

Ministry of the Environment,  
Conservation and Parks

Ministère de l'Environnement, de la  
Protection de la nature et des Parcs

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March 17, 2022

William Cane  
Mayor  
The Corporation of the Township of Hamilton  
8285 Majestic Hills Dr.  
P.O. Box 1060  
Cobourg, ON K9A 4W5

Dear Mr. Cane,

**RE: Creighton Heights Drinking Water System  
2021-2022 Compliance Inspection Report  
MECP File: SI NO HM DA 540**

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Please find attached the Ministry of the Environment's inspection report for the above facility. The report details the findings of the announced inspection that began on January 24, 2022.

This report provides an assessment of compliance and conformance based on observations and information available during the inspection review period only. As always, please refer to the applicable legislative requirements, permissions, policies, guidelines and best management practices to clarify your specific obligations.

One (1) instance of non-compliance was identified during the inspection and require the submission of information or plans to my attention. Please forward your written response to the Actions Required to the undersigned at the Peterborough District Office of the Ministry of Environment by April 22, 2022.

Please note that "Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, licenses, permits, orders, or instructions. Such violations could result in the issuance of mandatory abatement instruments including Orders, tickets, penalties, or referrals to the ministry's Investigations and Enforcement Branch.

Additional findings and applicable comments, where provided, will be found within the 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).

Thank you for the assistance afforded to me during the conduct of the compliance assessment. Please do not hesitate to call me (705-768-0423) or Ms. Jacqueline Fuller, Supervisor, Safe Drinking Water Branch (705-768-0436), should you have any questions or concerns regarding the above.

Yours truly,



**Viktoria Light**

Provincial Officer #1100  
Drinking Water Program Inspector  
Eastern Region  
Ministry of Environment, Conservation and Parks  
Enclosure (1)

c: Anita Schoenleber, Water Operations Manager, The Corporation of The Township of Hamilton  
Dr. Natalie Bocking, Medical Officer of Health, Haliburton Kawartha Pine Ridge HU  
Rhonda Bateman, CAO/Secretary-Treasurer, Lower Trent Conservation Authority  
Office File



CREIGHTON HEIGHTS DRINKING WATER SYSTEM  
9235 DALE RD, HAMILTON TOWNSHIP, ON, K0K 1C0  
**Inspection Report**

System Number:	220008104
Inspection Start Date:	01/24/2022
Inspection End Date:	03/14/2022
Inspected By:	Viktoria Light
Badge #:	1100
Inspected By:	Jacqueline Fuller
Badge #:	



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(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:** Other Inspection Findings

<b>Question ID</b>	MRDW1115000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
In the event that an issue of non-compliance outside the scope of this inspection protocol is identified, a "No" response may be used if further actions are deemed necessary (and approved by the DW Supervisor) to facilitate compliance.	Legislative	Not Applicable
<b>Observation/Corrective Action(s)</b>		
<p>The following instance of non-compliance were noted during the inspection:  On November 15, 2016, the Township of Hamilton received a letter from the MECP outlining regulatory relief from lead sampling for the Creighton Heights Drinking Water System. The letter states the Conditions in Schedule D of MDWL 139-102 expire after October 15, 2016.  The letter prescribed that from summer 2017 onwards, the Creighton Heights DWS is required to test two (2) distribution samples for:</p> <ul style="list-style-type: none"> <li>-alkalinity and pH during each of the periods (WINTER &amp; SUMMER) in every 12-month period and for</li> <li>-lead during each of the periods (WINTER &amp; SUMMER) in every third 12-month period</li> </ul> <p>Two (2) distribution samples were collected and tested for lead, alkalinity and pH on March 18, 2019, September 24, 2019, and most recently on January 24, 2022.  Two (2) distribution samples were taken and tested for pH and alkalinity on January 24, 2022 (WINTER).  It was noted that during the SUMMER period only one (1) distribution sample was collected on July 26, 2021, for alkalinity and pH analysis, contrary to Schedule 15.1-5 of O.Reg.170/03.</p> <p><b>Required Action #1:</b>  The operating authority for the Creighton Heights DWS shall ensure that at least two (2) distribution samples are collected during SUMMER and WINTER periods each year and analyzed for pH and alkalinity, in accordance with Schedule 15.1-5. of O.Reg.170/03.  By April 22, 2022, the operating authority for the Creighton Heights DWS shall develop and implement a written procedure for ensuring that two (2) distribution samples are collected twice each year during the prescribed SUMMER and WINTER periods and tested for pH and alkalinity.  By April 22, 2022, a copy of the written procedure prescribed above shall be submitted to the undersigned Provincial Officer.</p>		

