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February 8, 2017

The Corporation of the Municipality of Manitouwadge
1 Mississauga Drive
Manitouwadge, ON P0T 2C0

Attention: Mr. Steve Butlin,
Director, Public Services

Dear Steve Butlin:

Re: Manitouwadge Water Treatment Plant 2016-17 Annual Inspection Report

Please find attached the 2016/17 municipal water works inspection report. The inspection was initiated on January 5, 2017. This inspection was completed under the Ministry of the Environment and Climate Change inspection protocol for municipal water treatment plants.

A Provincial Officer's Order has not been issued with the inspection report.

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

Please note the attached IRR methodology memo describing how the risk rating model has improved to better reflect the health related and administrative non-compliance found in an inspection report. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report.

If you have any questions or concerns regarding the rating, please contact Dave Manol, Drinking Water Program Supervisor (A), at 807-475-1689.

Should you have any questions or comments in regards to this inspection, please feel free to contact me at 807-475-1513.

Yours truly,

Donald Gervais
Water Inspector
Thunder Bay District Office

cc.: Ontario Clean Water Agency
PO Box 819
Longlac, Ontario, P0T 2AO
Attention: Bradley McMahon, Senior Operations Manager
BMcMahon@ocwa.com

Thunder Bay District Health Unit
999 Balmoral Ave.
Thunder Bay, Ontario, P7B 6E7
Attention: Abby Mackie, Senior Public Health Inspector
abby.mackie@TBDHU.COM

Ontario

Ministry of the Environment and Climate Change

MANITOUWADGE DRINKING WATER SYSTEM

Inspection Report

Site Number:	220000219
Inspection Number:	1-CMPT2
Date of Inspection:	Jan 05, 2017
Inspected By:	Don Gervais

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OWNER INFORMATION:

Company Name:	MANITOUWADGE, THE CORPORATION OF THE TOWNSHIP OF,		
Street Number:	1	**Unit Identifier:**	
Street Name:	MISSISSAUGA Dr		
City:	MANITOUWADGE		
Province:	ON	**Postal Code:**	P0T 2C0

CONTACT INFORMATION

INSPECTION DETAILS:

Site Name:	MANITOUWADGE DRINKING WATER SYSTEM
Site Address:	SHAWINIGAN PL MANITOUWADGE P0T 2C0
County/District:	Manitouwadge
MOECC District/Area Office:	Thunder Bay District
Health Unit:	THUNDER BAY DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	
Category:	Large Municipal Residential
Site Number:	220000219
Inspection Type:	Announced
Inspection Number:	1-CMPT2
Date of Inspection:	Jan 05, 2017
Date of Previous Inspection:	Jan 12, 2016

COMPONENTS DESCRIPTION

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

Site (Name): DISTRIBUTION (WATER INSPECTION)
Type: Other **Sub Type:**
Comments:
The Manitouwadge distribution system serves a population of approximately 2106 persons, according to the 2014 Annual Report. It is categorized, under legislation, as a large municipal residential drinking-water system. Four high lift pumps deliver finished water into the distribution system, with two additional fire pumps capable of supplementing that delivery. There are no storage facilities within the system other than the main reservoir.
The bulk of the water mains consist of 6" ductile iron, and are approximately 55 years old. There are approximately 126 fire hydrants located in Manitouwadge.
Service connections are fully metered.

Site (Name): TREATED WATER
Type: Treated Water POE **Sub Type:**
Comments:
Wells #1 and #2 are located in the main water treatment plant. Wells #3 and #4 are separately located in a remote building, as is Well #5. Treatment is achieved by Ultraviolet irradiation (1 UV unit is located at each of the three

wellhead sites), aeration and chlorination. Water from the wells is passed through induced draft aerators, with water from wells 1 and 2 passing through one aerator and water from wells 3, 4, and 5 passing through a second aerator. UV contact is provided at each of the three well sites as water leaves each well when in operation. Sodium Hypochlorite (12%) is injected into the water as it passes into a common reservoir. The chlorine feed system consists of two microprocessor-controlled metering pumps.
An underground reservoir is located at the pump house. It consists of two - 2,030 m3 cells, for a total capacity of 4,060,000 Litres. The reservoir is in an enclosed fenced area, with access by two shafts raised above grade, each having a locked access cover.
Water pressure is supplied by four high lift pumps, each rated at 40.5 L/s; in addition, there are two fire pumps also rated at 40.5 L/s.
Stand-by power for the water treatment plant is provided by a 400 kW generator located at the plant on Shawinigan Place. A 200 kW generator set, located at the pumphouse that houses wells 3 and 4 is, now out of service and the pumphouse will be provided back-up electricity through the use of a 300 kW generator set recently installed at the waste water treatment compound.
Sodium hypochlorite is used as well as citric acid in UV cleaning. Monitoring equipment consists of the following:
1. five flow meters to measure the water coming from each of the wells and one flow meter to measure combined flow of all five wells;
2. a turbidimeter that measures turbidity at the point of entrance to the distribution system;
3. a free chlorine analyzer measuring the free chlorine residual at the point of entrance to the distribution system;
4. a flow meter to measure treated water leaving the plant.

