Ministry of the Environment, Conservation and Parks
Drinking Water and Environmental Compliance Division
West Central Region
Niagara District Office

9th Floor, Suite 15
301 St. Paul Street
St. Catharines, ON L2R 7R4
Tel.: 905 704-3900
1-800-263-1035
Fax: 905 704-4015

Ministère de l'Environnement de la Protection de la nature et des Parcs
Division de la conformité en matière d'eau potable et d'environnement
Direction régionale du Centre-Ouest
Bureau du district de Niagara

9e étage, bureau 15
301, rue St. Paul
St. Catharines, ON L2R 7R4
Tel.: 905 704-3900
1-800-263-1035
Téléc: 905 704-4015

Monday, December 3, 2018

File: SI NI PE A540 – 2018-19
DWS# 260001604

Mr. Jason Marr
Director of Public Works and Utilities
20 Pelham Town Square
Fonthill, Ontario
L0S 1E0

Re: Pelham Distribution System Inspection Report

Dear Mr. Marr,

Please find the enclosed copy of the inspection report for the Pelham Distribution System initiated on November 16, 2018. Please note that as of June 29, 2018 the Ministry of the Environment and Climate Change's name has changed to the Ministry of the Environment, Conservation and Parks. This name change will take some time to be reflected in ministry materials and systems.

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

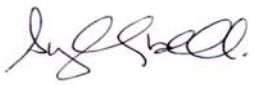
The items found within the section entitled "Non-compliance with Regulatory Requirements and Actions Required" outline non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, licenses, permits, orders, or guidelines. Please ensure that the required actions are completed within the prescribed timeframe.

The items found within the section entitled "Summary of Best Practice Issues and Recommendations" provide information to the owner or operating authority outlining practices or standards established through existing and emerging industry standards that should be considered in

order to advance current efforts. These items do not, in themselves, constitute violations. More recommendations are also provided within the body of the report.

Thank you for the assistance during the inspection. Please do not hesitate to contact me if you have any questions or concerns about the attached report.

Sincerely,



Sylvain Campbell, P. Eng.
Provincial Officer #1278, Water Inspector
Niagara District Office - West Central Region
Phone: (905) 704-3910 or 1 (800) 235-1035 x. 43910
E-mail: sylvain.campbell@ontario.ca

Cc: Ryan Cook – Town of Pelham
Dave Vaccaro – Town of Pelham
Anthony Habjan - Niagara Public Health Department
Tareq Al-Zabet - Niagara Peninsula Conservation Authority
Zafar Bhatti – Ministry of the Environment, Conservation and Parks
MECP Niagara District File

Ontario

Ministry of the Environment, Conservation and Parks

PELHAM DISTRIBUTION SYSTEM

Inspection Report

Site Number:	260001604
Inspection Number:	1-I6G4P
Date of Inspection:	Nov 16, 2018
Inspected By:	Sylvain Campbell

TABLE OF CONTENTS

OWNER INFORMATION:

Company Name:	PELHAM, THE CORPORATION OF THE TOWN OF		
Street Number:	20	**Unit Identifier:**	
Street Name:	PELHAM TOWN Sq		
City:	FONTHILL		
Province:	ON	**Postal Code:**	L0S 1E0

CONTACT INFORMATION

Type:	Director	**Name:**	Jason Marr
Phone:	(905) 892-2607 x313	**Fax:**	(905) 892-5055
Email:	jmarr@pelham.ca		
Title:	Director of Public Works and Utilities		

Type:	ORO	**Name:**	Ryan Cook
Phone:	(905) 892-2607	**Fax:**	
Email:	rcook@pelham.ca		
Title:	Manager of Public Works		

Type:	Niagara Health Unit	**Name:**	Anthony Habjan
Phone:	(905) 688-3762	**Fax:**	(905) 641-4994
Email:	anthony.habjan@niagararegion.ca		
Title:	Manager, Environmental Health - Niagara Region Public Health Unit		

Type:	Niagara Conservation Authority	**Name:**	Tareq Al-Zabet
Phone:	(905) 788-3135	**Fax:**	
Email:	talzabet@npca.ca		
Title:	Director, Watershed Management		

INSPECTION DETAILS:

Site Name:	PELHAM DISTRIBUTION SYSTEM
Site Address:	20 PELHAM TOWN SQ FONTHILL L0S 1E0
County/District:	Pelham
MECP District/Area Office:	Niagara District
Health Unit:	REGIONAL NIAGARA PUBLIC HEALTH DEPARTMENT
Conservation Authority:	Niagara Peninsula Conservation Authority
MNR Office:	Guelph Regional Office
Category:	Large Municipal Residential
Site Number:	260001604
Inspection Type:	Announced
Inspection Number:	1-I6G4P
Date of Inspection:	Nov 16, 2018
Date of Previous Inspection:	Jan 11, 2018

COMPONENTS DESCRIPTION

Site (Name): Distribution (Water Inspection)
Type: Other **Sub Type:** Other
Comments:
The Town of Pelham Water Distribution System receives its supply of treated water from the Regional Municipality of Niagara's Welland Drinking Water System via a 750 mm diameter watermain. Raw water for the Welland Water Treatment Plant is taken from Lake Erie via the Welland Recreational Waterway. Two drinking water storage facilities are located within the Town of Pelham: the Shoalts Drive Reservoir/Rechlorination Station and the Pelham Elevated Tank. The Welland Water Treatment Plant and the two storage facilities are subject to a separate inspection as they are owned and operated by the Regional Municipality of Niagara.

The Town of Pelham owns and operates the water distribution system, which supplies drinking water to Fonthill and Fenwick urban areas in Pelham. The Pelham Water Distribution System supplies drinking water to approximately 12,546 people through approximately 84 kilometres of Town watermains ranging from 50 mm to 400 mm. The watermains are primarily cast iron, asbestos concrete, high pressure concrete piping, copper and PVC piping. There are approximately 554 hydrants and 683 valves located throughout the system. The Town owns a fill station with side-fill and a backflow prevention device as well as a residential pressure boosting station. The Town of Pelham does not provide any additional treatment or rechlorination.

Site (Name): Chestnut Ridge Pumping Station
Type: Other **Sub Type:** Pumphouse
Comments:
The Town owns the Chestnut Ridge booster pump station which is located on the Pelham's Elevated Tank property. There is one fire pump on site which supplies a small part of the Town when needed.

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, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period.**

  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 an inspection of a "stand alone connected distribution system". This type of system receives treated water from a separately owned "donor" system. This report contains the elements required to assess key compliance and conformance issues associated with a "receiver" system. This report does not contain items associated with the inspection of the donor system, such as source waters, intakes/wells and treatment facilities.

  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.

  This focused inspection included a review of operational records for the Pelham Distribution System (DS) from January 1, 2018 to November 15, 2018. Permit 072-201 and Licence 072-101, Issues 3, were approved on May 16, 2017.

  This inspection included a visit of the Chestnut Ridge booster station and to the Town's bulk water fill station.

  During the site visits, the inspector met with the Manager of Public Works, and the Supervisor of Water/Wastewater.

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.**

  The only equipment required by the Permit is the Chestnut Ridge Pumping Station. The station was visited however, as the Town does not operate the equipment and the station is located on a Niagara Region's property, the equipment could not be accessed. The Supervisor of Water/Wastewater mentioned that the equipment was as per the Permit.

- **The owner/operating authority was in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.**

  The status of the Forms 1 projects from the previous inspection period which had not been integrated in the distribution system (DS) drawings at the time is the following:

Treatment Processes

Project Description	Approval Date	Date Commissioned	In DS Drawing?
1 - Station Street from Port Robinson Rd. to Regional Road 20	August 16, 2016	Not yet	No
2 - Summersides Boul. And Station Street	Feb. 2, 2017	June 14, 2018	No

Four Form 1 projects were approved during the inspection period. The Forms appeared to meet the requirements of Condition 3 of Schedule B of the Permit.

Project Description	Approval Date	Date Commissioned	In DS Drawing?
1 – Lymburner St. and Acacia Rd. Swan Ave. and Myrtle St. Walker Rd.	May 16, 2018	Sep. 6, 2018	No
2 – Clare Avenue South of Quaker Road	May 22, 2018	July 12, 2018	No
3 – Rice Road between Highway 20 and Steve Bauer Trail	Sep. 12, 2018	Oct 19, 2018	No
4 – Station Street and Lyndhurst Ave.	Sep. 26, 2018	Not yet	No

Treatment Process Monitoring

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

  The Town took four chlorine samples during one day of the week and three samples on another day of the week at least 48 hours apart from the previous samples. The minimum free chlorine residual (FCR) concentration during the inspection period was 0.22 mg/L on September 20, 2018.

