Ministry of the Environment and Climate Change
Safe Drinking Water Branch
Kenora Area Office
808 Robertson St
2nd Floor,
Kenora ON P9N 1X9
Tel.: 807-468-2727
Fax.: 807-468-2735
Toll Free: 1-888-367-7622

Ministère de l'Environnement et de l'Action en matière de changement climatique
Direction du contrôle de la qualité de l'eau potable
Bureau du secteur de Kenora
808, rue Robertson
2e étage,
Kenora ON P9N 1X9
Tél.: 807-468-2727
Téléc.: 807-468-2735
Sans Frais: 1-888-367-7622

February 12, 2018

Town of Fort Frances
320 Portage Ave.
Fort Frances, ON
P9A 3P9

Attention: Douglas Herr, Environmental and Facilities Superintendent

Dear Mr. Herr:

Re: Fort Frances Water Treatment Plant Inspection Report (2017/2018)

Please find attached the 2017/2018 municipal water works inspection report. The announced focused inspection was conducted on January 22 & 23, 2018. The time and co-operation of all operators involved was greatly appreciated.

There were no non-compliances identified during the inspection.

Best practice issues and associated recommendations, for the continued improvement of operations of the Fort Frances drinking-water system, are provided on page 12 of the inspection report. *"Recommended Actions"* convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the fulsome availability of information to consumers, and conformance with existing and emerging industrial standards. Please note that items which appear as recommended actions do not, in themselves, constitute violations.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles on the Inspection, Investigation & Enforcement (II&E) Secretariat and advice in internal/external risk experts. The Inspection Summary Rating Record (IRR), included as Appendix B 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. 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, at (807) 475-1689.

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 councilors, to take steps to be better informed about the drinking water systems over which they have decision-making authority. These steps could include asking for a copy of this inspection report and 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 "Resources" on the Drinking Water Ontario website at www.ontario.ca/drinkingwater.

If you have any questions or comments in regards to this inspection, or if you would like to discuss Ontario's drinking water legislation, please contact Carolyn Lacroix at (807) 468-2727.

Sincerely,

CLacroix

Ministry of the Environment
Northern Region - Kenora Area Office

CL/cl

cc. Northwestern Health Unit
21 Wolsley Street
Kenora, Ontario
P9N 3W7
Attention: Thomas Nabb, Program Manager

cc. Ministry of Natural Resources and Forestry
922 Scott Street
Fort Frances, Ontario
P9A 6S7
Attention: Greg Chapman, District Manager

cc. Ministry of the Environment
435 James Street South
Suite 331
Thunder Bay, Ontario
P7E 6S7
Attention: Dave Manol, Drinking Water Supervisor

cc. Kenora Area Office

Ministry of the Environment and Climate Change
Safe Drinking Water Branch
Kenora Area Office
808 Robertson St
2nd Floor,
Kenora ON P9N 1X9
Tel.: 807-468-2727
Fax.: 807-468-2735
Toll Free: 1-888-367-7622

Ministère de l'Environnement et de l'Action en matière de changement climatique
Direction du contrôle de la qualité de l'eau potable
Bureau du secteur de Kenora
808, rue Robertson
2e étage,
Kenora ON P9N 1X9
Tél.: 807-468-2727
Téléc.: 807-468-2735
Sans Frais: 1-888-367-7622

Ontario

File Number: RR EM MI – 540

Ontario

Ministry of the Environment and Climate Change

FORT FRANCES DRINKING WATER SYSTEM

Inspection Report

Site Number:	220000978
Inspection Number:	1-F74CB
Date of Inspection:	Jan 22, 2018
Inspected By:	Carolyn Lacroix

TABLE OF CONTENTS

Page

Owner Information
Contact Information 2

Inspection Details
Drinking Water System Components Description 2

Inspection Summary
Introduction 4
Capacity Assessment 4
Treatment Processes 5
Treatment Process Monitoring 5
Operations Manuals 7
Logbooks 7
Security 7
Certification and Training 7
Water Quality and Monitoring 8
Water Quality Assessment 9
Reporting and Corrective Actions 9
Other Inspection Findings 10

Non-Compliance with Regulatory Requirements and Actions Required 11

Summary of Best Practice Issues and Recommendations 12

Signatures 13

Appendices
Appendix A – Key Reference Materials
Appendix B – Inspection Summary Rating Record