## INSPECTION DETAILS

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

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

<b>Question ID</b>	MRDW1001000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
What was the scope of this inspection?	Information	Not Applicable
<b>Observation</b>		
<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>On January 17, 2022, Provincial Officer Viktoria Light initiated an announced inspection of the Creighton Heights Drinking Water System (DWS). The Corporation of the Township of Hamilton, the owner and the operating authority for the system, was notified of the inspection on January 7, 2022.</p> <p>Please note that all references to the "inspection review period" refer to the elapsed time since the previous Ministry Compliance Inspection was completed. In this inspection report, "inspection review period" refers to the period of time between February 1, 2021 and January 24, 2022.</p> <p>The drinking-water system inspection included physical inspection of the production wells, treatment system, and a document review.</p> <p>The purpose of the inspection was to assess compliance with the Safe Drinking Water Act ("SDWA"), Ontario Regulation 170/03, Ontario Regulation 128/04, Drinking Water Works Permit (DWWP) Number 139-202 (issued August 12, 2021), Municipal Drinking Water Licence (MDWL) Number 139-102 (issued August 12, 2021) and Permit To Take Water Number 7265-8W9HLX (issued August 31, 2012).</p>		

<b>Question ID</b>	MRDW1000000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Does this drinking water system provide primary disinfection?	Information	Not Applicable

<b>Observation</b>
This Drinking Water System provides for both primary and secondary disinfection and distribution of water.

<b>Question ID</b>	MRDW1007000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<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>Two (2) production wells, well TW6 and well TW7, are situated within concrete well vaults. The top of each vault extends above the grade and is covered with a solid, watertight cover, sufficient to prevent the entry of surface water and other foreign materials into the vault. Each vault is equipped with a floor drain to ensure that water will not collect in the vault. Both vault covers are secured in place with locks.</p> <p>The production well TW1 is located west of the wells TW6 and TW7. The well casing extends approximately 35 centimetres from the grade and the top of the well casing is equipped with properly sealed commercially manufactured well cap furnished with screened air vent. The grading in the immediate vicinity of the well is sufficient to prevent water from ponding. The well is situated on a slight northerly slope.</p>		

<b>Question ID</b>	MRDW1009000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<p>Measures were in place to protect the groundwater and/or GUDI source in accordance with any the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.</p> <p>Section 16 of Schedule B of the Municipal Drinking Water Licence (MDWL) Number 139-102 requires the development of an inspection schedule for all wells associated with the water treatment system, well inspection and maintenance procedures for the entire well structure of each well, and remedial action plans for situations where an inspection indicates non-compliance with respect to the regulatory requirements and/or risk to raw well water quality.</p> <p>The inspection and maintenance schedule, contained in the Contingency Plan document, prescribes monthly visual checks of any sources of pollution around the well, signs of vandalism or unauthorized entry and verification of surface drainage in the immediate vicinity of the wells. The schedule further prescribes a quarterly more in-depth visual inspection of the above grade components of the wells by the operation staff, annual review of raw water quality data and 5–10-year inspection of the below grade components by a licensed well contractor.</p>		

The review of the monthly and quarterly well inspection records confirmed that during the inspection review period the monthly inspections, with the exception of May 2021, were completed in accordance with inspection schedule and documented in the monthly checklists. The quarterly inspection of production wells was completed in March, June, August and November 2021.

