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December 10, 2019

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Joshua Gravelle	Process and Compliance Technician	North Eastern Ontario Hub, OCWA	jgravelle@ocwa.com
Josh DeWaal	Operator	North Eastern Ontario Hub, OCWA	JDeWaal@ocwa.com

**RE: 2019-2020 Inspection Report for the Mattawa Drinking Water System
Drinking Water System no. 210001905
Inspection Report No. 1-LCSL8**

On September 25, 2019 I conducted the annual inspection of the Mattawa Drinking Water System. The inspection included a site visit to the water treatment plant as well as a document review for the period from May 31, 2018 to September 24, 2019.

Two sections of the report, namely "Actions Required" and "Recommended Actions" identify aspects of the drinking water system's operation with the potential for improvement.

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.

Please note that the section "Recommended Actions" suggests the actions the owner and the operating authority should consider implementing in order to advance efforts already in place to address issues of source protection and emergency preparedness. Items which appear as "recommended actions" do not, in themselves, constitute violations.

Section 19 of the Safe Drinking Water Act, 2002 (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 councilors, 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 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 Councils" found at <https://www.ontario.ca/page/drinking-water>.

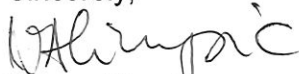
To measure the individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation and Enforcement Secretariat and the advice of internal and external risk experts. The Inspection Summary Rating Record (IRR), included as Appendix A of the inspection report, provides a summarized quantitative measurement of the drinking water system's annual inspection and regulated water quality testing performance. Please review 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 the inspection report.

IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Sherry Ilersich, Water Compliance Supervisor – Timmins/North Bay at (705) 845-1544.

Electronic copies of this inspection report have been sent to the North Bay Parry Sound Health Unit and the North Bay-Mattawa Conservation Authority in accordance with the Ministry's Municipal Drinking Water Inspection Protocol.

Thank you for your co-operation. If you have any questions about this inspection report, please contact me at (705) 491-2781 or by email at vesna.alimpic@ontario.ca.

Sincerely,



Vesna Alimpic
Water Inspector/Provincial Officer
Drinking, Water and Environmental Compliance Division
Ministry of the Environment, Conservation and Parks
North Bay Office

- c: Robert A-Muhong, Manager, Environmental Health Programs, North Bay Parry Sound District Health Unit
David Ellingwood, Supervisor Source Water Protection, North Bay-Mattawa Conservation Authority
Sherry Ilersich, Ministry of the Environment, Conservation and Parks, Water Compliance Supervisor, Drinking, Water and Environmental Compliance Division, Northern Region, Timmins/North Bay



Ministry of the Environment, Conservation and Parks

**MATTAWA DRINKING WATER SYSTEM
Inspection Report**

Site Number:	210001905
Inspection Number:	1-LCSL8
Date of Inspection:	Sep 25, 2019
Inspected By:	Vesna Alimpic

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OWNER INFORMATION:

Company Name:	MATTAWA, THE CORPORATION OF THE TOWN OF	Unit Identifier:	
Street Number:	160		
Street Name:	WATER St		
City:	MATTAWA		
Province:	ON	Postal Code:	P0H 1V0

CONTACT INFORMATION

Type:	Owner	Name:	Raymond A Belanger
Phone:	(705) 744-5611	Fax:	(705) 744-0104
Email:	raymond.belanger@ mattawa.ca		
Title:	CAO/Treasurer, The Corporation of the Town of Mattawa		

Type:	Operating Authority	Name:	Paul Dyrda
Phone:	(705) 303-9767	Fax:	(705) 752-5965
Email:	pdyrda@ocwa.com		
Title:	Operations Manager, OCWA Near North Cluster		

Type:	Operating Authority	Name:	Yvan Rondeau
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Email:	yrondeau@ocwa.com		
Title:	Safety, Process and Compliance Manager, OCWA Near North Cluster		

Type:	Operating Authority	Name:	Josh Gravelle
Phone:	(705) 568-7000	Fax:	(705) 567-7974
Email:	jgravelle@ocwa.com		
Title:	Process and Compliance Technician , OCWA North Eastern Ontario Hub		

Type:	Operating Authority	Name:	Josh DeWaal
Phone:	(705) 471-5084	Fax:	
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Title:	Operator, OCWA Near North Cluster		

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Title:	Manager, Environmental Health Programs, NBPSDHU		

Type:	Conservation Authority	Name:	David Ellingwood
Phone:	(705) 474-5420	Fax:	(705) 474-9793
Email:	david.ellingwood@nbmca.ca		
Title:	Supervisor, Source Water Protection, North Bay-Mattawa Conservation Authority		

Type:	MOE SDWB	Name:	Sherry Ilersich
Phone:	(705) 845-1544	Fax:	(705) 497-6866
Email:	sherry.ilersich@ontario.ca		
Title:	Water Compliance Supervisor, Timmins / North Bay		

INSPECTION DETAILS:

Site Name: MATTAWA DRINKING WATER SYSTEM
Site Address: 400 BISSETT Street MATTAWA ON P0H 1V0
County/District: MATTAWA
MECP District/Area Office: North Bay Area Office
Health Unit: NORTH BAY PARRY SOUND DISTRICT HEALTH UNIT
Conservation Authority: North Bay Mattawa Conservation Authority
MNR Office:
Category: Large Municipal Residential
Site Number: 210001905
Inspection Type: Announced
Inspection Number: 1-LCSL8
Date of Inspection: Sep 25, 2019
Date of Previous Inspection: May 31, 2018

COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point

Sub Type:

Site (Name): WELL 1 RAW
Type: Source

Sub Type: Ground

Comments:

Well # 1 was constructed in 1958 per well record 4300581. It is the larger of the two wells located within the well house at 400 Bissett Street. It is a gravel wall type of construction and had a total depth of 26.5 m. A 660 mm diameter steel outer casing extends from grade to a depth of 19.1m. A 400 mm diameter inner casing extends from grade to 22.1 m and a 400 mm diameter stainless steel screen extends from 22.1 m to 26.7 m. Well #1 is equipped with a 100 Hp vertical turbine pump and is rated at 53 L/s at a 105.8 m TDH. The pump is set at approximately 21.9 m below grade. The well head is approximately 30 cm above the pumphouse floor. Well # 1 is generally operated as the duty well from 6 am to midnight to meet higher water demand period. The switchover of well pumps is controlled by a timer within the system's programmable logic controller.