OWNER INFORMATION:

Company Name:	FORT FRANCES, THE CORPORATION OF THE TOWN OF		
Street Number:	320	**Unit Identifier:**	
Street Name:	PORTAGE Ave		
City:	FORT FRANCES		
Province:	ON	**Postal Code:**	P9A 3P9

CONTACT INFORMATION

INSPECTION DETAILS:

Site Name:	FORT FRANCES DRINKING WATER SYSTEM
Site Address:	901 COLONIZATION RD E FORT FRANCES P9A 3P9
County/District:	Fort Frances
MOECC District/Area Office:	Kenora Area Office
Health Unit:	NORTHWESTERN HEALTH UNIT
Conservation Authority:	
MNR Office:	Fort Frances District Office
Category:	Large Municipal Residential
Site Number:	220000978
Inspection Type:	Announced
Inspection Number:	1-F74CB
Date of Inspection:	Jan 22, 2018
Date of Previous Inspection:	Jan 12, 2017

COMPONENTS DESCRIPTION

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

Site (Name):	SOURCE		
Type:	Source	**Sub Type:**	Surface

Comments:
The raw water supply for the Fort Frances municipal drinking water system is taken from the Rainy River at the outflow of Rainy Lake. The source water is generally of good quality, however it can be subject to elevated levels of colour, turbidity, and dissolved organic carbon.
Source water is gravity-fed into a low-lift pump well located within the plant. It is then drawn through a 630 mm diameter, 190 m long intake line that is equipped at the terminal end with a stainless steel screen. Coarse material is screened at the initial intake point and again through a set of screens within the raw water well.

Site (Name):	TREATED WATER		
Type:	Treated Water POE	**Sub Type:**	Pumphouse

Comments:
Three (3) vertical turbine low lift pumps deliver raw water through a common header equipped with alum and soda

ash injection points, an in-line mixer, and a flow meter. Alum is added at all times when water is being produced; soda ash is added only when needed based on the pH of the raw water supply. Polymer is then injected as the water passes into two solids contact clarifiers. The clarifiers are equipped with blow-down devices to remove excess sludge, which is discharged to the municipal sanitary sewer. Clarified water passes through one of four dual media (anthracite coal/sand) filters. Each filter effluent line is monitored for pH and turbidity. Water is disinfected in a baffled contact chamber by the addition of chlorine gas. Soda ash, used for pH adjustment is added to the clearwell, as well as hydrofluosilicic acid. Treated water flows are measured using an in-line flow meter.
Four high lift pumps (rated at 63.1 L/s (2), 94.7 L/s and 126.2 L/s) pressurize treated water as it is directed to the distribution system. Distribution system pressure is also maintained by the elevated storage tank located in the southwest portion of Fort Frances.
A complete description of the treatment system can be found in Drinking Water Works Permit No. 224-201.

Site (Name): DISTRIBUTION (WATER INSPECTION)
Type: Other **Sub Type:** Other
Comments:
The Fort Frances distribution system services a population of approximately 8,000 in Town, and another 300 people in the neighbouring community of Couchiching First Nation. The distribution system is comprised of ductile steel, cast iron, and PVC piping. The original system was installed in the early 1900's. As older pipes are replaced, PVC piping comprises an increasing proportion of the works. Some sections of the distribution system have been looped at the recommendation of a consulting engineer, however several dead ends still remain. The distribution system is 70.73 kilometres in length and contains 399 fire hydrants.
A 4,500 cubic meter elevated storage tower is located in the southwest portion of the town. A telemetry system is used to maintain water levels in the tower. A paced-to-flow chlorination system injects liquid calcium hypochlorite at the outflow from the storage tower to maintain adequate chlorine residuals in the distribution system.

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.

  This focused inspection was conducted on January 22 and 23, 2018, by Water Inspector, Carolyn Lacroix. The inspection included a tour of the Drinking Water System (DWS) components, document review and interview with DWS personnel. The inspection review period is the period of time from the date of the previous Ministry of the Environment and Climate Change (MOECC) inspection conducted on January 12 and 13, 2017, to the first day of this inspection, unless otherwise stated.
  Text highlighted in bold-type is computer-generated based on yes/no responses to standard questions answered during the inspection. Supporting information, in regular font, has been added by the undersigned Water Inspector to qualify standard responses and to provide additional guidance/information.