<b>Question ID</b>	MRDW1014000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Is there sufficient monitoring of flow as required by the MDWL or DWWP issued under Part V of the SDWA?	Legislative	SDWA   31   (1)
<b>Observation</b>		
<p>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.</p> <p>Raw water flow is measured at the well TW1 discharge pipe and a common well TW6 and TW7 discharge pipe. It was reported that only well TW6 or TW7 is in service at any given time and wells' duty rotate automatically on stop signal.</p> <p>In addition, treated water flow meters are installed at the common treated water discharge, fire flow discharge and at the discharge to the Deerfield Estates.</p> <p>Raw water and treated water flow meters were calibrated on December 8, 2021, by Franklin Empire Inc.</p>		

<b>Question ID</b>	MRDW1016000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<p>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. Section 1.1 of Schedule C of the current Municipal Drinking Water Licence limits the rated capacity of treated water that flows from the treatment subsystem into the distribution system to 979.2 m<sup>3</sup>/day.</p> <p>The daily treated water volumes were reviewed for the inspection period.</p> <p>The rated capacity for the daily volume of water pumped into the distribution system has not been exceeded during this period.</p> <p>The maximum combined daily volume of treated water directed to the Creighton Heights and Deerfield Estates distribution systems was recorded on June 13, 2021, at 668.41 m<sup>3</sup>/day.</p>		

<b>Question ID</b>	MRDW1033000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Is the secondary disinfectant residual measured as required	Legislative	SDWA   O. Reg.

for the large municipal residential distribution system?		170/03   7-2   (3), SDWA   O. Reg. 170/03   7-2   (4)
<b>Observation</b>		
<p>The secondary disinfectant residual was measured as required for the distribution system. The Creighton Heights DWS serves population of approximately 1,135. The system is classified as a large municipal residential drinking water system and the owner and operating authority for the system must ensure that distribution system chlorine residuals are measured twice each week at four (4) and three (3) distribution system sampling points, at least 48 hours apart. Distribution system chlorine residuals were measured by operation staff twice each week at four (4) and three (3) distribution system sampling locations using a hand-held analyzer. The sample test results were recorded in the monthly logs.</p>		

<b>Question ID</b>	MRDW1037000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<p>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. The Creighton Heights DWS operates with two different secondary disinfection strategies. Approximately 11 months of the year, the plant utilizes naturally occurring ammonia to form chloramines. For approximately one month of the year, the plant increases chlorine dose to above breakpoint disinfection to achieve a free chlorine residual in the distribution system in order to prevent nitrification. The on-line chlorine analyzer monitoring total or free chlorine residual of the treated water leaving the treatment plant (secondary disinfection) is equipped with minimum and maximum alarms, set at 1.6 mg/L and 2.9 mg/L for total chlorine residual, and 0.3 mg/L and 2.9 mg/L for free chlorine residual, respectively.</p>		

<b>Question ID</b>	MRDW1038000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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	Legislative	SDWA   O. Reg. 170/03   6-5   (1) 1-4

data with the prescribed format?		
<b>Observation</b>		
<p>Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was 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.</p> <p>The secondary disinfection total chlorine residual monitoring water quality leaving the treatment facility is continuously measured by an on-line analyzer and recorded on the SCADA system every 5 minutes. The date and time are recorded with every test result.</p>		

<b>Question ID</b>	MRDW1039000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
If primary disinfection equipment that does not use chlorination or chloramination is provided, has the owner and operating authority ensured that the equipment has a recording device that continuously records the performance of the disinfection equipment?	Legislative	SDWA   O. Reg. 170/03   1-6   (3)
<b>Observation</b>		
<p>The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment. Schedule D of the Municipal Drinking Water Licence 139-102 provides relief from continuously recording of UV parameters in accordance with O.Reg.170/03, Schedule 1, Section 1-6(3).</p> <p>In exchange for relief from regulatory requirements the MDWL requires that every incidence of the UV system generating an alarm condition in accordance with O.Reg.170/03, Schedule 1, Section 1-6(2) is recorded by documenting a log entry of the incidence.</p> <p>Waterworks operators record the status of each UV units on a weekly basis and document any observed alarms in the logbook as well as in the 'Creighton Heights UV Equipment Alarm Monthly Summary Report'.</p>		