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) 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.

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 construction of the wells appears sufficient to prevent entry of surface contamination.

- **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.**

  A weekly well inspection log contains a checklist of the above ground components to be completed by operations staff. A review of the weekly well inspection logs for the inspection period indicated that the above ground components of the wells were inspected on a weekly basis.

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

  Operations staff review source water quality data and have not noted any significant increasing or decreasing water quality trends.

Permit To Take Water

- **The owner was in compliance with all conditions of the PTTW.**

  Permit to Take Water Number 8046-9A5P8P limits the water taking from each production well to 3,456,000 litres per day 2,400L/min total taking equal to 17,280,000 liters per day. The PTTW also requires the permit holder to retain water taking records of all water takings and that flows should be measured using annually calibrated flow metrers. Manitouwadge WTP retained records of all water takings. The Manitouwadge DWS did not exceed the permitted maximum taking for each production well. The maximum daily water taking during the inspection period was a total taking equal to 1,244.86 cubic metres per day.

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking**

Capacity Assessment

Water Works Permit issued under Part V of the SDWA.

Each of the five production wells are equipped with a flow meter.

- **The flow measuring devices were calibrated or verified in accordance with the requirements of the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  Flow measuring devices are calibrated annually. The last calibration for the 5 raw water and 1 treated flow meters was conducted on October 27, 2016 by OCWA (Jose Marques).

- **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.**

  The maximum rated capacity specified in Manitouwadge Drinking Water System Licence 229-101 is 10,472 cubic metres per day.
  The records reviewed during this inspection show daily maximum rates well below the allowable level for the period since the time of the last inspection. The maximum flow was 1,244.86 m3 per day occurring in November, 2016.

- **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.**

  The records reviewed during this inspection show daily maximum rates well below the allowable level for the period since the time of the last inspection. There were no maximum flow exceedances reported.

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.**

  It was confirmed during the inspection that all equipment identified in Schedule A and C of Drinking Water Works Permit Number 229-201 Issue Number 2 was installed at the Manitouwadge DWS.

- **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 required chlorine residual at the point of entry of treated water into the distribution system, at maximum flow rate, has been calculated to be 0.36 mg/L free chlorine. This is the minimum chlorine residual required to achieve CT. Values are normally maintained at 0.70 mg/L free chlorine or higher.

- **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.**

  During this inspection period, there is no indication to suggest that values within the distribution system were ever below 0.05 mg/L free chlorine. The lowest recorded value was 0.38 mg/L of free chlorine in July and October 2016.

- **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.**

  The UV units and chlorinator pump are equipped with alarms and shut-off mechanisms, also equipped with automatic switchover or with a mechanism to shut-off water flow, that will prevent improperly treated water from entering the clearwell. The source of water is groundwater under the direct influence of surface water, according to the KGS Group Groundwater Study, 2003 report. The water treatment system is, therefore, designed such that UV disinfection and chlorination act in concert to provide primary disinfection (the chlorination also provides secondary

Treatment Processes

disinfection). This is reflected in Drinking Water Works Permit Number 229-201. The UV units are appropriately equipped with alarms and shut-off mechanisms.

- **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.**

- **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 Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking Water Licence and/or Drinking Water Works Permit issued under Part V of the SDWA, or at/near a location where the intended CT has just been achieved.**

  The inline chlorine analyzer located after the clearwell has an alarm and automatic shut down feature to ensure primary chlorination is achieved.

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

  The CT calculation is available in the on-site Operations Manual and posted on the wall. The equivalent minimum chlorine residual necessary to achieve primary disinfection is included and highlighted. As well, the low chlorine alarm set-point is set higher than the minimum required residual.

- **The secondary disinfectant residual was measured as required for the distribution system.**

  Chlorine residuals tests were performed in all four distribution zones each time as indicated by the records reviewed for this inspection period.

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

  There are binders with paper copies of daily trending reviewed by the operator for each day for the inspection period.

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

  A portable HACH colourimeter is used for taking grab chlorine residual readings.

  The check standards used to verify the accuracy of the meter expire in April 2017.

- **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.**

  The operator indicated that a record is made every 73 seconds for primary disinfection(free chlorine readings).