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.**

  Conditions 2.1.1 and 2.1.2, Schedule C, Municipal Drinking Water Licence (MDWL) #224-101, requires continuous measurements and recording of the flow rate and daily volume of raw water flowing into the WTP and of treated water flowing from the WTP into the distribution system. The Fort Frances WTP is equipped with one raw water flow meter and one treated water flow meter.
  There were no losses of flow data during the inspection review period.

- **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.**

  Condition 1.1, Schedule C, MDWL #224-101, identifies the rated capacity of the Fort Frances WTP as 17,000 m^3/day. This represents the maximum daily volume of treated water that is allowed to be directed to the distribution system from the WTP.
  The highest volume of treated water pumped to the distribution system in a single day was 5680 m^3, on August 1, 2017. This represents 33% of the rated capacity.

Capacity Assessment

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.**

  During the inspection, the undersigned Water Inspector toured the WTP and the water tower.
  The following discrepancy was noted in Schedule A of Drinking Water Works Permit (DWWP) #224-201:
  - The alum chemical metering pump is described as "having a calibration cylinder controlled automatically on the basis of the raw water flow". A new chemical metering pump has been installed and the new pump does not have a calibration cylinder. The instrument is now calibrated manually by weighing a sample.
  During the next Drinking Water Works Permit and Municipal Drinking Water License renewal, the above item is to be updated.

- **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.**

  In accordance with O. Reg. 170/03, Schedule 1-2(2), surface water systems must have chemically assisted filtration and disinfection and achieve an overall performance of at least a 2-log (99%) removal/inactivation of Cryptosporidium oocysts, a 3-log (99.9%) removal/inactivation of Giardia cysts, and a 4-log (99.99%) removal/inactivation of viruses, by the time the water is delivered to the first consumer.
  The Fort Frances WTP achieves the above performance criteria using conventional treatment consisting of coagulation, flocculation, sedimentation filtration, and chlorine disinfection.
  Records reviewed during the inspection confirmed that the system was providing the required level of treatment throughout the inspection review period.
  Trends on the SCADA system and chart records were reviewed to ensure that minimum chlorine residuals were met continuously.
  Under worst case conditions (temp 0.5 degrees Celsius, pH 7.5, clearwell level 60% capacity, treated water flow 17 000 cubic meters per day), the plant must maintain their chlorine residual above 0.85mg/L. This was achieved throughout the inspection review period. The plant has the capacity to operate at a flow rate greater than that described above, but a low level alarm at the distribution water tower (4.7m from the top of the tower) will alert operators if water levels are decreasing at an accelerated rate. A third high lift pump will only come on once the distribution tower water level drops to 5.0m from the top of the tower. Operators will therefore be alerted prior to flow rates potentially exceeding that described in their current "Worst Case Scenario CT Calculation" and can make adjustments to treatment as deemed necessary.
  Daily chemical feed and feed output reports were reviewed and demonstrated the consistent use of alum at all times the plant was treating water.
  Monthly turbidity summaries were reviewed to ensure that the filtered water turbidity was less than or equal to 0.3 NTU in 95% of the measurements taken each month. This was met throughout the inspection review period.

- **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.**

  Distribution chlorine levels must be maintained at or above 0.05 mg/L at all times. The lowest recorded chlorine level in the distribution system during the inspection review period was 0.21 mg/L.

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.**

Treatment Process Monitoring

The treated water chlorine residual is monitored by a continuous analyzer at the point where treated water enters the distribution system.

- **Continuous monitoring of each filter effluent line was being performed for turbidity.**

  All four filters in the WTP are equipped with turbidity analyzers. Continuous turbidity data from each filter is printed daily, reviewed by operators and filed in the WTP office.

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

  Daily chlorine residuals are collected from the water tower, meeting the requirements of O. Reg. 170/03, Schedule 7, subsections 7-2(3),(4). Chlorine residuals are also collected during bacteriological sampling.

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

  Upon arrival at the WTP each morning, operators observe chlorine residuals from the previous 24 hour period on the circle chart recorder which is located next to the continuous chlorine analyzer.
  The circle chart recorder will hold up to a week of chlorine data. Operators then review a printout of the turbidity readings off each filter for the previous 24 hour period. These printouts display turbidity in 15 minute intervals; each 15 minute data set includes the minimum, maximum and mean turbidity value for the prior 15 minute time period. Operators then review continuous data for the previous 24 hour period on the SCADA computer.
  In 2014, the Town of Fort Frances developed an SOP for "Reviewing Continuous Monitoring Turbidity Test Results".

