-2.</p>		

Question ID	MRDW1085000	
Question	Question Type	Legislative Requirement
Are all organic water quality monitoring requirements prescribed by legislation conducted within the required frequency?	Legislative	SDWA O. Reg. 170/03 13-4 (1),SDWA O. Reg. 170/03 13-4 (2),SDWA O. Reg. 170/03 13-4 (3)
Observation		
<p>All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.</p> <p>Ontario Regulation 170/03 - Schedule 13-4 stipulates that Schedule 24 Organic water quality samples are required to be collected and tested every 60 months from the treated water within the required frequency as prescribed by Ontario Regulation 170/03 - Schedule 6-1.1(7). According to documentation provided for review from the Owner / Operating Authority, samples were collected from the Treatment Plant on the following dates:</p> <ol style="list-style-type: none"> 1. January 30, 2012 2. January 2, 2017 <p>Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting Schedule 24 Organic water quality samples as prescribed by Ontario</p>		

Regulation 170/03 - Schedule 13-4.

Question ID	MRDW1086000	
Question	Question Type	Legislative Requirement
Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?	Legislative	SDWA O. Reg. 170/03 13-6.1 (1),SDWA O. Reg. 170/03 13-6.1 (2),SDWA O. Reg. 170/03 13-6.1 (3), SDWA O. Reg. 170/03 13-6.1 (4),SDWA O. Reg. 170/03 13-6.1 (5),SDWA O. Reg. 170/03 13-6.1 (6)
Observation		
<p>All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.</p> <p>Ontario Regulation 170/03 - Schedule 13-6.1 stipulates that haloacetic acids are required to be collected and tested every three months from the distribution water within the required frequency as prescribed by Ontario Regulation 170/03 - Schedule 6-1.1(4). The requirement for collecting and analyzing haloacetic acids became effective on January 1, 2017. According to documentation provided for review from the Owner / Operating Authority, samples were collected on the following days from the distribution system:</p> <ol style="list-style-type: none"> 1. April 1, 2019 - HAA = <MDL (5.3 ug/L) 2. July 1, 2019 - HAA = <MDL (5.3 ug/L) 3. October 7, 2019 - HAA = <MDL (5.3 ug/L) 4. January 6, 2020 - HAA = <MDL (5.3 ug/L) 5. April 6, 2020 - HAA = <MDL (5.3 ug/L) 6. July 6, 2020 - HAA = <MDL (5.3 ug/L) 7. October 5, 2020- HAA = <MDL (5.3 ug/L) 8. January 4, 2021 - HAA = <MDL (5.3 ug/L) 9. April 5, 2021 - HAA = <MDL (5.3 ug/L) <p>Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting haloacetic acids water quality samples as prescribed in Ontario Regulation 170/03 - Schedule 13-6.1.</p> <p>The Owner / Operating Authority is reminded that assessment of the reported results for haloacetic acids is based on a running annual average of quarterly results and calculated as</p>		

prescribed by Ontario Regulation 170/03 – Schedule 13-6.1 (3) as follows:

"(3) For the purposes of Schedule 2 to the Ontario Drinking Water Quality Standards, the running annual average of quarterly results with respect to haloacetic acids shall be calculated for each calendar quarter by using the following formula:

$$[A + B + C + D] \div 4$$

in which,

"A" is the average of all the results from the samples tested under subsection (2) in that calendar quarter,

"B" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "A" in which testing was carried out,

"C" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "B" in which testing was carried out, and

"D" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "C" in which testing was carried out."

A running annual average for each quarter must be calculated and recorded to ensure compliance has been met after each quarter.