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

- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's**

Treatment Process Monitoring

instructions or the regulation.

Continuous analysers are calibrated each month with portable devices that were calibrated by Clear Tech July 2015.
Calibration check standards are used for the portable meters to ensure units are measuring within the required range and prior to calibrating on-line analyzers.

Check standards for chlorine, turbidity, and pH were valid.

Distribution System

- **There is no backflow prevention program, policy and/or bylaw in place.**

  There is no backflow prevention program, policy and/or bylaw in place.

  The owner/operator is not aware of any known instances of cross connections between the distribution system and other non-potable water sources (private water supplies or surface water).

- **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.**

  As part of the daily routine, operators on-site can perform a visual inspection of the interior of the clearwell/reservoir. The clearwell/reservoir is contained within the treatment building and the interior parts are visible to operators on-site.

- **Existing parts of the distribution system that are taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that come in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit, or an equivalent procedure (i.e. the Watermain Disinfection Procedure).**

  There were no repairs to the distribution system during the inspection review period.

  The owner/operating authority are reminded that Drinking Water Works Permit no. 229-201, Schedule B, Condition 2.3 states:
  All parts of drinking-water systems in contact with drinking water which are taken out of service for inspection, repair or other activities that may lead to contamination before they are put back in service, must be disinfected in accordance with the provisions of:
  a) the Ministry's Watermain Disinfection Procedure, effective January 2, 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.

- **The owner had not implemented a program for the flushing of watermains as per industry standards.**

  The Public Works Superintendent indicated that there is no flushing program.

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

- **A program for inspecting and exercising valves did not exist.**

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

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

Distribution System

Operations Manuals

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

  The Operations Manual are kept in the office and appears to be current and comprehensive.

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

- **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.**

Logbooks

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

- **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.**

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

  All logs and records are stored at the WTP facility for a period of five (5) years or more.

Contingency/Emergency Planning

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

  Adequate spill containment was found for the sodium hypochlorite container used. As well, the diesel generator fuel tank is equipped with spill containment.

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

  At the time of this inspection there were spill clean-up materials found on-site.

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

  The stand-by diesel generator is tested monthly and under plant load. There are log sheets on file of the generator performance at the time of the monthly test.

Security

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

Security

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

  All buildings are alarmed and monitored by Tbaytel security.

Consumer Relations

- **The owner and/or operating authority did not undertake efforts to promote water conservation and/or reduce water losses in their system.**

Certification and Training

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

  The ORO for this facility is designated as Darren McCraw. The relief ORO's is identified as Jeff St. Pierre.

- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

- **All activities that were undertaken by uncertified persons in the DW subsystems were overseen by persons having the prescribed qualifications.**

- **All operators possessed the required certification.**

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

  OIT 's are only making adjustments with direction from the OIC.

- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**

  All microbiological water quality monitoring requirements for raw water samples for the five production wells were being met.

- **All microbiological water quality monitoring requirements for distribution samples were being met.**

  For Large Municipal Residential drinking water systems the microbiological sampling legislative specification requires that a minimum number of monthly distribution samples, for populations less than 100,000, be collected based on a total of eight plus one per 1,000 population. Twenty-five percent of these are to be analyzed for general bacterial population expressed as colony counts on a heterotrophic plate count (HPC), while all others are to be analyzed for Escherichia Coli (EC) as well as total coliform (TC) bacteria. Based on a population of approximately 2106, therefore, a minimum number of 10 distribution samples are required to be collected each month, with HPC to be performed on a minimum of 25% of these on a monthly basis. In addition, at least one sample from the distribution system must be collected per week.
  Information reviewed from the time of the last inspection indicates that the owner has complied with these microbiological monitoring parameter and frequency requirements and, in fact, has conducted sampling and testing in excess of that required.

- **All microbiological water quality monitoring requirements for treated samples were being met.**

  At least one treated water sample must be taken from the point of entry to the distribution system each week, and

Water Quality Monitoring

tested for Escherichia coli, total coliform bacteria and HPC bacteria, in accordance with Schedule 10, section 10-3, O. Reg. 170/03.

Records reviewed for the inspection period indicate that weekly treated water samples were collected and analyzed as prescribed.

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

  Inorganic parameters are listed in Schedule 23 of O. Reg. 170/03. In accordance with Subsection 2(1) of O. Reg. 170/03, a drinking water system that obtains water from a raw water supply that is ground water under the direct influence of surface water is deemed, for the purposes of the Regulation, to be a drinking water system that obtains water from a raw water supply that is surface water. For large municipal systems with a surface water source, sampling frequencies are once each 12 months, provided previous sample results have not exceeded one-half MAC for any parameter listed in Schedule 23.

