Ministry of the Environment and Climate Change

Safe Drinking Water Branch

Guelph District Office
4th Floor
1 Stone Road West
Guelph, Ontario N1G 4Y2

Ministère de l'Environnement et de l'Action en matière de changement climatique

Direction du contrôle la qualité de l'eau potable

Bureau du district de Guelph
4e étage
1, chemin Stone Ouest
Guelph (Ontario) N1G 4Y2

Ontario

July 7, 2016

The Corporation of the Township of Mapleton
7275 Sideroad 16
Drayton, ON
N0G 1P0

Attention: Mr. Jamie Morgan
Director of Public Works

RE: 2016-17 Inspection Report for the Moorefield Drinking Water System

Dear Mr. Morgan,

I would like to thank you and the team at the Ontario Clean Water Agency for the assistance provided to me during my recent inspection of the Moorefield Drinking Water System (DWS # 220069732). Attached is the final report for this inspection, with inspection report number 1-CLQDE.

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 Appendix A of the inspection report, provides the Ministry, the system owner and the local Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. The attached IRR methodology memo describes how the risk rating model has improved to better reflect the health related and administrative non-compliance found in an inspection report. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. Please note that this methodology memo refers to some outdated web links, however the information in the memo is still relevant. If you have any questions or concerns regarding the rating, please contact Lisa Williamson, Drinking Water Program Supervisor, at 519-837-6386.

Feel free to contact me at (519) 826-4274 if you have any questions related to this inspection.

Best regards,

Martha Weber
Provincial Officer
Water Inspection Program
Guelph District Office

Cc via email: Scott Craggs, West Highlands Hub, OCWA
Lisa Benoit, West Highlands Hub, OCWA
Shawn Zentner, Wellington-Dufferin-Guelph Health Unit
Sandra Cooke, Grand River Conservation Authority
District Office File (SI WE MA HI 540)

Ontario

Ministry of the Environment and Climate Change

MOOREFIELD DRINKING WATER SYSTEM

Inspection Report

Site Number:	260069732
Inspection Number:	1-CLQDE
Date of Inspection:	Jun 14, 2016
Inspected By:	Martha Weber

Moorefield Drinking Water System
DWS# 260069732
2016/17 Focused Inspection Report

TABLE OF CONTENTS:

APPENDICES:

OWNER INFORMATION:

Company Name: MAPLETON, THE CORPORATION OF THE TOWNSHIP OF
Street Number: 7275 **Unit Identifier:**
Street Name: SIDEROAD 16 Rd
City: DRAYTON
Province: ON **Postal Code:** N0G 1P0

CONTACT INFORMATION

Type: Owner **Name:** Jamie Morgan
Phone: (519) 638-3313 **Fax:** (519) 638-5113
Email: jmorgan@mapleton.ca
Title: Director of Public Works

Type: Operating Authority **Name:** Scott Craggs
Phone: (519) 941-1938 **Fax:** (519) 941-1794
Email: scraggs@ocwa.com
Title: West Highlands Hub Manager

Type: Operating Authority **Name:** Lisa Benoit
Phone: (519) 941-1938 **Fax:** (519) 941-1794
Email: lbenoit@ocwa.com
Title: Process & Compliance Technician

INSPECTION DETAILS:

Site Name: MOOREFIELD DRINKING WATER SYSTEM
Site Address: 5 HILWOOD DRIVE ST MOOREFIELD N0G 2K0
County/District: Mapleton
MOECC District/Area Office: Guelph District
Health Unit: WELLINGTON-DUFFERIN-GUELPH HEALTH UNIT
Conservation Authority:
MNR Office:
Category: Large Municipal Residential
Site Number: 260069732
Inspection Type: Announced
Inspection Number: 1-CLQDE
Date of Inspection: Jun 14, 2016
Date of Previous Inspection: Aug 20, 2015