Question ID	MRDW1087000		
Question	Question Type	Legislative Requirement	
Have all trihalomethane water quality monitoring requirements prescribed by legislation been conducted within the required frequency and at the required location?	Legislative	SDWA O. Reg. 170/03 13-6 (1)	
Observation			
All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.			
Ontario Regulation 170/03 – Schedule 13-6 stipulates that trihalomethane samples are required to be collected and tested every three months from the distribution water within the required frequency as prescribed by Ontario Regulation 170/03 – Schedule 6-1.1(4). Schedule 13-6(4) allows for a reduction in trihalomethane sampling provided certain conditions are met with. Generally stated, if the results of the previous 12 consecutive trihalomethane tests do not exceed 50 ug/L, the Owner / Operating Authority may be relieved from sampling for 8 consecutive quarters and then must resume sampling for 4 consecutive quarters. If the requirements of Schedule 13-6(4) continue to be met with, this process can be continued.			
The following presents a brief history of the trihalomethane sampling at the drinking water system.			
1. October 6, 2014 – THM = 16 ug/L			
2. January 5, 2015 – THM = 15 ug/L			

3. April 6, 2015 – THM = 14 ug/L
4. July 6, 2015 – THM = 14 ug/L
5. October 5, 2015 – THM = 15 ug/L
6. January 4, 2016 – THM = 15 ug/L
7. April 4, 2016 – THM = 17 ug/L
8. July 4, 2016 – THM = 14 ug/L
9. October 3, 2016 – THM = 17 ug/L
10. January 2, 2017 – THM = 14 ug/L
11. April 3, 2017 – THM = 14 ug/L
12. July 6, 2017 – THM = 17 ug/L
13. Quarter 4, 2017 – THM = Sample not Collected (On Reduced Sampling)
14. Quarter 1, 2018 – THM = Sample not Collected (On Reduced Sampling)
15. Quarter 2, 2018 – THM = Sample not Collected (On Reduced Sampling)
16. Quarter 3, 2018 – THM = Sample not Collected (On Reduced Sampling)
17. Quarter 4, 2018 – THM = Sample not Collected (On Reduced Sampling)
18. Quarter 1, 2019 – THM = Sample not Collected (On Reduced Sampling)
19. Quarter 2, 2019 – THM = Sample not Collected (On Reduced Sampling)
20. Quarter 3, 2019 – THM = Sample not Collected (On Reduced Sampling)
21. October 7, 2019 – THM = 14 ug/L
22. January 6, 2020 – THM = 14 ug/L
23. April 6, 2020 – THM = 15 ug/L
24. July 6, 2020 – THM = 10 ug/L
25. October 5, 2020 – THM = 17 ug/L
26. January 4, 2021 – THM = 13 ug/L
27. April 5, 2021 – THM = 16 ug/L

According to conversations with the Operating Authority, and according to the aforementioned results of testing, sampling for Trihalomethanes was formerly conducted on a reduced basis and is now being conducted on a quarterly basis according to the requirements of Ontario Regulation 170/03 – Schedule 13-6. Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting trihalomethane water quality samples as prescribed by Ontario Regulation 170/03 – Schedule 13-6.

Question ID	MRDW1088000		
Question		Question Type	Legislative Requirement
Are all nitrate/nitrite water quality monitoring requirements prescribed by legislation conducted within the required frequency for the DWS?		Legislative	SDWA O. Reg. 170/03 13-7
Observation			
All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted			

within the required frequency for the DWS.

Ontario Regulation 170/03 – Schedule 13-7 stipulates that nitrate and nitrite are required to be collected and tested every three months from the treated water within the required frequency as prescribed by Ontario Regulation 170/03 – Schedule 6-1.1(4). According to documentation provided for review from the Owner / Operating Authority, samples were collected from the Treatment Plant on the following dates:

1. April 6, 2020
2. July 6, 2020
3. October 5, 2020
4. January 4, 2021
5. April 5, 2021

Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting nitrate and nitrite samples as prescribed by Ontario Regulation 170/03 – Schedule 13-7.