  Information reviewed from the time of the last inspection indicates that the owner carried out sampling in February 10, 2016 and has complied with the inorganic monitoring parameter and frequency requirement. It is noted that the Township carries out Schedule 23 sampling and testing on an annual basis.

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

  Organic parameters are listed in Schedule 24 of O. Reg. 170/03. In accordance with Subsection 2(1) of O. Reg. 170/03, a drinking water system that obtains water from a raw water supply that is ground water under the direct influence of surface water is deemed, for the purposes of the Regulation, to be a drinking water system that obtains water from a raw water supply that is surface water. For large municipal systems with a surface water source, sampling frequencies are once each 12 months, provided previous sample results have not exceeded one-half MAC for any parameter listed in Schedule 24.
  Information reviewed from the time of the last inspection indicates that the owner carried out sampling on February 10, 2016 and has complied with the inorganic monitoring parameter and frequency requirement. It is noted that the Township carries out Schedule 24 sampling and testing on an annual basis.

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

  As part of the requirements of Schedule 13, treated water trihalomethane testing is to be performed every three months. Samples were collected and analyzed, as required. The results for the most recent four quarters of sampling are 28.1 µg/L (January 20, 2016), 32.8 µg/L (April 18, 2016), 25.5 µg/L (July 20, 2016) and 24.5 µg/L (October 18, 2016). The current THM rolling average is 27.72 µg/L.
  The sampling frequency and results satisfied the regulatory requirements.

- **Trihalomethane samples were being collected from a point in the distribution system or connected plumbing system that was likely to have an elevated potential for the formation of trihalomethanes.**

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

  Treated water samples must be collected at least once every three months for analysis of nitrate and nitrite in accordance with Schedule 13, section 13-7 of O. Reg. 170/03. For this inspection review period, samples were collected on January 20, 2016, April 11, 2016, July 4, 2016, and October 18, 2016 and were found to be below the Maximum Acceptable Concentration (MAC).

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

Water Quality Monitoring

required frequency.

Based on records reviewed, a sample was last collected on January 19, 2015 and tested for sodium with a result of 41.5 mg/L. There was a resample on January 28, 2015 with a result of 45.5 mg/L of sodium. These results exceeded the standard of 20 mg/L, and were reported as adverse water quality incidents and appropriate corrective action was carried out. Sodium is required to be evaluated every 60 months.

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

  Based on records reviewed, a sample was last collected January 19, 2015 and tested for fluoride with a result of 0.077 mg/L, well below the standard of 1.5 mg/L. Fluoride is required to be evaluated every 60 months.

- **The owner ensured that water samples were taken at the prescribed location.**

  Raw water samples are collected from the raw water tap located within the WTP.
  Treated water samples are collect from the treated water tap located within the WTP.

- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

  The works has qualified for the plumbing sampling exemption.
  Distribution samples are to be collected during each of the winter (December 15 to April 15) and summer (June 15 to October 15) sampling periods.

  For this inspection review period, the required distribution sample was collected on October 4,5,6, and 7, 2016 (summer sampling period) and April 11,12,13, and 14, 2016 (winter sampling period).

- **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 being tested at least once every month from each well that is supplying water to the system.**

- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**

- **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

- **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.**

  The operators do not work 24 hours a day and carry a cell phone to respond to alarms after work hours. Operators must respond to the plant to make adjusts to the process.

  Data reviewed for this inspection period indicates that the operator's responded in a timely manner and took

Reporting & Corrective Actions

appropriate actions.

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

  At the time of inspection I was informed that the Manitouwadge 2015 Annual Report did not get completed because of the change in operating authority and the lack of information available.

- **Summary Reports for municipal council were not completed on time, did not include the required content, and/or were not distributed in accordance with the regulatory requirements.**

  At the time of inspection I was informed that the Manitouwadge 2015 Summary Report did not get completed because of the change in operating authority and the lack of information available.

- **All changes to the system registration information were provided within ten (10) days of the change.**

  The information listed on drinking water system profile is current.

Other Inspection Findings

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

The owner of a drinking water system is required to prepare an Annual Report on the operation of the system and the quality of its water for all municipal residential systems, the reporting period is from January 1 to December 31 and the report is to be completed by February 28 of the following year. The annual report must be provided, without charge to every person who requests a copy and effective steps must be taken to advise users of the system that copies of the report are available. Additionally, the report must be posted to the municipality's web site if the drinking water system is a large municipal residential system serving more than 10,000 people. The report shall also be provided to the owner of any other drinking water systems that are connected to and receiving all of its drinking water from the system that is the subject of the annual report. A template for the Annual Report is available on the Ministry's web site for owners/operators to use.