Site (Name): WELL 2 RAW
Type: Source

Sub Type: Ground

Comments:

Well # 2 was constructed in 1949 per well record 4300579. It is the smaller of the two wells located within the well house at 400 Bissett Street. It is a gravel wall type well construction and has a total depth of 23.8 m. A 560 mm diameter steel outer casing extends from grade to a depth of 18.6 m. A 300 mm diameter inner casing extends from grade to 20.6 m and a 300 mm diameter #6 stainless steel screen extends from 20.6 m to 23.6 m. Well # 2 is equipped with a 40 Hp vertical turbine pump and is rated at 22.7 L/s at a 91.5 m TDH. The pump is set at approximately 17.3 m below grade. The well head is approximately 15 cm above the pumphouse floor. Well # 2 is generally operated as the duty well from midnight to 6 a.m. for energy conservation purposes.

Site (Name): PUMPHOUSE
Type: Treated Water POE

Sub Type: Pumphouse

Comments:

The pumphouse is located at 400 Bissett Street. Raw water flows from the wells into a common 200 mm discharge header within the pump house. Primary disinfection is achieved using two ultraviolet reactors. Each unit is capable of

providing a minimum ultraviolet dosage of 40 mJ/cm² at a peak flow rate of 75.7 L/s and raw water ultraviolet transmittance of 95%.

Secondary disinfection with 12% sodium hypochlorite is completed in the common discharge header prior to entry to the distribution system. The hypochlorite system consists of one 560 L storage tank, with spill containment, and two chemical metering pumps (one duty and one standby) with discharge lines into the common discharge header. The chemical metering pumps are equipped with an automatic switch-over device and controls which provide for flow proportional dosing. If both dosing pumps fail an alarm to the pager is initiated and the raw water pumps automatically shut down. A sample line is installed on the 150 mm discharge header so that continuous on-line monitoring for free chlorine residual can be achieved. Treated water is also piped back from the point of entry to the distribution system to be used for cooling of the diesel generator and the UV reactors during their warm up cycle and for water lubrication of the pump for Well # 1.

A supervisory control and data acquisition (SCADA) system was put in place in 2011 to enhance the automated control of the water production and treatment components and to produce the required performance and monitoring reports. Backup power is supplied by a 300 kW diesel generator equipped with an automatic transfer switch and a 2,200 L capacity above ground fuel tank. This system can run the entire pumphouse, as well as a nearby sewage lift station. Other meters and appurtenances are contained within the pumphouse in accordance with the requirements of system's recently issued Municipal Drinking Water Licence and Drinking Water Works Permit.

Site (Name): RESERVOIR

Type: Other

Sub Type: Reservoir

Comments:

The in-ground reservoir has an operating capacity of 795 cubic metres and is located 700 metres to the northwest of the well house. The normal high operating water level in the reservoir is approximately 70 metres of elevation above the well house. The reservoir is located within a fenced compound and is equipped with two access hatches, two vent pipes and an overflow pipe. Monitoring of the reservoir level is used to control the operation of the well pumps at the pumphouse.

Site (Name): DISTRIBUTION

Type: Other

Sub Type: Other

Comments:

The population of Mattawa is approximately 2,150. The distribution system is fed from the well house when the pumps are operating, with excess water being directed to the elevated in ground reservoir. When the well pumps are off the distribution is gravity fed from the reservoir. The system has approximately 1050 service connections to residential and commercial consumers. There is approximately 20,000 metres of various sized cast iron, ductile iron and polyvinyl chloride piping. There are 107 fire hydrants and 239 valves in the distribution system.

INSPECTION SUMMARY:

Introduction

- 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.

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.

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.

On September 25, 2019 Ministry of the Environment, Conservation and Parks Water Inspector Vesna Alimpic conducted an inspection of Mattawa Drinking Water System (DWS). The inspector was accompanied with Joshua Gravelle, Process Compliance Technician (PCT) and Joshua DeWaal, Operator in Charge for the system, both with North Eastern Ontario Hub of Ontario Clean Water Agency (OCWA), who provided the inspector with data and information required for the completion of the inspection report.

The Corporation of the Town of Mattawa is the owner of the Mattawa Drinking Water System and Distribution System. The operating authority for the Mattawa DWS is OCWA.

Inspection included a tour and physical review of the components of the drinking water system and a review of the system documents for the period from the last inspection conducted on May 31, 2018 to the date of the current inspection. This period is referred to as the "inspection period" in this report.

Specifically, this included a review and assessment of operating practices in relation to the following documents:

- Drinking Water System Regulation O. Reg. 170/03
- Certification of Drinking Water Systems Operators Regulation O. Reg. 128/04
- Permit to Take Water (PTTW) No. 1546-9GHPLM dated February 27, 2014
- Municipal Drinking Water Licence (MDWL) No. 195-101 Issue No. 2 dated July 25th, 2016
- Municipal Drinking Water Licence (MDWL) No. 195-101 Issue No. 1 dated September 26th, 2011
- Drinking Water Works Permit (DWWP) No. 195-201 Issue No. 2 dated July 25th, 2016
- Drinking Water Works Permit (DWWP) No. 195-201 Issue No. 1 dated September 23rd, 2011.

Source

- **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.**

Condition 2.3 of Drinking Water Works Permit 195-201 Issue No. 2 from July 25, 2016 requires that all parts of the drinking water system in contact with drinking water which are taken out of service for inspection, repair or other activities that may lead to contamination, must be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

- a) The Ministry's Watermain Disinfection Procedure, effective January 25, 2017;
- b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
- c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
- d) AWWA C654 – Standard for Disinfection of Wells.

Conditions 16.2.8, 16.2.9 and 16.2.10 of the MDWL require the owner to develop well inspection schedules and maintenance procedures, as well as remedial action plans where an inspection indicates non-compliance with

Source

respect to regulatory requirements and/or risk to raw well water quality.

Maintenance of Well # 2 and its return into operation in October 2018 were performed in accordance with a modification of the AWWA C654 - Standard for Disinfection of Wells, which was authorized by the MECP's Approvals and Licensing Section on September 28, 2018.

Source

- **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.**

The wells are located in the Mattawa Water Treatment Plant building. Well casings extend more than 15 cm above the floor of the building. During the inspection, there was no indication of possibility of entry of surface water and other foreign materials into the wells.

Mattawa wellhouse is located approximately 30 m from Mattawa River. According to PCT and the operator present during the inspection, flood waters during Mattawa floods in spring 2019 did not reach the wellhouse so there was no entry of surface water into the well.

- **Trends in source water quality were being monitored.**

The trends in source water quality are being monitored by collection of regulatory samples and production of tables with the monitoring data. According to the operating authority, a consulting firm hired by the Municipality requested that samples of raw water and surface water are collected and tested for several parameters since the Mattawa floods in spring 2019. The tested parameters in raw water are compared against surface water and trends are observed. According to the operating authority, there seem to have not been changes in monitored water quality parameters caused by floods.