<b>Question ID</b>	MRDW1042000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
If UV disinfection is used were duty sensors and reference UV sensors checked and calibrated as per the requirements of Schedule E of the MDWL or at a frequency as otherwise recommended by the UV equipment manufacturer?	Legislative	SDWA   31   (1)
<b>Observation</b>		
<p>All UV sensors were checked and calibrated as required.</p> <p>Schedule E of the current MDWL requires that the duty UV sensors are checked on at least a monthly basis against a reference UV sensor or at a frequency as otherwise recommended by the UV equipment manufacturer.</p> <p>The procedure provided by UV Pure suggests calibration of the sensor is performed once per year. UV lamp and water quality sensors were checked on a weekly basis and recorded in the 'UV Readings Log'.</p>		

According to the 'Creighton Heights Annual UV Calibration' logs, all UV units were calibrated against a reference UV sensor between December 16 and 23, 2021.

<b>Question ID</b>	MRDW1035000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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
<b>Observation</b>		
Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test. Operation staff visited the facility each day. The trending review, daily operational parameter checks, as well as any unusual observations were recorded in the logbook.		

<b>Question ID</b>	MRDW1040000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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
<b>Observation</b>		
All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation. The on-line chlorine analyzer and hand-held chlorine and turbidity analyzers were calibrated by HACH Service Plus on June 10, 2021.		

<b>Question ID</b>	MRDW1108000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
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.

<b>Question ID</b>	MRDW1109000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
If the system uses equipment for primary disinfection other than chlorination or chloramination and the equipment has malfunctioned, lost power or ceased to provide the appropriate level of disinfection, causing 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   1-6   (1)
<b>Observation</b>		
When the primary disinfection equipment, other than that used for chlorination or chloramination, has failed causing an alarm to sound or an automatic shut-off to occur, a certified operator responded in a timely manner and took appropriate actions. During the inspection period, three (3) UV alarms were initiated and responded to by operation staff in a timely manner. The details of these incidents were documented in the logbook and alarm summary.		

<b>Question ID</b>	MRDW1018000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.		

<b>Question ID</b>	MRDW1023000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
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. The Creighton Heights DWS system obtains water from three (3) secure ground water sources.		

The primary disinfection system consists of UV irradiation and is capable of achieving an overall performance that provides at a minimum 2-log removal or inactivation of viruses. Secondary disinfection is provided utilizing chloramination using naturally occurring ammonia and chlorine injection. Each year for approximate duration of one (1) month, free chlorine secondary disinfection is utilized by increasing chlorine dosage beyond breakpoint chlorination in order to prevent nitrification in the distribution system.

Operation staff monitored performance of UV disinfection system and secondary disinfection on a daily basis and documented operational parameters in the monthly logs and 'UV Readings' logs. During the inspection review period, the Creighton Heights DWS provided the required minimum level of treatment through UV irradiation and secondary chlorine disinfection.

<b>Question ID</b>	MRDW1024000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
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. Since the last inspection, the minimum distribution total chlorine residual of 0.29 mg/L was measured at Division Steet North and HWY #45 on July 19, 2021. The maximum total chlorine residual of 2.76 mg/L was measured and recorded on May 20, 2021, across from 9 McCarty Drive.		

<b>Question ID</b>	MRDW1025000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
All parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit. It was reported during the inspection that rehabilitation and inspection of Wells 1 & 6 was carried out in accordance with AWWA C654 Standard. No watermain repairs or new installations have taken place during the inspection period. The ministry 'Watermain Disinfection Procedure' is used when and if watermain repairs or installations are needed.		