- **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.**

  Currently, the alarm set points for chlorine and turbidity are as follows:
  • Final Effluent Low Chlorine Alarm = 1.40 mg/L - If final effluent chlorine levels drop below this set point, an alarm will sound immediately and the high lift pumps will shut down. The system will run off of the water tower.
  • Final Effluent High Chlorine Alarm = 3.2 mg/L - calls out operator on duty
  • Filter Effluent Turbidity High Alarm = 0.45 NTU - plant alarm sounds, if the filter effluent turbidity continues to exceed the set point for more than 10 min, the filter that is exceeding will shut down and a call out will be made to the on-call operator
  • Filter Effluent Turbidity High High Alarm = 0.80 NTU - plant immediately alarms, calls out the on-call operator and filter shuts down
  • Filter Effluent Turbidity Low Alarm = different set points for each filter - plant will alarm if the set point is reached or the analyser malfunctions

- **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.**

  Final effluent chlorine levels are being read and recorded by the SCADA system every 60 seconds and are also documented on the chart recorder.
  Filter effluent turbidity levels are being read and recorded every 60 seconds. The SCADA system takes all 60 second test data within a period of 15 minutes and calculates and records the maximum, minimum and mean readings (in NTU) at the end of the 15 minute period, along with the time and filter number.

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

Treatment Process Monitoring

O. Reg. 170/03, Schedule 6, section 6-5(1)8, requires that the continuous monitoring equipment must be checked and calibrated in accordance with the manufacturer's instructions.
The Rosemont Chlorine Residual Analyzer Instruction Manual for continuously monitoring chlorine does not state how frequently the instrument should be calibrated; therefore, O. Reg. 170/03, Schedule 6, section 6-5(1)10 applies. This section requires that the instrument be checked and calibrated as frequently as necessary to ensure that the margin of error for free chlorine residual test results are within 0.05 mg/L, if the concentrations usually measured by the equipment are less than or equal to 1.0 mg/L, and proportionally higher if the concentrations usually measured are greater than 1.0 mg/L. Documentation shows that the analyzer was last calibrated by an outside party on August 21, 2017 and had been previously calibrated on August 17, 2016. Manual chlorine residuals are taken daily and compared to the on-line analyzer. If the analyzer starts to drift, an in- house calibration is completed. In house treated water chlorine analyzer calibrations took place approximately 1/month.
The Rosemount Clarity II Turbidity Instruction Manual, for continuously monitoring turbidity on filters 1, 2, 3 & 4, requires the instrument to be calibrated annually. Documentation shows that the turbidity analyzers were calibrated on August 21, 2017 and had been previously calibrated on August 18, 2016.

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.**

  Only certified operators make entries in the logbook.

Security

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

  Security measures provided at the WTP include:
  • "No Trespassing" signs;
  • alarm system; and
  • locked doors when employees are not present.
  Security measures provided at the water tower include:
  • "No Trespassing" signs; and
  • a fence around the water tower that is gated and locked
  There are a limited number of keys available for the WTP and the water tower.

Certification and Training

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

  The Fort Frances WTP is a Class 3 subsystem and the distribution system is a Class 2 subsystem. Two operators operate as the ORO on a rotational basis for both subsystems. Both ORO's hold valid certificates that are at the same level or higher than both subsystems.
  On weekends the ORO listed in the water treatment plant log book is also the ORO for the distribution system.

Certification and Training

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

  The OIC is documented daily in the logbook for the water treatment plant and the distribution system, except for on weekends when only the water treatment plant log book identifies the OIC. On weekends, the OIC for the water plant is also the OIC for the distribution system. Only operators with the appropriate level of certification were designated as the OIC for the review period.

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

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

Water Quality Monitoring

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

  O. Reg. 170/03, Schedule 10, section 10-2 requires owners and operating authorities of DWS's that serve 100,000 people or fewer to ensure that at least eight distribution samples plus one additional distribution sample for every 1,000 people served by the system are taken each month.
  At least one of the samples must be taken each week. The samples must be tested for E. coli and total coliform bacteria with at least 25% of the required samples to be tested for general bacteria measured using heterotrophic plate counts (HPC).
  The Fort Frances DWS serves a population of approximately 8,000 people; therefore, at least 16 distribution samples must be taken every month. This requirement was met throughout the inspection review period.