Action(s) Required:

By Febuary 28, 2017, the Town of Manitouwadge is to provide to the undersigned inspector a copy of the 2015 Annual report.

2 Summary Reports for municipal council were not completed on time, did not include the required content, and/or were not distributed in accordance with the regulatory requirements.

Ensure that Summary Reports are completed on time, and submitted in accordance with section 22-2, O.Reg. 170/03.

Action(s) Required:

By Febuary 28, 2017, the Town of Manitouwadge is to provide to the undersigned inspector a copy of the 2015 Summary report.

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 is no backflow prevention program, policy and/or bylaw in place.

Recommendation:

This is a best management practice item.

However, as previously recommended the owner should develop a backflow prevention program.

The following may be used as reference in the development of such a program:
a) MOECC document "A Guide for Drinking Water System Owners Seeking To Undertake a Backflow Prevention Program",
b) the OWWA for additional guidance,
c) the CAN/CSA standards associated with backflow (B64.10.01 / B64.10.1-01 Manual for the Selection and Installation of Backflow Prevention Devices / Manual for the Maintenance and Field Testing of Backflow Prevention Devices), and
d) the InfraGuide Methodology for Setting a Cross-Connection Control Program available at www.fcm.ca.

2 . The owner had not implemented a program for the flushing of watermains as per industry standards.

Recommendation:

This is a best management practice recommendation.

Consideration should be given to the development of a procedure that addresses the distribution system flows during flushing, operating valves and hydrants as it relates to the issue of the design capacity of the plant and the drinking water quality.

An example of an industry standard is the American Water Works Association (AWWA) Standard G200-09 Distribution System Operation and Management Section 4.1.8 System Flushing.

3 . A program for inspecting and exercising valves did not exist.

Recommendation:

This is a best management practice recommendation.

In conjunction with a flushing program and hydrant operation program, consideration should be given to the development of a procedure that addresses operating valves.

An example of an industry standard is the American Water Works Association (AWWA) Standard G200-09 Distribution System Operation and Management, Section 4.2.5 Valve exercising and replacement.

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

Recommendation:

This is a best management practice recommendation.

In conjunction with a flushing program and valve exercising program, consideration should be given to the development of a procedure that addresses hydrant operation.

An example of an industry standard is the American Water Works Association (AWWA) Standard G200-09 Distribution System Operation and Management, Section 4.2.6 Fire hydrant maintenance and testing.

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

Recommendation:

This is a best management practice. Although no bylaw is in place, access to hydrants is restricted. The hydrants are to be used for fire fighting only.

6 . The owner and/or operating authority did not undertake efforts to promote water conservation and/or reduce water losses in their system.

Recommendation:

This is a best management practice recommendation.

Consideration should be given to the development of a water conservation program.

SIGNATURES

Inspected By:	Signature: (Provincial Officer)
Don Gervais	
Reviewed & Approved By:	Signature: (Supervisor)
Dave Manol	
Review & Approval Date:	

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

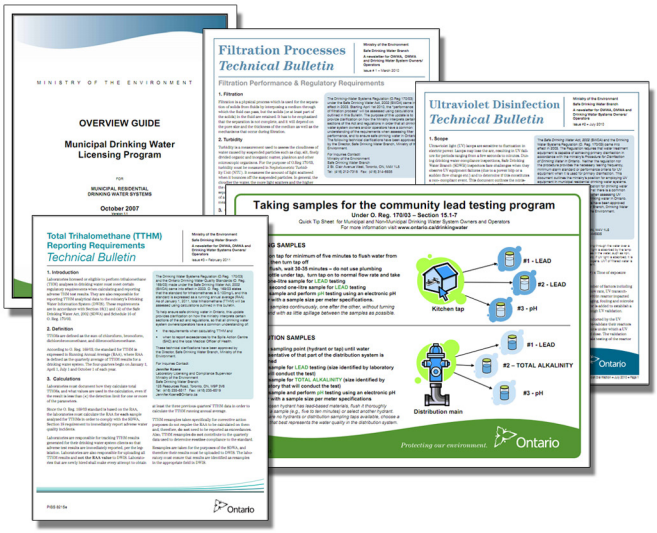
STAKEHOLDER APPENDIX

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are posted on the Ministry of the Environment's **Drinking Water Ontario** website at **www.ontario.ca/drinkingwater** to help in the operation of your drinking water system.

Below is a list of key materials frequently used by owners and operators of municipal drinking water systems. To read or download these materials, go to **Drinking Water Ontario** and search in the **Resources** section by **Publication Number**.