Permit To Take Water

- **The owner was not in compliance with all conditions of the PTTW.**

Section 34. (3) of Ontario Water Resources Act requires that a person shall not take more than 50,000 litres of water on any day by any means except in accordance with a permit issued by the Director.

Permit to Take Water #1564-9GHPLM was issued on February 27, 2014 and expires on May 16, 2023. The permit sets the following limits for takings:

- maximum taking per minute for well # 1: 3,183 L/min
- maximum taking per minute for well # 2: 1,364 L/min
- maximum number of hours taken per day for each well: 24
- maximum taken per day for well # 1: 4,582,080 L/day
- maximum taken per day for well # 2: 1,964,160 L/day
- maximum number of days taken per year for each well: 365 and
- maximum total taking per day from both wells: 6,546,240 L/day.

Other than water taking limits, the PTTW does not include any special conditions.

A review of available documents has shown that water taking from well # 2 has exceeded the maximum taking per minute 1,364 L/min or 22.73 L/s on nine occasions in August 2019. Duration of exceedances ranged from 11 minutes to 4 hours and 33 minutes with the highest taking of 29.05 L/min.

During the preparation of this inspection report, the operating authority informed that they have been working with the owner to determine the cause of exceedances in water taking from well #2.

Permit To Take Water

Failure to take water in accordance with the conditions from permit to take water is a violation of Ontario Water Resources Act.

Please refer to item # 1 of the Non-Compliance with Regulatory Requirements and Actions Required section of this report for further direction related to this item.

Capacity Assessment

- **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.**

As per DWWP, there are magnetic flow meters installed on the discharge of well # 2 and on the treated water discharge from the well house to the distribution system. The production from well # 1 is calculated as the difference in flow between the treated water and raw water readings.

- **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.**

Rated capacity identified in the MDWL is 6,540 m³/day. Review of daily water takings provided by the operating authority has shown that maximum daily takings were below the rated capacity. Maximum water taking was recorded on November 2, 2018 with 2,573 m³ taken on that day, which is 39% of the rated capacity.

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Records of taken water and treated water conveyed to the distribution system are made and contain the information about daily volumes, pump flows and minimum and maximum flows.

Capacity Assessment

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the MDWL issued under Part V of the SWDA.**

Condition 3.2 of Schedule 3 of the MDWL specifies that if the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and calibrated at least once every 12 months during which the drinking water system is in operation. Section 3.2.1 of the MDWL further specifies that for greater certainty, if condition 3.2 applies, the equipment shall be checked and calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

Records show that both flow meters were calibrated on April 27, 2018 and April 26, 2019. The calibration was done cross-referencing a previously calibrated ultrasonic flowmeter.

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

All physical components listed on the DWWP were observed to be in place at the facility. They were all installed, connected to the system and operational.

- **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.**

The operating authority was able to demonstrate that a Form 2 was completed for the introduction of a continuous online chlorine analyzer at the point of entry of treated water into distribution. The analyzer is paired with SCADA system and programming is put in place that can initiate a plant lockout in case of high or low chlorine.

Treatment Processes

Note: According to the information provided by the operating authority, Form 2 was misplaced during the switchover of the ORO from the owner to OCWA. The required Form 2 was completed by the previous ORO and kept in his personal records after the switchover.

The owner is encouraged to create a tracking number/system for all Form 2s and a list of all minor modifications or replacements describing if the project is exempt from approval, covered under a Form 2 or covered under a Schedule C application.

- **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.**

Section 1-3 of Schedule 1 of O. Reg. 170/03 requires that the owner of a drinking water system that uses water from a raw water supply that is ground water must ensure that the water treatment equipment provided is designed to be capable of achieving, at all times, primary disinfection in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario, including at least 99 per cent (2 log) removal or inactivation of viruses by the time water enters the distribution system.

Section 1-2(2) of Schedule 1 of O. Reg. 170/03 requires that the owner of a drinking water system and the operating authority for the system must ensure that the water equipment required by Section 1-3 is operated in a manner that achieves the design capabilities it is required to have under this section.

The MDWL No. 195-101 Issue No. 2 assigns 2 log removal credits for viruses to the existing UV disinfection system. In order to achieve the assigned removal credits for primary disinfection, the UV system must be operated within the validated limits for flow rate, calculated UV dosage, UV Transmittance, and UV lamp status in accordance with MDWL. A UV reactor is operating off specification when it operates outside of the validated range.

The MDWL specifies the following operational requirements for achievement of assigned log removal/inactivation credits for the process of UV disinfection at Mattawa DWS:

Operational Requirements:

- Ultraviolet light disinfection equipment shall have a feature that ensures that no water is directed to users of water treated by the equipment or that causes an alarm to sound in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection;
- Water shall not flow through a UV reactor when the reactor's UV lights are off or not fully energized;
- UV lamp status shall indicate whether each UV lamp is on or off;
- All UV sensors shall operate within their calibration range or corrective measures shall be taken; and
- Installed or replaced UV equipment components shall be equal or better than the components used during validation testing unless the UV equipment was revalidated.

Review of available records and interview with the operator in charge has shown the following:

- The UV disinfection equipment is equipped with a feature that no water is directed towards users without the appropriate level of disinfection
- Water did not flow through a UV reactor when the reactor's UV lights were off or not fully energized during the inspection period.
- There is an indication of UV lamp status on SCADA indicating whether each UV lamp is on or off
- Corrective measures were taken when it was discovered that annual calibration of UV sensors was conducted and it was determined that UV sensor # 1 and reference sensor were out of tolerance.

A review of the data provided indicated that the treatment equipment was operated in a manner that achieved the required design capabilities during the inspection period.

Treatment Processes

- 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.

A review of distribution system chlorine residuals confirmed that the free chlorine residual was never less than 0.05 mg/L. The free chlorine residual measured in the distribution system ranged from 0.11 mg/L to 1.18 mg/L during the inspection period.

- 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.

Section 1-6(1) of Schedule 1 of O. Reg. 170/03 states that the owner must ensure that the disinfection equipment is designed and operated so that, if the disinfection equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection, no water is directed to users and a certified operator takes appropriate action at the location where the equipment is installed before water is again directed to users.

The UV reactors are equipped with alarms and shut off mechanisms. The alarm set point for the UV dosage is set at 48 mJ/cm². If the UV dosage falls below 48 mJ/cm², the duty UV reactor (UVR) will alarm and shut down both the UVR unit and the duty well pump. The standby UVR is then brought on-line and the duty pump re-started when the UVR unit completes its required start-up protocols. In case of an alarm on the stand-by UVR unit, the unit would alarm and shut off the UVR unit and the duty well pump. In this case, an operator intervention is required to resolve the issue and continue with water treatment. The UVR will shut off after 60 seconds cumulative time with dosage below 48 mJ/cm². Additionally, a callout alarm is triggered in case UV transmittance falls below 95%.