COMPONENTS DESCRIPTION

Site (Name): Moorefield Raw Well PW-1
Type: Source **Sub Type:** Ground Water
Comments:
According to Water Well Record #6711853 (two pages with audit numbers 162524 and 162525), Well PW-1 was originally drilled in July 1995 to a depth of 390 ft. The more recent Water Well Record # 6714414 shows that in August 2002 the original casing was removed and the hole was enlarged to allow for a larger casing and also

grouting. Neat cement grout was installed in the annular space from ground level to a depth of 250 ft. The well is located outside the pumphouse and is equipped with a submersible pump rated at 11.0 L/s at a total dynamic head of 49 m. The well is complete with a 150 mm diameter discharge pipe from the well to the water pumphouse. A magnetic flow meter, located in the pumphouse, measures the rate and amount of water extracted from Well PW-1.

Site (Name): Moorefield Raw Well PW-2
Type: Source **Sub Type:** Ground Water
Comments:
According to Water Well Record #6714415, Well PW-2 was drilled in September 2002 to a depth of 300 ft. The annular space is filled with neat cement grout from ground level to 240 ft below grade. The well is located outside the pumphouse, adjacent to Well PW-1, and is equipped with a submersible pump rated at 7.0 L/s at a total dynamic head of 64 m. The well is complete with a 150 mm diameter discharge pipe from the well to the water pumphouse. A magnetic flow meter, located in the pumphouse, measures the rate and amount of water extracted from Well No. PW-2.

Site (Name): Moorefield Treated
Type: Treated Water POE **Sub Type:** Pumphouse
Comments:
The Moorefield Drinking Water System is located at 5 Hilwood Drive (Lot 10, Concession 10) in Moorefield, Ontario. Water is pumped from either Well PW-1 or PW-2 and disinfected with a 12 percent sodium hypochlorite solution. Each well has a dedicated 200 L capacity sodium hypochlorite solution tank and two metering pumps (one duty and one standby). After injection with sodium hypochlorite, water is directed to a 7.7 m diameter by 8.6 m tall (387 m^3) water standpipe for contact time. The tank also provides storage capacity for equalization and emergencies.

Four high lift pumps (3 duty and 1 standby), each having a rated capacity of 4.0 L/s at a total dynamic head of 54.1 m, transport treated water to the distribution system. Three pressure tanks, each with a capacity of 1,200 L, maintain adequate high-lift pump cycling time. A magnetic flow meter measures the rate and amount of treated water supplied to the distribution system. An online chlorine analyzer and turbidimeter are also installed downstream of the treatment equipment. An outdoor 60 kW diesel generator set including a sub-base fuel tank provides standby power for the facility.

Site (Name): Moorefield Distribution System
Type: Other **Sub Type:** Other
Comments:
The Moorefield distribution system supplies potable water to a population of approximately 550 people. There are about four kilometers of watermains, which are reported to be comprised of 150 mm diameter PVC pipe. There are six blow-off valves and no fire hydrants within the system.

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

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 related 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 report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

  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.

  The Moorefield Drinking Water System is owned by the Township of Mapleton and operated by the Ontario Clean Water Agency (OCWA).

  This inspection report covers a review period of August 1, 2015 to May 31, 2016.

  Municipal Drinking Water Licence (MDWL) #105-102, Issue 2 is dated November 24, 2015 and expires November 22, 2020. Drinking Water Works Permit (DWWP) #105-202, Issue 3 is dated November 24, 2015.

  Permit to Take Water (PTTW) #4651-6JTS55 was revoked and replaced by PTTW #1401-9KXJW5 on June 24, 2014.

  According to classification certificate #3825, dated June 14, 2006, this system is a Class 1 Water Distribution and Supply Subsystem.

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.**

- **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.**

  According to Water Well Record #6714414, the annular space for well PW-1 was filled with neat cement grout from ground level to a depth of 250 feet. According to Water Well Record #6714415, the annular space for well PW-2 was filled with neat cement ground from ground level to a depth of 240 feet.