Visit **Drinking Water Ontario** for more useful materials. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or **picemail.moe@ontario.ca**.



PUBLICATION NUMBER	PUBLICATION TITLE
4448e01	Procedure for Disinfection of Drinking Water in Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids
7467	Filtration Processes Technical Bulletin
7685	Ultraviolet Disinfection Technical Bulletin
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)
2601e	Overview Guide: Municipal Drinking Water Licensing Program
0000	Municipal Drinking Water Licensing Program Bulletin, Issue 1, January 2011
0000	Certification Guide for Operators and Water Quality Analysts
6560e	Taking Samples for the Community Lead Testing Program
7423e	Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption
7128e	Drinking Water System Contact List
4449e01	Technical Support Document for Ontario Drinking Water Quality Standards

PIBS 8990b

Ontario

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

Beaucoup de documentation sur le fonctionnement d'un réseau d'eau potable se trouve sur le site Web du **ministère de l'Environnement**.

Vous trouverez ci-dessous la liste des principaux documents que les propriétaires et les exploitants de réseaux municipaux d'eau potable utilisent fréquemment. Pour lire ou télécharger ces documents, allez sur le site Web du Ministère, et effectuez une recherche par numéro de publication dans la section RESSOURCES.

Consultez le site d'**Eau potable Ontario** pour obtenir d'autre documentation. Communiquez avec le Centre d'information du public au 1 800 565-4923 ou au 416 325-4000, ou encore à **picemail.moe@ontario.ca** si vous avez des questions ou besoin d'aide.

NUMÉRO DE PUBLICATION	TITRE DE LA PUBLICATION
4448f01	Marche à suivre pour désinfecter l'eau portable en Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids (en anglais seulement)
7467	Filtration Processes Technical Bulletin (en anglais seulement)
7685	Ultraviolet Disinfection Technical Bulletin (en anglais seulement)
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (février 2011) (en anglais seulement)
2601f	Guide général - Programme de délivrance des permis de réseaux municipaux d'eau potable
0000	Bulletin du Programme des permis de réseaux municipaux d'eau potable, numéro 1, janvier 2011
0000	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
6560f	Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités
7423f	Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption
7128f	Liste des personnes-ressources du réseau d'eau potable
4449f01	Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario

ontario.ca/drinkingwater

Ontario

APPENDIX B

INSPECTION RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2016-2017)

DWS Name:	MANITOUWADGE DRINKING WATER SYSTEM
DWS Number:	220000219
DWS Owner:	Manitouwadge, The Corporation Of The Township Of,
Municipal Location:	Manitouwadge
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	January 5, 2017
Ministry Office:	Thunder Bay District

Maximum Question Rating: 626

Inspection Module	Non-Compliance Rating
Source	0 / 28
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 89
Distribution System	0 / 21
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 57
Water Quality Monitoring	0 / 148
Reporting & Corrective Actions	8 / 33
Treatment Process Monitoring	0 / 124
TOTAL	**8 / 626**

Inspection Risk Rating	**1.28%**

FINAL INSPECTION RATING:	**98.72%**

Inspection Rating Record Generated On 08-FEB-17 (Inspection ID: 1-CMPT2).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2016-2017)

DWS Name:	MANITOUWADGE DRINKING WATER SYSTEM
DWS Number:	220000219
DWS Owner:	Manitouwadge, The Corporation Of The Township Of,
Municipal Location:	Manitouwadge
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	January 5, 2017
Ministry Office:	Thunder Bay District

Non-compliant Question(s)	Question Rating
Reporting & Corrective Actions	
Was an Annual Report containing the required information prepared by February 28 of the following year?	4
Have Summary Reports for municipal council been completed on time, include the required content, and distributed in accordance with the regulatory requirements?	4
TOTAL QUESTION RATING	8

Maximum Question Rating: 626

Inspection Risk Rating	**1.28%**

FINAL INSPECTION RATING:	**98.72%**

Inspection Rating Record Generated On 08-FEB-17 (Inspection ID: 1-CMPT2).

APPLICATION OF THE RISK METHODOLOGY USED FOR MEASURING MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEM INSPECTION RESULTS

The Ministry of the Environment (MOE) has a rigorous and comprehensive inspection program for municipal residential drinking water systems (MRDWS). Its objective is to determine the compliance of MRDWS with requirements under the Safe Drinking Water Act and associated regulations. It is the responsibility of the municipal residential drinking water system owner to ensure their drinking water systems are in compliance with all applicable legal requirements.

This document describes the risk rating methodology, which has been applied to the findings of the Ministry's MRDWS inspection results since fiscal year 2008-09. The primary goals of this assessment are to encourage ongoing improvement of these systems and to establish a way to measure this progress.