- The owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.

The operating authority was able to demonstrate that sodium hypochlorite and repair parts which came into contact with water during the inspection period met applicable safety criteria standards in accordance with the MDWL.

Treatment Processes

- Where an activity has occurred that could introduce contamination, all parts of the drinking water system were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.

All parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

- The Ministry's Watermain Disinfection Procedure, effective January 25, 2017;
- AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
- AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
- AWWA C654 – Standard for Disinfection of Wells.

In October 2018, a structural assessment of the reservoir was conducted by a professional engineer. The inside of the reservoir was cleaned and the old main drain valve was replaced with a new smaller valve. The operating authority reported to the Ministry that AWWA Standard C652-11 "Disinfection of Water-Storage Facilities" was used following the inspection, cleaning and valve replacement.

Also in October 2018, well # 2 was cleaned by wire brushing and airlifting and the existing pump was replaced following procedures from AWWA C654 – Standard for Disinfection of Wells and additional requirements specified

Treatment Processes

by the Ministry.

Review of operating authority's records of water main repairs has indicated that the Ministry's Watermain Disinfection Procedure was followed during maintenance and repair activities.

- **Up-to-date plans for the drinking water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the DWWP and MDWL issued under Part V of the SDWA.**

Treatment Process Monitoring

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**
- **The secondary disinfectant residual was measured as required for the distribution system.**

Subsection 7-2(3) of Schedule 7 of O. Reg. 170/03 requires that the owner of a large municipal residential system that provides secondary disinfection and the operating authority for the system must ensure that at least seven distribution samples are taken each week and are tested immediately for free chlorine residual. Unless at least one sample is taken on each day of the week, at least four of the samples must be taken on one day of the week, at least 48 hours after the last sample was taken in the previous week. At least three of the samples must be taken on a second day of the week, at least 48 hours after the last sample was taken. When more than one sample is taken on the same day of the week under paragraph 1 or 2, each sample must be taken from a different location.

Free chlorine residuals were measured daily in period May 31, 2018 to July 28, 2019. Starting on July 29, 2019 to the end of the inspection period, the operating authority sampled for free chlorine residuals twice a week with at least 48 hours between the samples.

- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

A review of daily logs confirmed that the operators examine the results of continuous monitoring within 72 hours of the test.

- **Samples for chlorine residual analysis were tested using an acceptable portable device.**

Chlorine residual tests are performed with three hand-held chlorine colourimetric analyzers. Verification of chlorine analyzers is done monthly; calibration is done annually.

- **The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.**

Performance of the disinfection equipment is continuously monitored and recorded using a supervisory control and data acquisition (SCADA) control system and a chart recorder. MDWL specifies that the ultraviolet light disinfection equipment must test for the test parameters set out in Column 4 of the MDWL (Column 4 test parameters: calculated UV dose, flow rate; UV transmittance, UV lamp status) at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less.

According to the information provided, SCADA performs tests for the test parameters every 12 seconds and the chart recorder tests every 5 seconds. Calculated UV dose and flow rate are recorded continuously. UV transmittance is recorded every second and minimum, maximum and average values are shown in daily reports. UV lamp status is monitored on the SCADA screen and recorded indirectly by recording of flow rate – when there is flow, the UV lamp is active.

Treatment Process Monitoring

- **All UV sensors were not checked and calibrated as required.**

The MDWL specifies the following requirements for Duty UV Sensor Checks and Calibration:

1. Duty UV sensors shall be checked on at least a monthly basis against a reference UV sensor or at a frequency as otherwise recommended by the UV equipment manufacturer;
2. When comparing a duty UV sensor to a reference UV sensor, the calibration ratio (intensity measured with the duty UV sensor/intensity measured with the reference UV sensor) shall be less than or equal to 1.2;
3. If the calibration ratio is greater than 1.2, the duty UV sensor shall be replaced with a calibrated UV sensor or a UV sensor correction factor shall be applied while the problem with the UV sensor is being resolved;
4. Reference UV sensors shall be checked against a Master Reference Assembly at a minimum frequency of once every three years or on a more frequent basis depending upon the recommendations of the equipment manufacturer;

Based on the review of available data and information provided by the operating authority, the following has been noted:

1. During the inspection period, there were no duty UV sensor checks against a reference UV sensor in the months of May, June and July 2019. According to the operator in charge, this happened because the reference UV sensor was being used as a duty UV sensor while duty UV sensors were shipped away for calibration, after which the reference UV sensor was sent off to be calibrated. The operating authority informed the inspecting officer that the manufacturer of the UV sensor, TrojanUV recommends monthly checking of duty sensor(s) against a reference sensor.
2. and 3. In the months when duty UV sensor checks were performed, the calibration ratio was less than 1.2.
4. The reference sensor was calibrated in February 2017 and in August 2019.

Failure to use or operate a municipal drinking-water system except under the authority of and in accordance with Drinking Water Works Permit is a violation of subsection 31(1)(b) of O. Reg. 170/03.

Please refer to item # 2 of the Non-Compliance with Regulatory Requirements and Actions Required section of this report for further direction related to this item.

Distribution System

- **There is a backflow prevention program, policy and/or bylaw in place.**

Backflow prevention and cross connections are addressed in the building code for new constructions.

- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

There is an unwritten schedule for routine cleanout, inspection and maintenance of Mattawa reservoir. Reservoir is inspected and cleaned every 10 years. It was inspected in 2006, 2008, and again in 2018.

- **The owner had implemented a program for the flushing of watermain as per industry standards.**

Mattawa Public Works performs flushing on an as needed basis and flushes problem areas if complaints are received.

- **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**

Free chlorine residuals are routinely checked at the far ends of the distribution system.

- **A program was in place for inspecting and exercising valves.**

All valves in the distribution were inspected in 2018. The owner and the operating authority are in the process of

Distribution System

preparing a program for inspecting and exercising valves.

- **There was no program in place for inspecting and operating hydrants.**

According to the information provided by the Municipality and the operating authority, there is no formal program for annual inspection of hydrants. Hydrants are inspected once a year when they are winterized.

Please refer to item # 1 of Summary of Recommendations and Best Practice Issues for further direction related to this item.

- **There was no by-law or policy in place limiting access to hydrants.**

According to the information provided by the Municipality and the operating authority, there is no formal program for inspecting and operating hydrants. However, hydrants are only accessed by certified operators and the fire department.

Please refer to item # 2 of Summary of Recommendations and Best Practice Issues for further direction related to this item.

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

There is a pressure gauge at the plant on the distribution water side of the system. This monitors the pressure at the water plant level and it is recorded in the daily trending screen. When a hydrant is inspected, the operating authority has a pressure gauge that is installed on the non-used port, giving the operator the running pressure as well as the static pressure. There have been no complaints related to pressure during the inspection period.