Distribution System

- **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).**

  The Pelham's contractors are required to follow the 'Niagara Peninsula Standard Contract Document' for construction work on the watermain, which details watermain disinfection and testing requirements before connection to the Pelham's distribution system. The Town received issue 3 of its Permit on May 16, 2017 which requires using the new Ontario "Watermain Disinfection Procedure" for new watermains and watermain repairs as of November 15, 2017. Standard Operating Procedure 025 - "Watermain Break" is used for watermain repairs. The main break records complied with the record requirements of the Watermain Disinfection Procedure.

Operations Manuals

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

  The manuals included a distribution map which showed the sampling locations, main sizes, and hydrants. They also contained a drawing showing the location of the Town's Pressure Reducing Valves (PRVs) and a drawing indicating the flushing locations.

Operations Manuals

- **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.**

  There were a few occasions where the name of a non-certified person was written in the main logbook under the "Operators on Duty" heading. The Town is encouraged to either create a new heading for non-certified people in the logbook or add a note besides the person's name to indicate that he/she is not a certified operator.

- **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.**

  The Chestnut Ridge pump station is located on the Pelham Tank's property, which is owned by the Region of Niagara. The station was locked with an alarm within a fenced area. The Town's filling station had a keypad access system. Its internal parts were in a locked compartment.

Certification and Training

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

  The Pelham DS received a Class II DS Licence #1733 on November 9, 2005. The Town has designated an overall responsible operator (ORO) for the Pelham Class 2 Distribution System through By-Law # 3612 (2015).

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

Water Quality Monitoring

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

  The Town is required to take 20 microbiological samples per month including at least one per week. The Town complied with the requirements as they took 7 to 12 samples per week using 4 different sampling routes during the inspection period.

  In addition, at least 25% of these samples must also be tested for Heterotrophic Plate Count (HPC). All bacteriological samples reviewed during the inspection were tested for HPC.

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

  Haloacetic Acid (HAA) samples were collected and tested from one location on a quarterly basis. The highest readout was 16.1 µg/L from a sample obtained on June 11, 2018. There is no limit for HAA running annual average at this time. The limit of 80 µg/L will take effect on January 1, 2020.

  The ORO was made aware of the May 9, 2018 letter sent by the Ministry's Director, Compliance, Promotion and Support Branch titled "Re: Haloacetic Acids (HAAs) Sampling Concerns". The ORO advised the inspector that he already had a second station in mind for the next samples to comply with this guidance letter.

Water Quality Monitoring

The HAA's running annual average was not included in the Town's 2017 Annual Report. The ORO agreed to include the average in the 2018 Annual Report.

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

  The running annual average for trihalomethane (THM) for 2017 was 50.0 µg/L, half of the limit of 100 µg/L. The numbers for 2018 appear to be lower than in 2017. The ORO mentioned that they contacted the Region of Niagara to ensure that they were aware of the higher THM readouts in 2017.

  The THM running annual average reported in the Town's Annual Report was incorrect. The report was updated prior to the issuance of this report.

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

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

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

  Although there were no changes to the system registration information during the inspection period, the ORO indicated that there may be changes in the near future. The Town is reminded that Subsection 10.1 (3) of O. Reg. 170/03 states:

  10.1(3) If there is any change to the information given to the Director under subsection (1) or (2), the owner of the drinking-water system shall give the Director written notice of the change within 10 days of the change.

Other Inspection Findings

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

  The ORO mentioned that the Town has hired a consultant to set up a new backflow prevention program which will likely be implemented by the end of 2019. The Town is encouraged to complete the implementation of the program as its topography makes it more prone to backflow.

- **The following items are noted as being relevant to the Drinking Water System:**

  The ORO mentioned that the Region of Niagara is planning to install a new elevated tank within the next 5 years which would replace the existing tank. The Town may not need its pressure-booster station when the new tank is installed.

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 - There were a few occasions where the name of a non-certified person was written in the main logbook under the "Operators on Duty" heading.

2 - The ORO mentioned that the Town has hired a consultant to set up a new backflow prevention program which will likely be implemented by the end of 2019.