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

  Section 10-3, Schedule 10, O. Reg. 170/03 requires at least one treated water sample to be taken every week from the point of entry to the distribution system and tested for total coliform bacteria, E. coli and HPC. This requirement was met throughout the inspection review period.

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

  Treated water samples must be taken at least once every 12 months (+/- 30 days from the anniversary of the previous sampling date) and tested for the inorganic parameters listed in O. Reg. 170/03, Schedule 23. These parameters were last sampled for on March 7, 2017 and had been previously sampled on March 8, 2016.

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

  Treated water samples must be taken at least once every 12 months (+/- 30 days from the anniversary of the previous sampling date) and tested for organic parameters listed in O. Reg. 170/03, Schedule 24. These parameters were last sampled for on March 7, 2017, and had been previously sampled on March 8, 2016.

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

  In accordance with section 13-6.1, Schedule 13, O. Reg. 170/03, a sample from the distribution system or plumbing is required to be taken and tested for Haloacetic acid (i.e. HAAs) once in each calendar quarter, from a location that is likely to have an elevated potential for the formation of HAA's.
  During the inspection review period, HAA samples were collected from the water tower on March 7, 2017; May 23, 2017; September 12, 2017 and December 11, 2017.

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

Water Quality Monitoring

the required frequency and at the required location.

In accordance with section 13-6, Schedule 13, O. Reg. 170/03, a sample from the distribution system or plumbing is required to be taken and tested for Trihalomethanes (i.e. HAAs) once in each calendar quarter, from a location that is likely to have an elevated potential for the formation of THM's.
During the inspection review period, THM samples were collected from the water tower, on March 7, 2017; May 23, 2017; September 12, 2017 and December 11, 2017. The running annual average THM concentration at the time of the inspection was 74 ug/L, the maximum acceptable concentration is 100 ug/L.

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

  Treated water samples must be taken every three months for analysis of nitrate and nitrite, in accordance with O. Reg. 170/03, Schedule 13, section 13-7. During the inspection review period, samples were collected on the following days: March 7, 2017; May 23, 2017; September 12, 2017 and December 11, 2017. All nitrate and nitrite samples were collected from the WTP at the point of entry to the distribution system.

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

  Sodium samples must be collected from the WTP at the point of entry to the distribution system at least once every 60 months to meet the requirements of O. Reg. 170/03, Schedule 13, section 13-8. A sodium sample was last collected from the Fort Frances WTP on March 9, 2015 and the result was 16.4 mg/L. It had been previously sampled on March 8, 2010.

- **The required daily samples were being taken at the end of the fluoridation process.**

  Schedule 7, section 7-4 of O. Reg. 170/03 requires that if a drinking water system provides fluoridation, the owner of the system and the operating authority for the system shall ensure that a water sample is taken at the end of the fluoridation process at least once every day and is tested for fluoride. Fluoride residuals were being recorded daily by operators. Fluoride is monitored by a continuous analyzer at the same location as the treated water chlorine analyzer, after treatment, prior to water leaving the plant.

- **All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit were being met.**

  Suspended solids are required to be monitored quarterly at the point of discharge to the Rainy River. Records indicated that manual composite samples were collected quarterly during the inspection review period and tested for suspended solids as required.

- **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

- **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.**

  On average, it takes an operator approximately 10 minutes to respond to an alarm call out. Only certified operators

Reporting & Corrective Actions

responded to alarms during the inspection review period.

Other Inspection Findings

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

  1. The plant does not have a mechanism to alert operators if they lose their SCADA system and the backup SCADA system. Alarms only sound if the SCADA system is operational.
  2. O. Reg. 170/03, Schedule 13, section 13-6.1(1) requires that in each calendar quarter, a sample be taken and tested for HAA's from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of HAA's. During the review period, HAA samples were taken from the water tower. This location is towards the end of the distribution system and is typically where THM's are sampled; however, unlike THM's, HAA's do not necessarily have the greatest formation with longer residency time.
  3. During the physical inspection, worst case scenario CT calculations were provided to the undersigned inspector; however, there was a minor error in these calculations. After the inspection, an updated, accurate, CT calculation was provided.

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

  During the inspection the undersigned officer took treated water audit samples, but the results have not yet been received from the lab. Once the results are received, they will be forwarded to the municipality.