<b>Question ID</b>	MRDW1026000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
If primary disinfection equipment that does not use chlorination or chloramination is provided, is the equipment equipped with alarms or shut-off mechanisms that satisfy the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03?	Legislative	SDWA   O. Reg. 170/03   1-6   (1)
<b>Observation</b>		
<p>The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03. Nine (9) UV reactors are equipped with water quality sensor, lamp intensity sensor and warning and low alarm set points. If alarm is initiated at a single UV reactor, a solenoid valve will automatically shut off flow of water through the unit to prevent inappropriately disinfected water from entering the distribution system.</p> <p>An alarm and an automatic well pump shut off is initiated if two (2) of the nine (9) UV reactors fail (in case when Well 1&amp;7 or 1&amp;6 are running), or if four (4) of the nine (9) UV reactors fail (in case when Well 7 or Well 6 are running).</p>		

<b>Question ID</b>	MRDW1062000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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
<b>Observation</b>		
<p>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.</p> <p>Distribution and treated water chlorine residuals measured by a hand-held instrument were recorded in the logbook and operation logs along with operator's name or initial.</p> <p>Operators at the Creighton Heights DWS are appropriately certified to conduct operational tests.</p>		

<b>Question ID</b>	MRDW1060000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<p>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.</p>		

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<b>Question ID</b>	MRDW1071000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Has the owner provided security measures to protect components of the drinking water system?	BMP	Not Applicable
<b>Observation</b>		
<p>The owner had provided security measures to protect components of the drinking water system. The property around the Creighton Heights DWS is not fenced. The water treatment facility is locked and equipped with a security system. Two production wells are located within concrete vaults. Vaults are equipped with lockable access hatches. The well TW1 cap is furnished with a lock.</p> <p>Two reservoir cells situated to the east of the Creighton Heights plant are equipped with secured hatches and switches that activate an alarm if the hatch covers are tampered with. There are no water storage facilities located within the Creighton Heights distribution system.</p>		

<b>Question ID</b>	MRDW1073000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Has the overall responsible operator been designated for all subsystems which comprise the drinking water system?	Legislative	SDWA   O. Reg. 128/04   23   (1)
<b>Observation</b>		
<p>The overall responsible operator has been designated for each subsystem.</p> <p>The Creighton Heights DWS is classified as a Class 2 Water Treatment system and a Class 1 Water Distribution system. During the inspection period, Water Operations Manager, Anita Schoenleber, was the designated Overall Responsible Operator. Ms. Schoenleber holds a valid Class 4 Water Treatment Subsystem and Class 3 Water Distribution Subsystem certificates. In the event of the Water Operations Manager's absence, one of the two (2) operators holding a Class 2 Water Treatment Subsystem certificate would cover the ORO responsibilities. The ORO designation is noted at the front of the facility logbook.</p>		

<b>Question ID</b>	MRDW1074000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Have operators in charge been designated for all subsystems for which comprise the drinking water system?	Legislative	SDWA   O. Reg. 128/04   25   (1)
<b>Observation</b>		
<p>Operators-in-charge had been designated for all subsystems which comprised the drinking water system. John Smith (WTS Class 2), Jeff Baldini (WTS Class 1), John Corey (WTS Class 2) and Jeff Bailey (WTS Class 1) are designated as Operators-in-Charge (OIC) and are credited OIC</p>		

experience for every working hour. OIC designation is documented in the logbook.

<b>Question ID</b>	MRDW1075000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Do all operators possess the required certification?	Legislative	SDWA   O. Reg. 128/04   22
<b>Observation</b>		
All operators possessed the required certification.		

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

<b>Question ID</b>	MRDW1099000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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
<b>Observation</b>		
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). The laboratory analytical test results were reviewed for the period from February 1, 2021, to January 24, 2022. Test results of drinking water samples taken during the inspection period for analysis by a licensed laboratory showed that chemical and microbiological parameters were below the Ontario Drinking Water Standards in all samples collected at the Creighton Heights DWS.		