MOE reviews the risk rating methodology every three years to account for legislative and societal changes that affect acceptable risk levels. As a result of the most recent review, the methodology has been modified to present an improved metric for the evaluation of the risk/safety of MRDWS operations.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains up to 14 inspection modules and consists of approximately 120 regulatory questions. Those protocol questions are also linked to definitive guidance that

PIBS 6797e

ministry inspectors use when conducting MRDWS inspections. The questions address a wide range of regulatory issues, from administrative procedures to drinking water quality monitoring. Additionally, the inspection protocol contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry have assessed each of the inspection protocol regulatory questions to determine the risk (not complying with the regulation) to the delivery of safe drinking water. This assessment was based on established provincial risk assessment principles, with each question receiving a risk rating referred to as the Question Risk Rating. Based on the number of areas where a system is deemed to be non-compliant during the inspection, and the significance of these areas to administrative, environmental, and health consequences, a risk-based inspection rating is calculated by the ministry for each drinking water system.

It is important to be aware that an inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. It shows areas where a system's operation can improve. To that end, the ministry works with owners and operators of systems to make sure they know what they need to do to achieve full compliance.

The inspection rating reflects the inspection results of the specific drinking water system for the reporting year. Since the methodology is applied consistently over a period of years, it serves as a comparative measure both provincially and in relation to the individual system. Both the drinking water system and the public are able to track the performance over time, which encourages continuous improvement and allows systems to identify specific areas requiring attention.

The ministry's annual inspection program is an important aspect of our drinking water safety net. The ministry and its partners share a common commitment to excellence and we continue to work toward the goal of 100 per cent regulatory compliance.

Determining Potential to Compromise the Delivery of Safe Water

The risk management approach used for MRDWS is aligned with the Government of Ontario's Risk Management Framework. Risk management is a systematic approach to identifying potential hazards; understanding the likelihood and consequences of the hazards; and taking steps to reduce their risk if necessary and as appropriate.

The Risk Management Framework provides a formula to be used in the determination of risk:

RISK = LIKELIHOOD × CONSEQUENCE
(of the consequence)

Every regulatory question in the inspection protocol possesses a likelihood value (L) for an assigned consequence value (C) as described in **Table 1** and **Table 2**.

TABLE 1:

Likelihood of Consequence Occurring	Likelihood Value
0% - 0.99% (Possible but Highly Unlikely)	L = 0
1 – 10% (Unlikely)	L = 1
11 – 49% (Possible)	L = 2
50 – 89% (Likely)	L = 3
90 – 100% (Almost Certain)	L = 4

TABLE 2:

Consequence	Consequence Value
Medium Administrative Consequence	C = 1
Major Administrative Consequence	C = 2
Minor Environmental Consequence	C = 3
Minor Health Consequence	C = 4
Medium Environmental Consequence	C = 5
Major Environmental Consequence	C = 6
Medium Health Consequence	C = 7
Major Health Consequence	C = 8

The consequence values (0 through 8) are selected to align with other risk-based programs and projects currently under development or in use within the ministry as outlined in **Table 2**.

The Question Risk Rating for each regulatory inspection question is derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:

- All levels of consequence are evaluated for their potential to occur
- Greatest of all the combinations is selected.

The Question Risk Rating quantifies the risk of non-compliance of each question relative to the others. Questions with higher values are those with a potentially more significant impact on drinking water safety and a higher likelihood of occurrence. The highest possible value would be 32 (4×8) and the lowest would be 0 (0×1).

Table 3 presents a sample question showing the risk rating determination process.

TABLE 3:

Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?

Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	**Major** Administrative Consequence	**Minor** Environmental Consequence	**Minor** Health Consequence	**Medium** Environmental Consequence	**Major** Environmental Consequence	**Medium** Health Consequence	**Major** Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely	L=3 (Likely)	L=2 (Possible)
R=4	**R=2**	**R=6**	**R=12**	**R=15**	**R=6**	**R=21**	**R=16**

Application of the Methodology to Inspection Results

Based on the results of a MRDWS inspection, an overall inspection risk rating is calculated. During an inspection, inspectors answer the questions that relate to regulatory compliance and input their responses as “yes”, “no” or “not applicable” into the Ministry’s Laboratory and Waterworks Inspection System (LWIS) database. A “no” response indicates non-compliance. The maximum number of regulatory questions asked by an inspector varies by: system (i.e., distribution, stand-alone), type of inspection (i.e., focused, detailed), and source type (i.e., groundwater, surface water).