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. The plant does not have a mechanism to alert operators if they lose their SCADA system and the backup SCADA system. Alarms only sound if the SCADA system is operational.
   2. O. Reg. 170/03, Schedule 13, section 13-6.1(1) requires that in each calendar quarter, a sample be taken and tested for HAA's from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of HAA's. During the review period, HAA samples were taken from the water tower. This location is towards the end of the distribution system and is typically where THM's are sampled; however, unlike THM's, HAA's do not necessarily have the greatest formation with longer residency time.
   3. During the physical inspection, worst case scenario CT calculations were provided to the undersigned inspector; however, there was a minor error in these calculations. After the inspection, an updated accurate CT calculation was provided.

   Recommendation:

   1. It is recommended that the Town of Fort Frances look into whether it is feasible to install some type of notification system that would make operators aware if their SCADA system failed.
   2. Research has demonstrated that HAA's may have the greatest formation at the beginning of the distribution system; however, if there is rechlorination, high HAAs may be found just past the rechlorination point if the right humic acids are present. Since facilities are not required to report HAA exceedances until January 1, 2020. It is being recommended that the Town of Fort Frances use this extra time to figure out the place of highest potential for elevated HAAs by sampling in different spots in the distribution system to characterize the HAAs in their system. This should aid in determining the best place to sample in their system, prior to the reporting requirements coming into effect in 2020.
   3. It is recommended that copies of the old worst case scenario CT calculations be removed from the filing cabinet and replaced with the newer, accurate calculation. In addition, it is recommended that a copy of this calculation also be included in the Operations Manual.

SIGNATURES

Inspected By:	Signature: (Provincial Officer)
Carolyn Lacroix	C Lacroix

Reviewed & Approved By:	Signature: (Supervisor)
Dave Manol	

Review & Approval Date: February 12, 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.

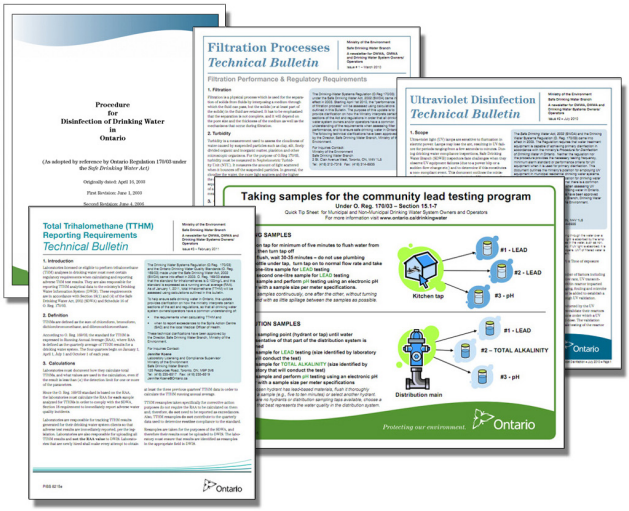
Key Reference Materials

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

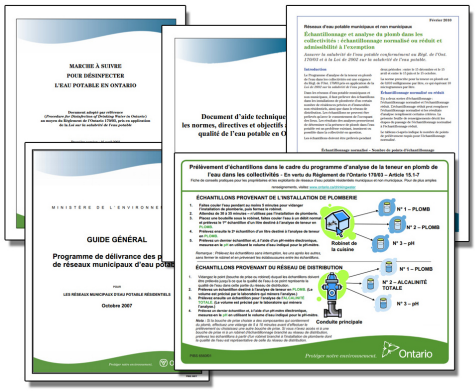
PIBS 8990b01

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

ontario.ca/eaupotable

PIBS 8990b01

Ontario

Inspection Summary Rating Record

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2017-2018)

DWS Name:	FORT FRANCES DRINKING WATER SYSTEM
DWS Number:	220000978
DWS Owner:	Fort Frances, The Corporation Of The Town Of
Municipal Location:	Fort Frances
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	January 22, 2018
Ministry Office:	Kenora Area Office

Maximum Question Rating: 448

Inspection Module	Non-Compliance Rating
Capacity Assessment	0 / 30
Treatment Processes	0 / 56
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 124
Reporting & Corrective Actions	0 / 21
Treatment Process Monitoring	0 / 133
TOTAL	**0 / 448**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 12-FEB-18 (Inspection ID: 1-F74CB).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2017-2018)

DWS Name:	FORT FRANCES DRINKING WATER SYSTEM
DWS Number:	220000978
DWS Owner:	Fort Frances, The Corporation Of The Town Of
Municipal Location:	Fort Frances
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	January 22, 2018
Ministry Office:	Kenora Area Office

Maximum Question Rating: 448

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 12-FEB-18 (Inspection ID: 1-F74CB).