<b>Question ID</b>	MRDW1094000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Are all water quality monitoring requirements imposed by the MDWL and DWWP being met?	Legislative	SDWA   31   (1)
<b>Observation</b>		
All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.		

Schedule C of the Municipal Drinking Water Licence, issued on August 12, 2021, requires quarterly sampling and testing of backwash wastewater for total suspended solids and total chlorine residual, and sets the annual running average limits of 25 mg/L and 0.02 mg/L, respectively.

The document review confirmed that wastewater samples were collected on March 15, 2021; June 15, 2021; September 14, 2021, and December 7, 2021, and analyzed for total suspended solids and total chlorine residual.

In addition, Schedule C requires quarterly sampling and testing for Nitrosodimethylamine (NNDMA) at the farthest point of distribution water.

The data review confirmed that NDMA samples were taken on September 13, 2021 and December 6, 2021.

<b>Question ID</b>	MRDW1096000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>	
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)	
<b>Observation</b>			
Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.			

<b>Question ID</b>	MRDW1081000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>	
Are all microbiological water quality monitoring requirements for distribution samples being met?	Legislative	SDWA   O. Reg. 170/03   10-2   (1),SDWA   O. Reg. 170/03   10-2   (2),SDWA   O. Reg. 170/03   10-2   (3)	
<b>Observation</b>			
All microbiological water quality monitoring requirements for distribution samples were being met. The Creighton Heights distribution system serves a population of approximately 1,135 residents. The system is classified as a large municipal residential system, and the owner and operating authority for the system is required to collect at a minimum nine (9) distribution samples each month and have them tested for the prescribed bacteriological parameters. During the inspection period, the operation staff collected on average ten (10) distribution samples each month for microbiological analysis, with at least two (2) samples being collected each week. Free and total chlorine residuals were measured at the time of sampling. Approximately 50% of all distribution samples were tested heterotrophic plate count bacteria.			

<b>Question ID</b>	MRDW1083000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>	
Are all microbiological water quality monitoring requirements for treated samples being met?	Legislative	SDWA   O. Reg. 170/03   10-3	
<b>Observation</b>			
All microbiological water quality monitoring requirements for treated samples were being met. Treated water samples were collected on a weekly basis and tested for Total coliform, E. coli and heterotrophic plate count bacteria.			

<b>Question ID</b>	MRDW1084000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>	
Are all inorganic water quality monitoring requirements prescribed by legislation conducted within the required frequency?	Legislative	SDWA   O. Reg. 170/03   13-2	
<b>Observation</b>			
All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency. The Creighton Heights DWS is classified as a large municipal residential drinking water system using a ground water as the source. The owner and the operating authority for the system must ensure that at least one water sample is taken every 36 months and is tested for each parameter set out in Schedule 23 of O.Reg.170/03. Treated water samples were collected and tested for inorganic parameters listed in Schedule 23 on May 26, 2021. The previous sampling testing for inorganic parameters was carried out in May 2018.			

<b>Question ID</b>	MRDW1085000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>	
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)	
<b>Observation</b>			
All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency. The Creighton Heights DWS is classified as a large municipal residential drinking water system using a ground water as the source. The owner and the operating authority for the system must ensure that at least one water sample is taken every 36 months and is tested for each parameter set out in Schedule 24 of O.Reg.170/03. Treated water samples were collected and tested for organic parameters listed in Schedule 24 on			

May 26, 2021. The previous sampling for organic parameters was carried out in May 2018.