Source

Sections 16.2.7 - 16.2.9 of Schedule B in the MDWL requires that an inspection schedule for all wells associated with the drinking water system be included in the operations and maintenance manual. There must be inspection and maintenance procedures for the entire well structure of each well including all above and below grade components, and remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

OCWA has established a well inspection program that requires inspections of the production wells on monthly, 5 year, and 10 year timelines. The 10 year inspection includes a detailed assessment of the wells, including below grade components, and is scheduled to be conducted next in 2017 for both wells.

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.**

  Schedule C of the Municipal Drinking Water Licence requires continuous monitoring of flow from treatment into the distribution system (Section 2.1.1) and from the wells into the treatment subsystem (Section 2.1.2). For each production well, and for treated water entering the distribution system, a magnetic meter is in place to monitor flow. These meters were last verified for accuracy on September 24, 2015.

- **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Municipal Drinking Water Licence issued under Part V of the SDWA.**

  Section 1 of Schedule C in the Municipal Drinking Water Licence allows a rated capacity from the treatment system into the distribution system of 1,555 m^3/day. A review of flow records indicates there were no exceedances of the limit established in the Licence.

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.**

- **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 Moorefield Drinking Water System obtains water from ground water sources. The treatment system consists of disinfection using chlorine and is capable of achieving an overall performance that provides, at a minimum, 2-log (99%) removal or inactivation of viruses prior to the first consumer. The minimum required CT value for this system has been determined to be 4 mg/L·min. To ensure the required CT has been achieved, the free chlorine residual low level lockout setpoint is 0.5 mg/L with a conservative low reservoir level setpoint as well. Records provided for the inspection period indicate that proper disinfection was achieved at all times water was being supplied to consumers.

- **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.**

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.**

  Continuous chlorine residual monitoring occurs after treated water has left the storage tank in which primary disinfection occurs.

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

  O. Reg. 170/03, Schedule 7, Section 7.2 requires at least seven distribution samples to be taken each week and tested immediately for chlorine residual. Unless one sample is taken on each day of the week, there is a requirement for at least 48 hours to pass between the sets of four samples and three samples used to complete the seven sample requirement.
  OCWA operators conduct daily distribution chlorine residual monitoring, and records indicate this monitoring was completed every day of the inspection review period.

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

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

  Low chlorine residual alarms are programmed to alert the operator if the treated free chlorine residual level drops to 0.5 mg/L. If the residual drops to 0.5 mg/L, the raw well pumps will lock out and cease to pump water into the disinfection tank. At the time of inspection, the treatment tank level lockout setpoint was 3.0 m, with an alarm setpoint of 4.0 m. During the inspection, a low chlorine residual was simulated for the lockout to be tested and was found to be working as expected.

- **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.**

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

Operations Manuals

- **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.**

Logbooks

- **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.**

Security

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

Security

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**
- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**
- **Only certified operators made adjustments to the treatment equipment.**

Water Quality Monitoring

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

  For the population of approximately 550 residents, O.Reg 170/03, Section 10-2 of Schedule 10 requires at least eight distribution samples to be taken every month, with at least one of the samples being taken in each week. These samples are to be tested for E. coli and total coliforms, and 25 percent of the samples are to be tested for general bacteria population expressed as colony counts on a heterotrophic plate count. A review of sampling records shows that samples were taken and tested as required, with sample numbers going above and beyond the minimum number every month.

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

  In O.Reg 170/03, Section 10-3 of Schedule 10 requires a treated sample be taken at least once every week and be tested for E. coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic plate count. A review of records shows that samples were taken as required.

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

  Inorganics sampling was completed on July 6, 2015.

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

  Organics sampling was completed on July 6, 2015.

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

  Trihalomethane sampling was conducted every three months as required, and the latest Running Annual Average was calculated to be 17 µg/L.

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

  Nitrate and nitrite sampling was conducted every three months as required.

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

  Sodium sampling was last conducted on July 11, 2011, and is scheduled to be sampled in July 2016.

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

  Fluoride sampling was last conducted on July 11, 2011, and is scheduled to be sampled in July 2016.