Question ID	MRDW1089000		
Question	Question Type	Legislative Requirement	
Are all sodium water quality monitoring requirements prescribed by legislation conducted within the required frequency?	Legislative	SDWA O. Reg. 170/03 13-8	
Observation			
All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.			
Ontario Regulation 170/03 - Schedule 13-8 stipulates that sodium samples are required to be collected and tested every 60 months from the treated water within the required frequency as prescribed by Ontario Regulation 170/03 - Schedule 6-1.1(7). According to documentation provided for review from the Owner / Operating Authority, samples were collected from the Treatment Plant on the following dates:			
1. January 30, 2012 - Sodium = 22.6 mg/L			
2. February 9, 2012 - Sodium = 21.2 mg/L (resample associated with January 30, 2012 sample)			
3. January 2, 2017 - Sodium = 24.4 mg/L			
4. January 9, 2017 - Sodium = 25.4 mg/L (resample associated with January 2, 2017 sample)			
Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting sodium water quality samples as prescribed by Ontario Regulation 170/03 - Schedule 13-8.			

Question ID	MRDW1090000		
Question	Question	Legislative	

	Type	Requirement
Where fluoridation is not practiced, are all fluoride water quality monitoring requirements prescribed by legislation conducted within the required frequency?	Legislative	SDWA O. Reg. 170/03 13-9
Observation		
All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.		
Ontario Regulation 170/03 - Schedule 13-9 stipulates that fluoride samples are required to be collected and tested every 60 months from the treated water within the required frequency as prescribed by Ontario Regulation 170/03 - Schedule 6-1.1(7). According to documentation provided for review from the Owner / Operating Authority, samples were collected from the Treatment Plant on the following dates:		
<ol style="list-style-type: none"> 1. January 30, 2012 - Fluoride = 1.00 mg/L 2. January 2, 2017 - Fluoride = 1.02 mg/L 		
Based on the aforementioned tests, the Owner / Operating Authority are in compliance with the requirements for collecting fluoride water quality samples as prescribed by Ontario Regulation 170/03 - Schedule 13-9.		

Question ID	MRDW1100000	
Question	Question Type	Legislative Requirement
Did any reportable adverse/exceedance conditions occur during the inspection period?	Information	Not Applicable
Observation		
There were no reportable adverse/exceedances during the inspection period.		
There were no AWQIs over the inspection period		

Question ID	MRDW1114000	
Question	Question Type	Legislative Requirement
Does the owner have evidence that, when required, all legal owners associated with the DWS were notified of the requirements of the Licence & Permit?	Legislative	SDWA 31 (1)
Observation		
The owner had evidence that all required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period.		
The Owners are made aware of the requirements of the Licence and Permit through the acceptance of the Annual / Summary Report through council resolution. In addition, the Owner / Operating Authority advised that the Councillors have just recently received Standard of Care training associated with water systems.		



Stakeholder Appendix

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are available to help you operate your drinking water system. Below is a list of key materials owners and operators of municipal residential drinking water systems frequently use.

To access these materials online click on their titles in the table below or use your web browser to search for their titles. Contact the Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater



PUBLICATION TITLE	PUBLICATION NUMBER
FORMS: Drinking Water System Profile Information Laboratory Services Notification Adverse Test Result Notification	012-2149E 012-2148E 012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website

Principaux guides et documents de référence sur les réseaux résidentiels municipaux d'eau potable

De nombreux documents utiles peuvent vous aider à exploiter votre réseau d'eau potable. Vous trouverez ci-après une liste de documents que les propriétaires et exploitants de réseaux résidentiels municipaux d'eau potable utilisent fréquemment. Pour accéder à ces documents en ligne, cliquez sur leur titre dans le tableau ci-dessous ou faites une recherche à l'aide de votre navigateur Web. Communiquez avec le ministère au 1-866-793-2588, ou encore à waterforms@ontario.ca si vous avez des questions ou besoin d'aide.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site www.ontario.ca/eaupotable

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable	012-2149F
Avis de demande de services de laboratoire	012-2148F
Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau potable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
Guide sur l'accréditation des exploitants de réseaux d'eau potable et des analystes de la qualité de l'eau de réseaux d'eau potable	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web