3 - The ORO was made aware of the May 9, 2018 letter sent by the Ministry's Director, Compliance, Promotion and Support Branch titled "Re: Haloacetic Acids (HAAs) Sampling Concerns". The ORO advised the inspector that he already had a second station in mind for the next samples to comply with this guidance letter.

4 - The HAA's running annual average was not included in the Town's 2017 Annual Report.

Recommendation:

1 - The Town is encouraged to either create a new heading for non-certified people in the logbook or add a note besides the person's name to indicate that he/she is not a certified operator.

2 - The Town is encouraged to complete the implementation of its proposed backflow program as its topography makes it more prone to backflow.

3 - The Town is reminded to use an alternate sampling station for HAAs in 2019 in order to comply with the requirements from the Ministry's May 9, 2018 letter titled "Re: Haloacetic Acids (HAAs) Sampling Concerns".

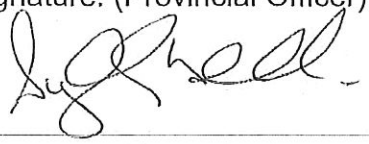
4 - The ORO agreed to include the HAA's running annual average in the 2018 Annual Report.

SIGNATURES

Inspected By:

Sylvain Campbell

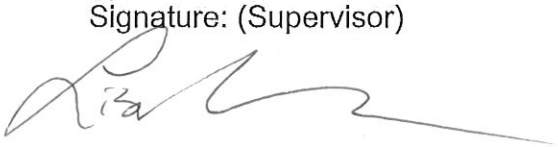
Signature: (Provincial Officer)



Reviewed & Approved By:

Zafar Bhatti

Signature: (Supervisor)



Review & Approval Date: 03. DEC. 2018

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:

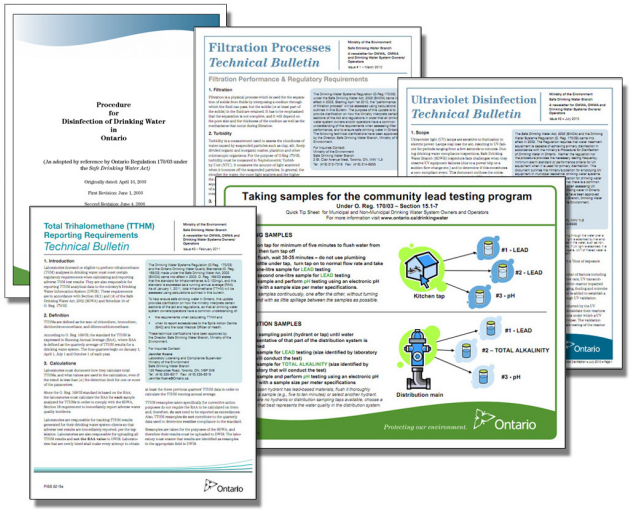
STAKEHOLDER APPENDIX

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are 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

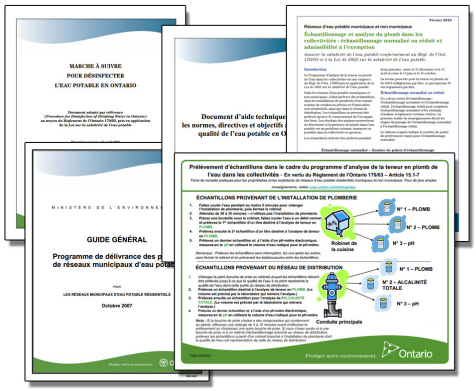
PIBS 8990b01

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

APPENDIX B:

MINISTRY AUDIT SAMPLE RESULTS

(IF APPLICABLE)

APPENDIX C:

INSPECTION RATING REPORT

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2018-2019)

DWS Name:	PELHAM DISTRIBUTION SYSTEM
DWS Number:	260001604
DWS Owner:	Pelham, The Corporation Of The Town Of
Municipal Location:	Pelham
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Adhoc
Inspection Date:	November 16, 2018
Ministry Office:	Niagara District

Maximum Question Rating: 175

Inspection Module	Non-Compliance Rating
Treatment Processes	0 / 18
Distribution System	0 / 21
Operations Manuals	0 / 28
Logbooks	0 / 18
Certification and Training	0 / 14
Water Quality Monitoring	0 / 51
Reporting & Corrective Actions	0 / 4
Treatment Process Monitoring	0 / 21
TOTAL	**0 / 175**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 03-DEC-18 (Inspection ID: 1-I6G4P).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2018-2019)

DWS Name:	PELHAM DISTRIBUTION SYSTEM
DWS Number:	260001604
DWS Owner:	Pelham, The Corporation Of The Town Of
Municipal Location:	Pelham
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Adhoc
Inspection Date:	November 16, 2018
Ministry Office:	Niagara District

Maximum Question Rating: 175

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 03-DEC-18 (Inspection ID: 1-I6G4P).