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

Operations and maintenance manuals are available at the facility at all times.

- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

- **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.**

Condition 16 of the MDWL specifies the required contents of the operation and maintenance manuals. A review of the operation and maintenance manuals confirmed that the requirements of the DWWP and MDWL were met.

Logbooks

- **Logbooks were properly maintained and contained the required information.**

Section 27 of O. Reg. 128/04 requires that the owner or operating authority of a subsystem must ensure that logs or other record-keeping mechanisms are provided to record information concerning the operation of the subsystem. Entries in the logs or other record-keeping mechanisms must be made chronologically and no person shall make an entry in a log or other record-keeping mechanism unless the person is an overall responsible operator, an operator-in-charge or is authorized to make an entry by the owner, the operating authority, the overall responsible operator or an operator-in-charge. A person who makes an entry in a log or other record-keeping mechanism must do so in a manner that permits the person to be unambiguously identified as the maker of the entry.

Section 27 of O. Reg. 128/04 also requires that an operator-in-charge or a person authorized by an operator-in-

Logbooks

charge must record the following information in the logs or other record-keeping mechanisms in respect of each operating shift:

1. The date, the time of day the shift began and ended and the number or designation of the shift.
2. The names of all operators on duty during the shift.
3. Any departures from normal operating procedures that occurred during the shift and the time they occurred.
4. Any special instructions that were given during the shift to depart from normal operating procedures and the person who gave the instructions.
5. Any unusual or abnormal conditions that were observed in the subsystem during the shift, any action that was taken and any conclusions drawn from the observations.
6. Any equipment that was taken out of service or ceased to operate during the shift and any action taken to maintain or repair equipment during the shift.

Note: In several occasions during the inspection period, operators resolved alarms remotely, which is noted in the security records. It is recommended that a log as per Subsections 27(5) and (6) is made of a remotely handled alarm in a log book or other record keeping mechanism and kept for future records.

While the owner and the operating authority were able to provide evidence that the records required by regulations O. Reg. 128/04 and 170/03 are kept as required and the documents necessary for the document review for the purpose of this inspection were provided, it appears that some documents related to the operating and maintenance of the system may have been misplaced during the change of ORO. In order to ensure that operators have access to historical records, all records related to the drinking water system should be kept in a central location ensuring that when there is a transition in workplace, the documents are not misplaced.

- **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.**
- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**
- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**

Records of adjustments such as pump switchovers are kept in the log book.

- **Logs or other record keeping mechanisms were available for at least five (5) years.**

Daily logs are kept at the pumphouse. During the operating authority switchover, historical daily operating logs and records remained with the owner at the Town Hall.

Contingency/Emergency Planning

- **Spill containment was provided for process chemicals and/or standby power generator fuel.**

Duty sodium hypochlorite container is placed in a polyethylene tank with volume sufficient to contain the volume of the container plus 10%. Spare sodium hypochlorite barrels are mounted on a secondary containment pallet. Generator fuel is stored outside in a double lined tank. Drains from the pumphouse are connected to sewage; there is no evidence that drains may result in contamination of the wells.

Contingency/Emergency Planning

- **Clean-up equipment and materials were in place for the clean up of spills.**

There is a spill kit at the facility with a spill boom and a spill pad. The waste material from spill clean up would be taken to the local landfill.

- **Standby power generators were tested under normal load conditions.**

Standby power generator at the pumphouse is tested under normal load conditions once a month. This is recorded on the Generator Inspection Checklist at the pumphouse and in logbook kept at the water treatment plant.

Security

- **All storage facilities were completely covered and secure.**

The in-ground reservoir is in a remote area and is located within a secure fenced compound. Access hatch covers and vents are adequately covered to prevent ingress of contaminants.

- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**

Air vents on the reservoir are equipped with screens.

- **The owner had provided security measures to protect components of the drinking water system.**

The facility is equipped with an intrusion alarm system, security fencing and lighting. Operators visit the treatment plant daily.

The in-ground reservoir is located within a secured fenced compound. The reservoir's control and monitoring systems are contained within a locked building equipped with entry alarms.

Consumer Relations

- **The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.**

There is a by-law to regulate the time, manner and nature of the use of the supply of water (By-law no. 09-06). The Municipality owns a sounding machine for detection of distribution system losses and when problems or suspected problems arise, the Public Works operators go out and attempt to locate the problem.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**

In period May 31, 2018 to November 26, 2018, Mr. Dan Finnigan was designated as the Operator with Overall Responsibility (ORO) for Mattawa Water Treatment Plant. Mr. Raymond Belanger, who previously served as a back-up ORO, was designated as the ORO in period November 27, 2018 to February 24, 2019. OCWA became the ORO on February 25, 2019. OCWA became the operating authority for the Mattawa Drinking Water System on August 1, 2019. Tim Fraser from OCWA has been the designated ORO for Mattawa WTP and Distribution System since February 26, 2019. Alternate operators that may function as designated ORO while on call for this facility are Don Michaud, Darren Aljoe and Gerry Duguay.

- **Only certified operators made adjustments to the treatment equipment.**

Certification and Training

Certification and Training

- **Operators-in-charge had been designated for all subsystems which comprised the drinking water system.**
An operator attending the subsystem is designated to be acting as an operator-in-charge, which is marked on every page of the log book. Operator in training is not designated as an operator in charge.
- **All operators possessed the required certification.**
A review of available documents and operators' certificates indicated that every operator employed in the subsystem holds a certificate applicable to Mattawa DWS.

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**
Subsection 10-4 of Schedule 10 of O. Reg. 170/03 requires the owner of a drinking-water system and the operating authority for the system must ensure that a water sample is taken at least once every week from the drinking-water system's raw water, before any treatment is applied to the water. If the drinking water system obtains water from a raw water supply that is ground water, the owner of the system and the operating authority for the system must ensure that a sample is taken from each well in the system.

A review of the water quality monitoring data for the inspection period has shown raw water samples were collected every week from both wells and tested for *Escherichia coli* and total coliforms.
- **All microbiological water quality monitoring requirements for distribution samples were being met.**
Section 10-2 of Schedule 10 of O. Reg. 170/03 requires that the owner of a drinking-water system and the operating authority for the system must ensure that at least ten distribution samples are taken every month, with at least one of the samples being taken in each week. The owner of the drinking-water system and the operating authority for the system must ensure that each of the samples is tested for *Escherichia coli* and total coliforms and that at least 25 per cent of the samples required to be taken are tested for general bacteria population expressed as colony counts on a heterotrophic plate count (HPC).