Water Quality Monitoring

- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**

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.**

Other Inspection Findings

- **The following issues were also noted during the inspection:**

  1. Regarding logbooks, a best practice item was observed in that the entries in the wellhouse logbook contain blank lines between daily entries. This is not an ideal practice as it can allow for the recording of information at a later date within the existing log entry.
  RECOMMENDATION: It is suggested that the Operating Authority consider crossing out empty lines from daily log entries to avoid the potential for the back entry of information.

  2. The Moorefield SCADA system appears to contain certain limitations that restrict the ability of efficient frequent detailed review of disinfection data.
  RECOMMENDATION: It is recommended that the Township consider upgrading the Moorefield SCADA system in conjunction with the SCADA installation that is currently underway at the Drayton Drinking Water System.

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.

Not Applicable

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 . The following issues were also noted during the inspection:

1. Regarding logbooks, a best practice item was observed in that the entries in the wellhouse logbook contain blank lines between daily entries. This is not an ideal practice as it can allow for the recording of information at a later date within the existing log entry.

2. The Moorefield SCADA system appears to contain certain limitations that restrict the ability of efficient frequent detailed review of disinfection data.

Recommendation:

1. It is suggested that the Operating Authority consider crossing out empty lines from daily log entries to avoid the potential for the back entry of information.

2. It is recommended that the Township consider upgrading the Moorefield SCADA system in conjunction with the SCADA installation that is currently underway at the Drayton Drinking Water System.

SIGNATURES

Inspected By:

Martha Weber

Signature: (Provincial Officer)

Reviewed & Approved By:

Lisa Williamson

Signature: (Supervisor)

Review & Approval Date:

07 Jul 2016

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 - 2016-2017)

DWS Name:	MOOREFIELD DRINKING WATER SYSTEM
DWS Number:	260069732
DWS Owner:	Mapleton, The Corporation Of The Township Of
Municipal Location:	Mapleton
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	June 14, 2016
Ministry Office:	Guelph District

Maximum Question Rating: 421

Inspection Module	Non-Compliance Rating
Source	0 / 28
Capacity Assessment	0 / 30
Treatment Processes	0 / 56
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 28
Water Quality Monitoring	0 / 104
Reporting & Corrective Actions	0 / 21
Treatment Process Monitoring	0 / 112
TOTAL	**0 / 421**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 07-JUL-16 (Inspection ID: 1-CLQDE).

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

DWS Name:	MOOREFIELD DRINKING WATER SYSTEM
DWS Number:	260069732
DWS Owner:	Mapleton, The Corporation Of The Township Of
Municipal Location:	Mapleton
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	June 14, 2016
Ministry Office:	Guelph District

Maximum Question Rating: 421

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 07-JUL-16 (Inspection ID: 1-CLQDE).

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.

The Ministry's Municipal Residential Drinking Water Inspection Protocol contains 15 inspection modules consisting of approximately 100 regulatory questions. Those protocol questions are also linked to definitive guidance that ministry inspectors use when conducting MRDWS inspections.

PIBS 6797e

Ontario

The questions address a wide range of regulatory issues, from administrative procedures to drinking water quality monitoring. The inspection protocol also contains a number of non-regulatory questions.

A team of drinking water specialists in the ministry 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 less than 100 per cent does not mean the drinking water from the system is unsafe. It shows areas where a system's operation can improve. 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 related to regulatory compliance and input their "yes", "no" or "not applicable" responses 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).