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).

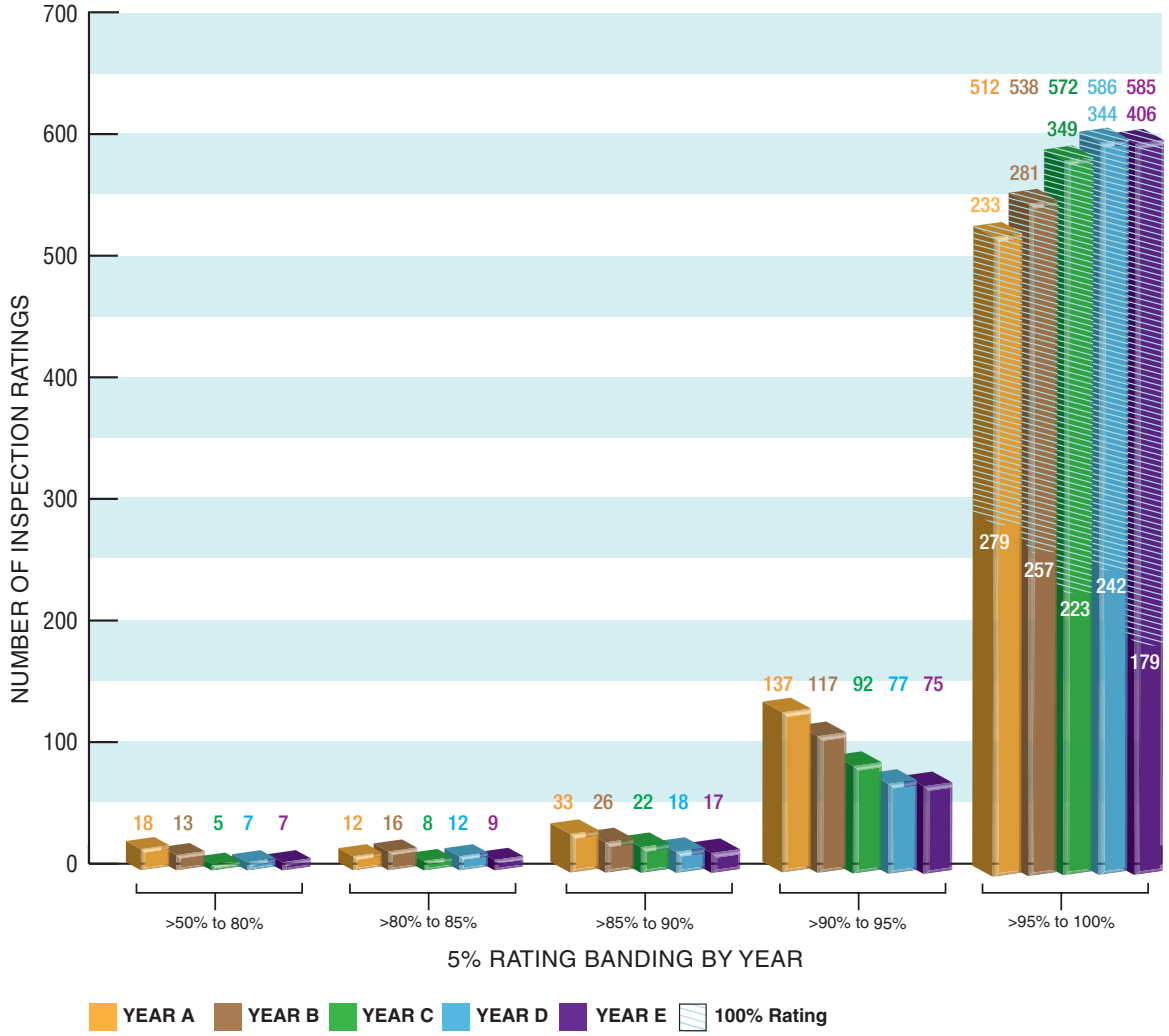
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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**