A review of the sampling records confirmed that samples from distribution were collected weekly and tested for *E. coli* and total coliforms, resulting in 12 to 15 monthly samples during the inspection period. Three distribution samples were tested for HPC monthly, satisfying the requirement that at least 25 per cent of the 10 required monthly distribution samples are tested for HPC.
- **All microbiological water quality monitoring requirements for treated samples were being met.**
Section 10-3 of Schedule 10 of O. Reg. 170/03 requires the owner of a drinking-water system and the operating authority for the system must ensure that a treated water sample is taken at least once every week and tested for *Escherichia coli*, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count (HPC).

A review of the sampling records confirmed that samples of treated water were collected weekly and tested for *Escherichia coli*, total coliforms and HPC during the inspection period.
- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**
Section 13-2 of Schedule 13 of O. Reg. 170/03 requires that the owner of a large municipal residential system and the operating authority for the system must ensure that at least one treated water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water. The owner of a large municipal residential system and the operating authority for the system must ensure that each of the samples is tested for every parameter set out in Schedule 23 (Inorganics).

Water Quality Monitoring

Sampling for the purpose of testing for Schedule 23 parameters was conducted on July 31, 2018.

- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-4 of Schedule 13 of O. Reg. 170/03 requires that the owner of a large municipal residential system and the operating authority for the system must ensure that at least one treated water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water. The owner of a large municipal residential system and the operating authority for the system must ensure that each of the samples is tested for every parameter set out in Schedule 24 (Organics).

Sampling for the purpose of testing for Schedule 24 parameters was conducted on July 31, 2018.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**

Section 13-6.1 of Schedule 13 of O. Reg. 170/03 requires that the owner of a drinking water system that provides chlorination and the operating authority for the system must ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water systems distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of haloacetic acids and tested for haloacetic acids (HAA).

A review of sampling data confirmed that the samples for haloacetic acids were collected quarterly during the inspection period.

Note: On January 1, 2020, the O. Reg. 169/03 standard for HAA (80 µg/L) will come into effect and be expressed as a RAA, where RAA is defined as "the running annual average of quarterly results" for HAA for a drinking water system.

Note: It has been observed that three HAA samples in 2019 were collected at the same location, which is located at the extremity of the distribution system. HAAs will generally form at the beginning of the distribution system. The Ministry has reached out to municipal drinking water systems' owners and operators in May 2018 with guidance for collection and developing of monitoring program for HAAs. Please refer to in Appendix C in previous inspection report.

- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**

Subsection 13-6 of Schedule 13 of O. Reg. 170/03 requires the owner of a drinking water system that provides chlorination and the operating authority for the system must ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water system's distribution system that is likely to have an elevated potential for the formation of trihalomethanes and tested for trihalomethanes (THMs).

According to O. Reg. 169/03, the standard for THMs is 0.100 mg/L (100 µg/L) expressed as a RAA, where RAA is defined as "the running annual average of quarterly results" for THMs for a drinking water system. O. Reg. 170/03 defines the "calendar quarter" as the three-month period that begins on January 1, April 1, July 1 or October 1.

A review of sampling data confirmed that the samples for trihalomethanes were collected quarterly during the inspection period. The Running Annual Average for THMs was 2.1 µg/L as of July 10, 2019.

- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**

Section 13-7 of Schedule 13 of O. Reg. 170/03 requires that 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 three months and

Water Quality Monitoring

tested for nitrate and nitrite.

A review of the sampling records confirmed that during the inspection period samples of treated water were collected every three months.

- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-8 of Schedule 13 requires that the owner of a drinking water system and the operating authority for the system must ensure that at least one treated water sample is taken every 60 months and tested for sodium.

The most recent sodium sample was collected on January 16, 2018.

- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Section 13-9 of Schedule 13 requires that the owner of a drinking water system and the operating authority for the system must ensure that at least one treated water sample is taken every 60 months and tested for fluoride.

The most recent fluoride sample was collected on January 16, 2018.

- **The owner ensured that water samples were taken at the prescribed location.**
- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**
- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**
- **Turbidity was not being tested at least once every month from each well that is supplying water to the system.**

Section 7-3 of Schedule 7 of O. Reg. 170/03 states that if the drinking-water system obtains water from a raw water supply that is ground water, the owner of the system and the operating authority for the system shall ensure that a sample is taken from each well that is supplying water to the system and tested for turbidity.

Section 6-1.1 (3) of Schedule 6 of O. reg. 170/03 states that if this Regulation requires at least one water sample to be taken every month and tested for a parameter, the owner of the drinking water system and the operating authority for the system must ensure that at least one sample that is taken during a month for the purpose of being tested for that parameter is taken at least 20 days, and not more than 40 days, after a sample was taken for that purpose in the previous month.

Ministry's interpretation of the above quoted sections of O. Reg. 170/03 is that if at least one water sample to be taken and tested for a specific parameter every month, there would still be a requirement to take at least 1 sample for that parameter in each calendar month, and each subsequent sample would also have to be taken at least 20 and not more than 40 days after the previous sample was taken, as required by subsection 6-1.1(3).

A review of turbidity sampling records in the spreadsheet provided by the operating authority showed that turbidity samples from both wells were collected on the following dates and with the following numbers of days between samples:

June 4, 2018 to July 18, 2018, i.e. 44 days apart,
September 14, 2018 to October 2, 2018, i.e. 18 days apart,

Water Quality Monitoring

October 2, 2018 to November 13, 2018, i.e. 42 days apart,
January 15, 2019 to February 26, 2019, i.e. 42 days apart,
February 26, 2019 to March 5, 2019, i.e. 7 days apart
May 7, 2019 to June 18, 2019, i.e. 42 days apart
June 18, 2019 to July 3, 2019, i.e. 15 days apart,
July 3, 2019 to August 12, 2019, i.e. 40 days apart.

Failure to take monthly samples for each well that is supplying water to the system and have them tested for turbidity least 20 days, and not more than 40 days, after a sample was taken for that purpose in the previous month is a violation of Schedule 7 of O. Reg. 170/3.

Prior to issuance of this inspection report, the operating authority provided the inspector with written confirmation that training in regulatory requirements for turbidity sampling was conducted with the OCWA operator in charge of the DWS. The operating authority indicated in a follow up conversation that the operator who also collected turbidity samples in the inspection period and who is employed by the Municipality has not been involved with the operation of the water treatment plant since OCWA became the operating authority in August 2019.

Please refer to item # 3 of the Non-Compliance with Regulatory Requirements and Actions Required section of this report for further direction related to this item.

- **The owner indicated that the required records are kept and will be kept for the required time period.**

Water Quality Assessment

- **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).**

Reporting & Corrective Actions

- **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.**
- **The Annual Report did not contain the required information and/or was not prepared by February 28th of the following year.**

Section 11(3) of Drinking Water Systems Regulation O. Reg. 170/03 prescribes that in the case of a large municipal residential system the annual report must cover the period from January 1 to December 31 in a year and must be prepared not later than February 28 of the following year.