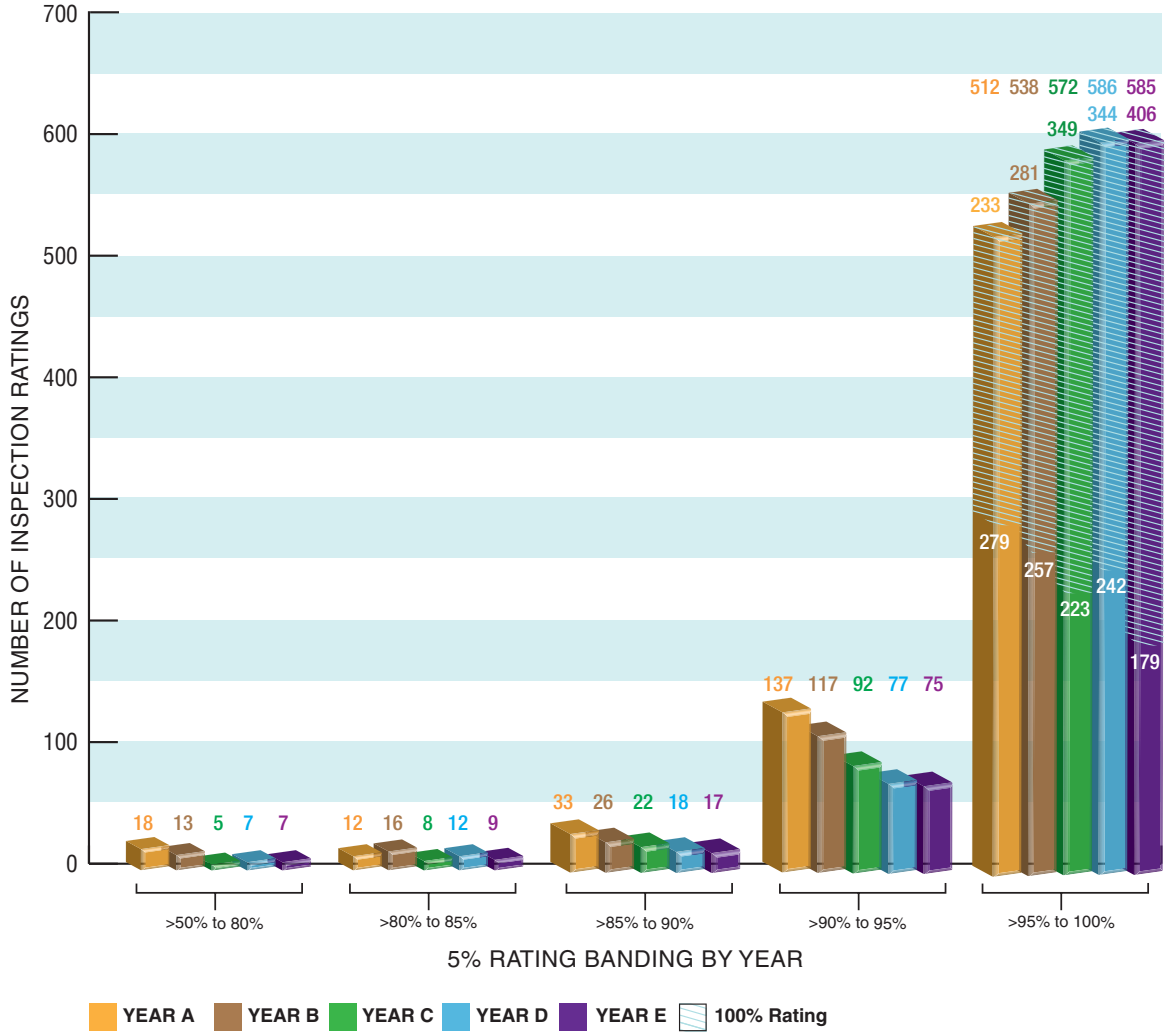
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

The individual MRDWS Total Inspection Ratings are published with the ministry's Chief Drinking Water Inspector's Annual Report.

Figure 1 presents the distribution of MRDWS ratings for a sample of annual inspections. Individual drinking water systems can compare against all the other inspected facilities over a period of inspection years.

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 14 possible modules of the inspection protocol, which would provide the system owner/operator with information on the areas where they need to improve. The 14 modules are:

1. Source
2. Permit to Take Water
3. Capacity Assessment
4. Treatment Processes
5. Process Wastewater
6. Distribution System
7. Operations Manuals
8. Logbooks
9. Contingency and Emergency Planning
10. Consumer Relations
11. Certification and Training
12. Water Quality Monitoring
13. Reporting, Notification and Corrective Actions
14. Other Inspection Findings

For further information, please visit **www.ontario.ca/drinkingwater**