<b>Question ID</b>   MRDW1086000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<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>Since the last ministry inspection, haloacetic acid samples were collected on a quarterly basis at a sampling point at Highway 45. Samples were collected on March 10, 2021; June 17, 2021; September 13, 2021 and December 5, 2021.</p> <p>The running annual average of haloacetic acids in the samples collected in the past four quarters was 6.05 µg/L.</p>		

<b>Question ID</b>   MRDW1087000		
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
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)
<b>Observation</b>		
<p>All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.</p> <p>Since the last ministry inspection, trihalomethane samples were collected on a quarterly basis at a sampling point at Highway 45. Samples were collected on March 10, 2021; June 17, 2021; September 13, 2021 and December 5, 2021.</p> <p>The running annual average of trihalomethanes in the samples collected in the past four quarters was 1.55 µg/L.</p>		

<b>Question ID</b>   MRDW1088000
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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
<b>Observation</b>		
<p>All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.</p> <p>Nitrate &amp; nitrite samples were collected from a treated water tap on March 10, 2021; June 17, 2021; September 13, 2021 and December 6, 2021.</p> <p>The concentration of nitrates and nitrites in all collected samples was below the Ontario Drinking Water Quality Standard (ODWS) of 10 mg/L and 1 mg/L, respectively.</p>		

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
<b>Observation</b>				
<p>All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.</p> <p>The owner of a drinking water system and the operating authority for the system must ensure that at least one water sample is taken every 60 months and tested for sodium.</p> <p>The last sodium sample was collected at the Creighton Heights DWS on June 5, 2017. The concentration of sodium in this sample was 27.2 mg/L.</p> <p>The next sodium sampling will be required to be completed in 2022.</p>				

Question ID	MRDW1090000	Question	Question Type	Legislative 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
<b>Observation</b>				
<p>All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.</p> <p>If a drinking water system does not provide fluoridation, the owner of the system and the operating facility for the system must ensure that a treated water sample is taken at least once every 60 months and is tested for fluoride, in accordance with Schedule 13-9 of O.Reg.170/03.</p> <p>The last fluoride sample was collected at the Creighton Heights DWS on June 5, 2017. The concentration of fluoride in this drinking water sample was 0.34 mg/L, which is below the Ontario Drinking Water Quality Standard of 1.5 mg/L for fluoride.</p> <p>Next fluoride sample will require to be collected in 2022.</p>				

<b>Question ID</b>	MRDW1100000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Did any reportable adverse/exceedance conditions occur during the inspection period?	Information	Not Applicable
<b>Observation</b>		
There were reportable adverse/exceedances during the inspection period.		

<b>Question ID</b>	MRDW1102000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Have corrective actions (as per Schedule 18) been taken to address adverse conditions, including any other steps as directed by the Medical Officer of Health?	Legislative	SDWA   O. Reg. 170/03   18-10   (1),SDWA   O. Reg. 170/03   18-11,SDWA   O. Reg. 170/03   18-12,SDWA   O. Reg. 170/03   18-13,SDWA   O. Reg. 170/03   18-14,SDWA   O. Reg. 170/03   18-2,SDWA   O. Reg. 170/03   18-3,SDWA   O. Reg. 170/03   18-4,SDWA   O. Reg. 170/03   18-5,SDWA   O. Reg. 170/03   18-6,SDWA   O. Reg. 170/03   18-9
<b>Observation</b>		
<p>Corrective actions (as per Schedule 18) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.</p> <p>Multiple adverse water quality incidents indicating exceedances of total chlorine residual recorded at the on-line chlorine analyzer monitoring secondary disinfection as a result of faulty on-line analyzer and/or switchover to a free chlorine secondary disinfection were reported to the authorities.</p> <p>Operation staff took corrective actions and conducted total and free chlorine residual analysis of grab samples collected at the reservoir cells and when needed, adjusted chlorine dosage.</p>		