OCWA became the overall responsible operator for Mattawa DWS on February 25, 2019. On the same day, OCWA requested a one month extension for the completion of the annual water report from the Ministry. A review of the legislation revealed that the regulation does not allow for an extension. The report was completed and submitted to the Owner on March 11, 2019.

Failure to prepare an annual report by February 28 is a violation of Section 11(3) of Drinking Water Systems Regulation O. Reg. 170/03.

Please refer to item #4 of Non-Compliance with Regulatory Requirements and Actions Required section of this report for further direction related to this item.

- **Summary Reports for municipal council were completed on time, included the required content, and were**

Reporting & Corrective Actions

distributed in accordance with the regulatory requirements.

Summary Report was submitted to the Municipal Council on March 25, 2019 and contains the required information.

- **All changes to the system registration information were not provided within ten (10) days of the change.**

Section 10.1(3) of O. Reg. 170/03 prescribes that if there is any change to the system information given to the Director, the owner of the drinking-water system shall give the Director written notice of the change within 10 (ten) days of the change.

A change of DWS owner and operating authority information and 24/7 contact which occurred in mid-November, 2018 were not documented in a drinking water system profile information form and provided to the Director within 10 (ten) days from the change.

Changes of system information when OCWA started acting as ORO on February 25, 2019 and subsequently as the operating authority on August 1, 2019 were provided to the Director within the required 10 days.

Failure to give the Director written notice of the change of system information within 10 (ten) days of the change constitutes a violation of O. Reg. 170/03.

Please refer to item # 5 of Non-Compliance with Regulatory Requirements and Actions Required section of this report for further direction related to this item.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

This section provides a summary of all non-compliance with regulatory requirements identified during the inspection period, as well as actions required to address these issues. Further details pertaining to these items can be found in the body of the inspection report.

1. The owner was not in compliance with all conditions of the PTTW.

A review of available documents has shown that water taking from well # 2 has exceeded the maximum taking per minute 1,364 L/min or 22.73 L/s on nine occasions in August 2019. Duration of exceedances ranged from 11 minutes to 4 hours and 33 minutes with the highest taking of 29.05 L/min.

Failure to take water in accordance with the conditions from permit to take water is a violation of Ontario Water Resources Act.

Action(s) Required:

During the preparation of this inspection report, the operating authority informed that they have been working with the owner to determine the cause of exceedances in water taking from well #2.

The owner must ensure that maximum water takings specified by the PTTW are not exceeded. If there is evidence that the water taking exceedance is a result of a change in water demand, the owner is required to apply for an amendment of the existing PTTW to reflect the actual water taking requirement.

2. All UV sensors were not checked and calibrated as required.

During the inspection period, there were no duty UV sensor checks against a reference UV sensor in the months of May, June and July 2019. This happened because the reference UV sensor was being used as a duty UV sensor while duty UV sensors were shipped away for calibration, after which the reference UV sensor was sent off to be calibrated. The monthly reference checks continued after the reference check calibration.

The manufacturer of the UV sensor, TrojanUV recommends monthly checking of duty sensors against a reference sensor.

Failure to use or operate a municipal drinking-water system except under the authority of and in accordance with Drinking Water Works Permit is a violation of subsection 31(1)(b) of O. Reg. 170/03.

Action(s) Required:

The operating authority must ensure that UV sensors are checked against a reference sensor monthly, as per the requirements of Schedule E of the MDWL and at a frequency recommended by the UV equipment manufacturer.

3. Turbidity was not being tested at least once every month from each well that is supplying water to the system.

In the inspection period, samples from each well were collected and tested for turbidity from 7 to 44 days apart.

Failure to take monthly samples for each well that is supplying water to the system and have them tested for turbidity least 20 days, and not more than 40 days, after a sample was taken for that purpose in the previous month is a violation of Schedule 7 of O. Reg. 170/3.

Action(s) Required:

Prior to issuance of this inspection report, the operating authority provided the inspector with written confirmation that training in regulatory requirements for turbidity sampling was conducted with the OCWA operator in charge of the DWS.

No further action required.

4. The Annual Report did not contain the required information and/or was not prepared by February 28th of the following year.

OCWA became the overall responsible operator for Mattawa DWS on February 25, 2019. On the same day, OCWA requested a one month extension for the completion of the annual water report from the Ministry. A review of the legislation revealed that the regulation does not allow for an extension.

Failure to prepare an annual report by February 28 is a violation of Section 11(3) of Drinking Water Systems Regulation O. Reg. 170/03.

Action(s) Required:

The report was completed and submitted to the Owner on March 11, 2019.

No further action required.

5. All changes to the system registration information were not provided within ten (10) days of the change.

A change of DWS owner and operating authority information and 24/7 contact which occurred in November 2018 were not documented in a drinking water system profile information form and provided to the Director within 10 (ten) days from the change.

OCWA took over as the ORO on February 25, 2019 and drinking water system profile information with updated information was submitted on March 6, 2019.

Failure to give the Director written notice of the change of system information within 10 (ten) days of the change constitutes a violation of O. Reg. 170/03.

Action(s) Required:

The owner of the drinking water system is reminded that they must ensure that any changes to the system information are provided to the Director by written notice within 10 (ten) days of the change.

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

1. There was no program in place for inspecting and operating hydrants.

There is no formal program for annual inspection of hydrants.

Recommendation:

It is recommended as a best management practice that the owner initiates a formal program which requires that all hydrants be revisited for inspection / operation with any regularity.

When developing the program, the owner can refer to the following reference materials:

1. AWWA Standard G200-09 Distribution System Operation and Management, Section 4.2.6 Fire hydrant maintenance and testing. This standard identifies the following minimum requirements for a hydrant maintenance and fire flow testing program:

- A goal for the number of hydrants to be inspected and tested based on a percentage of the total hydrants in the system.

- Procedures for opening and closing hydrants to minimize potential damage to the distribution system.

- Fire flow-testing requirements.

Additional reference material:

- Small System Operation and Maintenance Practices (InfraGuide, October 2005), 3.2.17 Exercise and Inspect Valves and Hydrants, pg. 27.

- Water Quality in Distribution Systems: A Best Practice by the National Guide to Sustainable Municipal Infrastructure. (InfraGuide, July 2003) Section 3.2.7 Control of Valve and Hydrant Operations pg 21.

- Installation, Field Testing, and Maintenance of Fire Hydrants, AWWA Manual M17, Third Edition, American Water Works Association.

- NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 1995 Edition, National Fire Protection Association.