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).

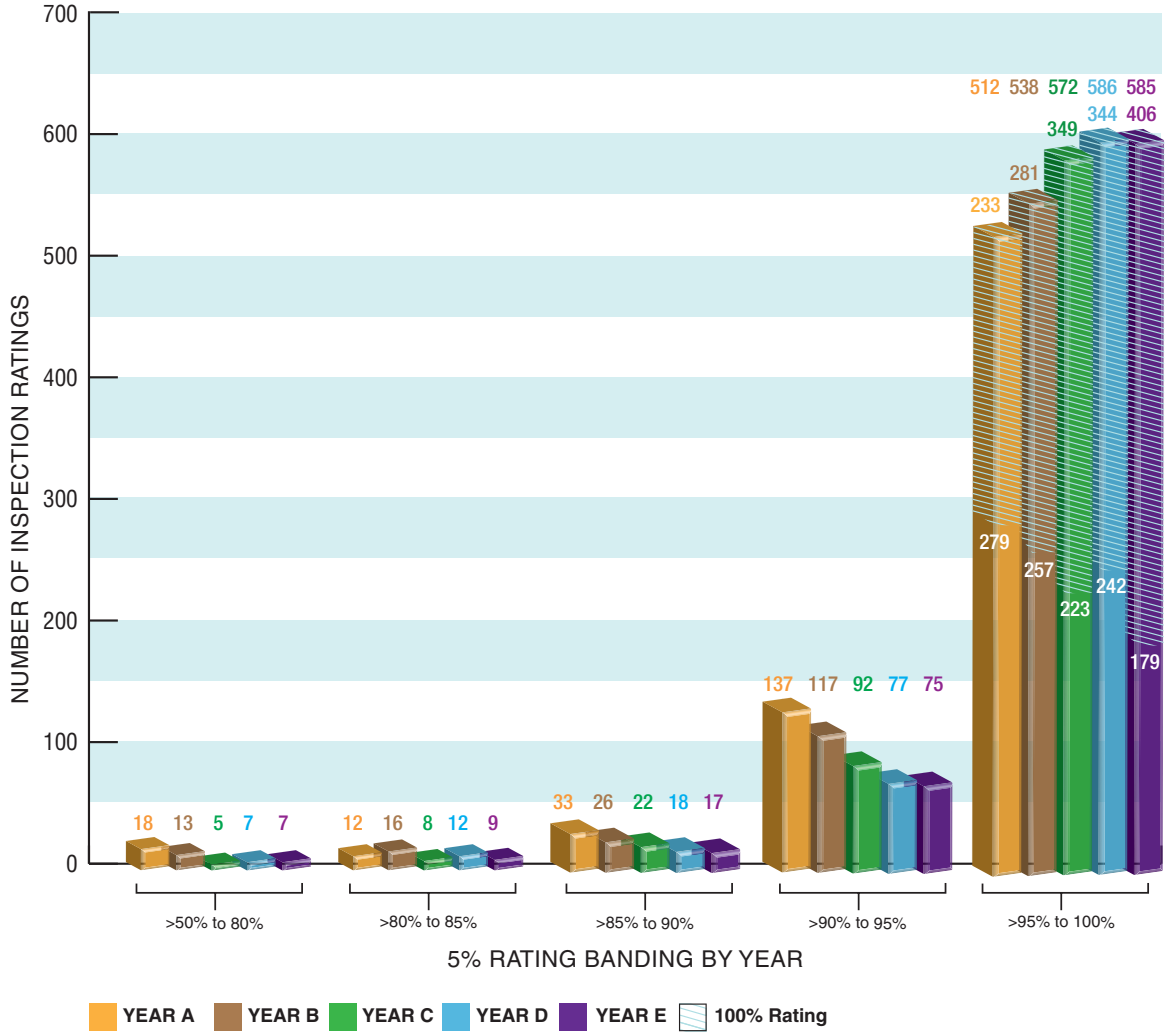
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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**