<b>Question ID</b>		MRDW1104000	
<b>Question</b>		<b>Question Type</b>	<b>Legislative Requirement</b>
Were all required verbal notifications of adverse water quality incidents immediately provided as per O. Reg. 170/03 16-6?		Legislative	SDWA   O. Reg. 170/03   16-6   (1),SDWA   O. Reg. 170/03   16-6   (2),SDWA   O. Reg. 170/03   16-6   (3),SDWA   O. Reg. 170/03   16-6   (3.1),SDWA   O. Reg. 170/03   16-6   (3.2), SDWA   O. Reg. 170/03   16-6   (4),SDWA   O. Reg. 170/03   16-6   (5),SDWA   O. Reg. 170/03   16-6   (6)
<b>Observation</b>			
<p>All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.</p> <p>During the inspection period, twelve (12) adverse water quality incidents related to exceedances of total chlorine residual at the on-line chlorine analyzer monitoring secondary disinfection were reported to the prescribed authorities.</p>			

<b>Question ID</b>		MRDW1115000	
<b>Question</b>		<b>Question Type</b>	<b>Legislative Requirement</b>
In the event that an issue of non-compliance outside the scope of this inspection protocol is identified, a "No" response may be used if further actions are deemed necessary (and approved by the DW Supervisor) to facilitate compliance.		Legislative	Not Applicable
<b>Observation</b>			
<p>The following instance of non-compliance were noted during the inspection:</p> <p>On November 15, 2016, the Township of Hamilton received a letter from the MECP outlining regulatory relief from lead sampling for the Creighton Heights Drinking Water System. The letter states the Conditions in Schedule D of MDWL 139-102 expire after October 15, 2016.</p> <p>The letter prescribed that from summer 2017 onwards, the Creighton Heights DWS is required to test two (2) distribution samples for:</p> <p>-alkalinity and pH during each of the periods (WINTER &amp; SUMMER) in every 12-month period and for</p>			

-lead during each of the periods (WINTER & SUMMER) in every third 12-month period

Two (2) distribution samples were collected and tested for lead, alkalinity and pH on March 18, 2019, September 24, 2019, and most recently on January 24, 2022.

Two (2) distribution samples were taken and tested for pH and alkalinity on January 24, 2022 (WINTER).

It was noted that during the SUMMER period only one (1) distribution sample was collected on July 26, 2021, for alkalinity and pH analysis, contrary to Schedule 15.1-5 of O.Reg.170/03.

Required Action #1:

The operating authority for the Creighton Heights DWS shall ensure that at least two (2) distribution samples are collected during SUMMER and WINTER periods each year and analyzed for pH and alkalinity, in accordance with Schedule 15.1-5. of O.Reg.170/03.

By April 22, 2022, the operating authority for the Creighton Heights DWS shall develop and implement a written procedure for ensuring that two (2) distribution samples are collected twice each year during the prescribed SUMMER and WINTER periods and tested for pH and alkalinity.

By April 22, 2022, a copy of the written procedure prescribed above shall be submitted to the undersigned Provincial Officer.

<b>Question ID</b>	MRDW1059000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Do the operations and maintenance manuals contain plans, drawings and process descriptions sufficient for the safe and efficient operation of the system?	Legislative	SDWA   O. Reg. 128/04   28
<b>Observation</b>		
The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.		

<b>Question ID</b>	MRDW1061000	
<b>Question</b>	<b>Question Type</b>	<b>Legislative Requirement</b>
Are logbooks properly maintained and contain the required information?	Legislative	SDWA   O. Reg. 128/04   27   (1), SDWA   O. Reg. 128/04   27   (2), SDWA   O. Reg. 128/04   27   (3), SDWA   O. Reg. 128/04   27   (4), SDWA   O. Reg. 128/04   27   (5), SDWA   O. Reg. 128/04   27   (6),

		SDWA   O. Reg. 128/04   27   (7)
<b>Observation</b>		
Logbooks were properly maintained and contained the required information.		



**APPENDIX A**  
**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](mailto:waterforms@ontario.ca).

For more information on Ontario's drinking water visit [www.ontario.ca/drinkingwater](http://www.ontario.ca/drinkingwater)



PUBLICATION TITLE	PUBLICATION NUMBER
<b>FORMS:</b> 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](mailto: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](http://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