- NFPA 291, Recommended Practice for Fire Flow Testing and Marking of Hydrants, 1995 Edition, National Fire Protection Association.

- The Fire Protection Handbook, 18th Edition, National Fire Protection Association.

- Fire Protection and Prevention Act, O. Reg. 388/97 Fire Code section 6.6 Water Supplies for Fire Protection. (Fire hydrants are required to be inspected under this legislation).

2. There was no by-law or policy in place limiting access to hydrants.

According to the information provided by the Municipality and the operating authority, there is no formal program for inspecting and operating hydrants.

Recommendation:

It is recommended as a best management policy that the owner develops a formal by-law or policy limiting access to hydrants.

SIGNATURES

Inspected By:

Vesna Alimpic

Signature: (Provincial Officer)



Reviewed & Approved By:

Sherry Ilersich

Signature: (Supervisor)



Review & Approval Date:

December 10, 2019

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

APPENDIX A
INSPECTION RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2019-2020)

DWS Name: MATTAWA DRINKING WATER SYSTEM
DWS Number: 210001905
DWS Owner: Mattawa, The Corporation Of The Town Of
Municipal Location: Mattawa

Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Detailed
Inspection Date: September 25, 2019
Ministry Office: North Bay Area Office

Maximum Question Rating: 534

Inspection Module	Non-Compliance Rating
Source	0 / 14
Permit To Take Water	12 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 114
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 42
Water Quality Monitoring	8 / 144
Reporting & Corrective Actions	8 / 33
Treatment Process Monitoring	14 / 61
TOTAL	42 / 534

Inspection Risk Rating 7.87%

FINAL INSPECTION RATING: 92.13%

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2019-2020)

DWS Name:	MATTAWA DRINKING WATER SYSTEM
DWS Number:	210001905
DWS Owner:	Mattawa, The Corporation Of The Town Of
Municipal Location:	Mattawa
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	September 25, 2019
Ministry Office:	North Bay Area Office

Non-compliant Question(s)	Question Rating
Permit To Take Water	
Is the owner in compliance with all conditions of the PTTW?	12
Reporting & Corrective Actions	
Have all changes to the system registration information been provided to the Ministry within ten (10) days of the change?	4
Was an Annual Report containing the required information prepared by February 28 of the following year?	4
Treatment Process Monitoring	
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?	14
Water Quality Monitoring	
If the drinking water system obtains water from a ground water source, is turbidity being tested at least once every month from each well that is supplying water to the system?	8
TOTAL QUESTION RATING	42

Maximum Question Rating: 534

Inspection Risk Rating	7.87%
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FINAL INSPECTION RATING:	92.13%
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APPENDIX B

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

APPENDIX C

HAA SAMPLING CONCERNS LETTER



August 1st, 2018

RE: Haloacetic Acids (HAAs) Sampling Concerns

Non-Municipal Year Round Residential Drinking Water System Owners/Operators,

The purpose of this document is to clarify ministry guidance for HAAs sampling. HAAs are disinfection by-products (DBPs) that are formed when dissolved organic matter reacts with chlorine which is added for the purpose of disinfection. Detailed information on HAAs can be found in "Health Canada (2008) Guidelines for Canadian Drinking Water Quality: Guideline Technical Document — Haloacetic Acids".

HAAs are a collection of several different compounds. The haloacetic acids most commonly found in drinking water are monochloroacetic acid (MCA), dichloroacetic acid (DCA), trichloroacetic acid (TCA), monobromoacetic acid (MBA) and dibromoacetic acid (DBA). Total HAAs is the sum of these five haloacetic acids. The HAAs most commonly found in the distribution system of drinking water systems are TCA and DCA. However the presence of bromide ions can result in the formation of MBA and DBA.

Sampling Points for HAAs

The ministry has recognized that more than one sampling location may be needed to characterize the HAAs levels throughout a distribution system. HAA concentrations can vary within and between distribution systems and so monitoring samples should be taken at points in the "middle" of the distribution system (i.e. an average water age, post re-chlorination). In light of the recently introduced HAAs standard of 80 µg/L, which will come in to force on January 1, 2020, the following guidance should be used in developing your monitoring program:

1. As a general rule, all samples described below should be obtained from a sampling point where the free (combined) chlorine residual concentration is maintained over 0.2 mg/L (1.0 mg/L) respectively.
2. First year of sampling: A system's established THM sampling point may be appropriate provided the chlorine concentrations are as described in item 1. If the residual is below the concentrations listed, use a nearby sampling point that meets the recommended residual.
3. Second year of sampling: obtain the sample from another point in the distribution system.
4. Third year of sampling:
 - a. If neither of the running annual averages for HAAs calculated (after year one and two) were higher than one-half of the standard (40 µg/L), the sampling point used in the first year of sampling can be used for compliance in future years.
 - b. If one of the running annual averages is over 40 µg/L, a third sampling point should be chosen using the same criteria as the second year. Subsequent sampling should be conducted from the point which had the highest individual sample result.

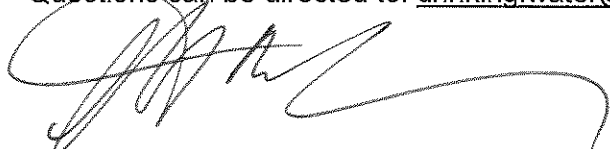
The outlined sampling plan is intended to be flexible and recognizes that sampling for HAAs has been required since 2017. The purpose of this plan is for an operator to understand their distribution system. It will also determine if there is an issue so any steps necessary can be taken to resolve the issue prior to the standard for HAAs coming into effect to avoid adverse water quality incidents for your system.

Factors influencing the creation of HAAs

The levels of DBPs formed depend on many water quality parameters and operating conditions. In the case of HAAs, higher precursor concentrations (synthetic and natural organic matter, bromide ion) in the raw water, chlorine dose, chlorination pH, water temperature and the residence time will influence the type (THMs, HAAs, etc.) and the levels of DBPs formed. Studies found that surface water sources are more likely to produce higher HAAs than ground water sources.

HAAs concentrations are found to be higher in the distribution system, usually just after the chlorination process. Health Canada studies performed in 2002 and 2003 indicated that concentration of HAAs peaked in the distribution system closer to the chlorine addition point and decreased in the extremities of the system. Furthermore, the location of peak HAA values in a distribution system tends to change throughout the year, it is likely to be closer to the chlorine addition point in the summer and fall and further away from the point in the winter and spring. Precipitation and runoff events can also affect DBPs.

Questions can be directed to: drinking.water@ontario.ca.

A handwritten signature in black ink, appearing to read 'Scott McCharles', with a long horizontal flourish extending to the right.

Scott McCharles on behalf of Cammy Mack
Director, Compliance, Promotion and Support Branch
Ministry of the Environment, Conservation and Parks