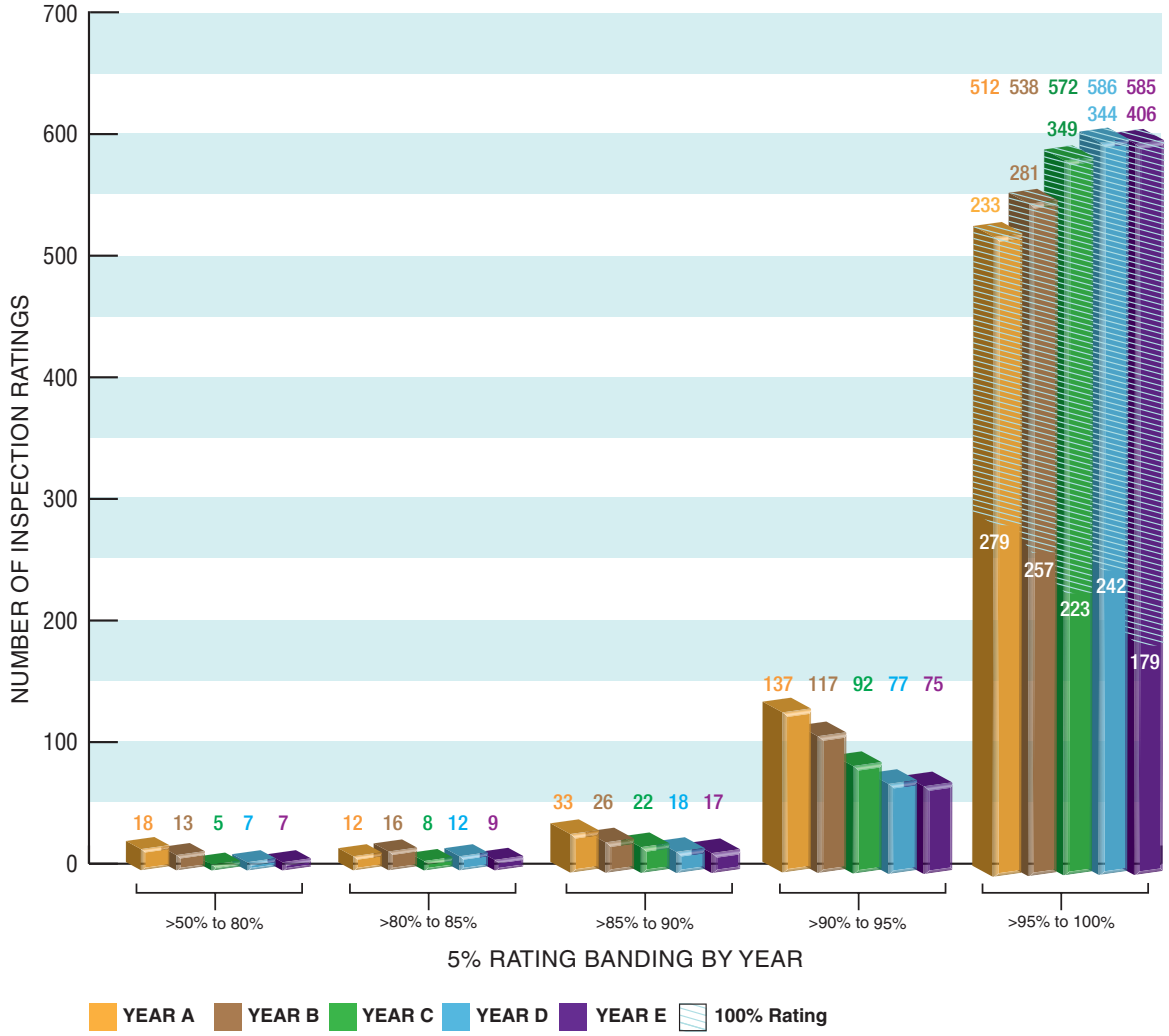
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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 15 possible modules of the inspection protocol, which would provide the system owner/operator with information on the areas where they need to improve. The 15 modules are:

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

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

APPENDIX B

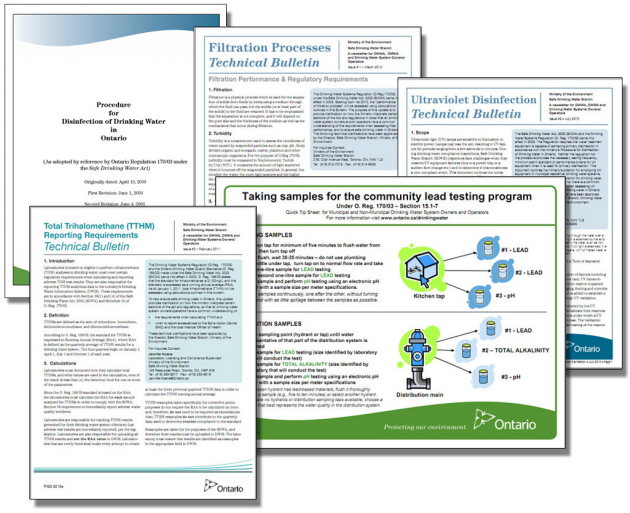
STAKEHOLDER INFORMATION

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 Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or **picemail.moe@ontario.ca**.

For more information on Ontario's drinking water visit **www.ontario.ca/drinkingwater** and email **drinking.water@ontario.ca** to subscribe to drinking water news.



PUBLICATION TITLE	PUBLICATION NUMBER
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	7889e01
FORMS: Drinking Water System Profile Information, Laboratory Services Notification, Adverse Test Result Notification Form	7419e, 5387e, 4444e
Procedure for Disinfection of Drinking Water in Ontario	4448e01
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	7152e
Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)	8215e
Filtration Processes Technical Bulletin	7467
Ultraviolet Disinfection Technical Bulletin	7685
Guide for Applying for Drinking Water Works Permit Amendments, Licence Amendments, Licence Renewals and New System Applications	7014e01
Certification Guide for Operators and Water Quality Analysts	
Guide to Drinking Water Operator Training Requirements	9802e
Taking Samples for the Community Lead Testing Program	6560e01
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	7423e
Guide: Requesting Regulatory Relief from Lead Sampling Requirements	6610
Drinking Water System Contact List	7128e
Technical Support Document for Ontario Drinking Water Quality Standards	4449e01

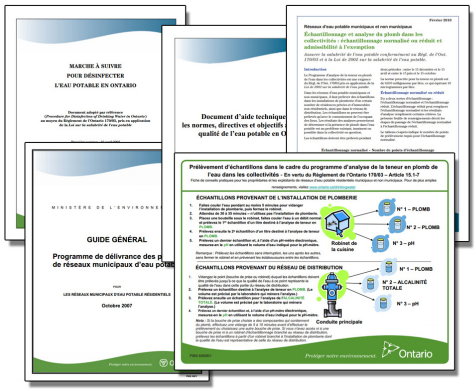
PIBS 8990b01

Ontario

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 Centre d'information au 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.



Pour plus de renseignements sur l'eau potable en Ontario, consultez le site **www.ontario.ca/eaupotable** ou envoyez un courriel à **drinking.water@ontario.ca** pour suivre l'information sur l'eau potable.

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Prendre soin de votre eau potable – Un guide destiné aux membres des conseils municipaux	7889f01
Renseignements sur le profil du réseau d'eau potable, Avis de demande de services de laboratoire, Formulaire de communication de résultats d'analyse insatisfaisants et du règlement des problèmes	7419f, 5387f, 4444f
Marche à suivre pour désinfecter l'eau potable en Ontario	4448f01
Strategies for Minimizing the Disinfection Products Thrihalomethanes and Haloacetic Acids (en anglais seulement)	7152e
Total Trihalomethane (TTHM) Reporting Requirements: Technical Bulletin (février 2011) (en anglais seulement)	8215e
Filtration Processes Technical Bulletin (en anglais seulement)	7467
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	7685
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable, de modification du permis de réseau municipal d'eau potable, de renouvellement du permis de réseau municipal d'eau potable et de permis pour un nouveau réseau	7014f01
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	
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802f
Prélèvement d'échantillons dans le cadre du programme d'analyse de la teneur en plomb de l'eau dans les collectivités	6560f01
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	7423f
Guide: Requesting Regulatory Relief from Lead Sampling Requirements (en anglais seulement)	6610
Liste des personnes-ressources du réseau d'eau potable	7128f
Document d'aide technique pour les normes, directives et objectifs associés à la qualité de l'eau potable en Ontario	4449f01

PIBS 8990b01

Ontario