Ministry of the Environment, Conservation & Parks

Owen Sound District Office

101 17th Street East, 3rd Floor
Owen Sound ON N4K 0A5
Tel.: 519-371-2901
Fax.: 519-371-2905

Ministère de l'Environnement, de la Protection de la nature et des Parcs

Bureau de district d'Owen Sound

101 17ème rue Est, 3e étage
Owen Sound ON N4K 0A5
Tél. : 519-371-2901
Téléc. : 519-371-2905

October 19, 2020

Sent by Email: edance@huronkinloss.com

The Corporation of the Township of Huron-Kinloss
21 Queen Street
P.O. Box 130
Ripley, Ontario
N0G 2R0

Attention: Emily Dance
Clerk

Dear Ms. Dance:

Re: 2020/2021 Inspection Report 1-O7BT9
Whitechurch Drinking Water System
Drinking Water Licence 087-103, Issue #4
Drinking Water Works Permit 087-203, Issue #3

The enclosed report documents findings of the inspection that was performed on August 12, 2020.

Two sections of the report, namely “Actions Required” and “Recommended Actions”, specify due dates for the submission of information or plans to my attention.

Please note that “Actions Required” are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, orders or instructions; “Recommended Actions” convey information that the owner or operating authority should consider implementing in order to conform with existing and emerging industry standards.

The report includes an Inspection Summary Rating Record as an appendix. This record forms part of the ministry’s comprehensive, risk-based inspection process. The rating provides a quantitative measure of the inspection results for this specific drinking water system for the reporting year. An inspection rating that is less than 100 per cent does not mean that the drinking water from the system is unsafe. The primary goals of this assessment are to encourage ongoing improvement of drinking water systems and to measure this progress from year to year.

I would like to remind you that Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) creates a number of obligations for individuals who exercise decision-making authority over municipal drinking water systems, including members of municipal councils. The recently revised, "Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils", a publication found on the Drinking Water Ontario website (http://www.ontario.ca/environment-and-energy/municipal-drinking-water-systems-licencing-registration-and-permits), provides further information about these obligations.

Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Yours truly,

Heather Lovely
Water Compliance Inspector
Phone: 519-374-0231
e-mail: heather.lovely@ontario.ca

Enclosure

ec: - Dr. Ian Arra, Medical Officer of Health, Grey-Bruce Health Unit
- Andrew Barton, Environmental Health Manager, Grey-Bruce Health Unit
- Phil Beard, General Manager, Maitland Valley Conservation Authority
- Nancy Mayhew, Overall Responsible Operator, Veolia Water Canada
- Mark Smith, Water Compliance Supervisor, Ministry of the Environment, Conservation & Parks

c: File SI-BR-HK-HU-540 (2020)

Ontario

Ministry of the Environment, Conservation and Parks

WHITECHURCH DRINKING WATER SYSTEM

Inspection Report

Site Number:	220008863
Inspection Number:	1-O7BT9
Date of Inspection:	Aug 12, 2020
Inspected By:	Heather Lovely

OWNER INFORMATION:

Company Name: HURON-KINLOSS, THE CORPORATION OF THE TOWNSHIP OF
Street Number: 21 **Unit Identifier:**
Street Name: QUEEN St
City: HURON KINLOSS
Province: ON **Postal Code:** N0G 2R0

CONTACT INFORMATION

Type: Operating Authority **Name:** Nancy Mayhew
Phone: (519) 524-6583 **Fax:** (519) 524-9358
Email: nancy.mayhew@veolia.com
Title: Overall Responsible Operator, Veolia Water Canada - WWT Class 2

Type: Owner **Name:** Tracey Howe
Phone: (519) 395-3735 xext133 **Fax:** (519) 395-4107
Email: thowe@huronkinloss.com
Title: Administrative Assistant, Public Works, Township of Huron-Kinloss

INSPECTION DETAILS:

Site Name: WHITECHURCH DRINKING WATER SYSTEM
Site Address:
County/District: HURON-KINLOSS
MECP District/Area Office: Owen Sound Area Office
Health Unit: GREY BRUCE HEALTH UNIT
Conservation Authority: Maitland Valley Conservation Authority
MNR Office: Owen Sound Field Office
Category: Small Municipal Residential
Site Number: 220008863
Inspection Type: Unannounced
Inspection Number: 1-O7BT9
Date of Inspection: Aug 12, 2020
Date of Previous Inspection: Jul 24, 2019

COMPONENTS DESCRIPTION

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

Site (Name): WELL 1 (South) (current production well)
Type: Source **Sub Type:** Ground Water
Comments:
The Whitechurch Drinking Water System is a "secure groundwater system", categorized as a Limited System. It is classified as a Small Municipal Residential drinking water system as per O.Reg 170/03.

In May 2003 the owner drilled two (2) wells to replace the original production well (Well ID#: 1401736). The wells were referred to as "TW1-03 and TW2-03", in a field evaluation report prepared by Ian D. Wilson Associates Ltd., November 4, 2003.

Whitechurch "Well 1" (Well ID#: 1410463) has a depth of 73.2 m (240 ft), and obtains its water mostly from the deep fracture zone near the base of the well. It has a casing diameter of 152 mm.

This well is very close to the neighbouring property. All private residences within the community of Whitechurch are on individual septic systems. The age and integrity of these septic systems is unknown. The distance from the well to the neighbouring property was measured to be approximately 14.81 meters. The engineer for the system indicated that the well is at least 16 meters from the neighbouring septic system. This well is also located approximately 3.94 meters from an agricultural field that is actively farmed. These risks are identified in the Maitland Valley Source Protection Area Assessment Report with a Risk Management Plan implemented for the adjacent farmland in 2016.

Historically water samples collected from both wells resulted in barium concentrations above the ODWQS of 1mg/L and radionuclide tests identified a Gross Alpha value of 1Bq/L. The Owner applied for, and received regulatory relief from the ODWQS requirement to maintain barium levels below 1 mg/L, since the elevated levels are considered naturally occurring. The current Municipal Drinking Water Licence (MDWL) (087-105, Issue 2) for the system requires the Owner to ensure treated water samples are tested for barium quarterly and results reported to the Grey-Bruce Health Unit annually.

Between January 2010 and June 2018 there were 6 samples that exceeded the ODWQS threshold, or 16% of the total 36 samples (mean value = 0.92 mg/L). Most recently, the barium results have been less than this threshold, with the most recent exceedance occurring in February 2013.

Site (Name): WELL 2 (North) (current production well)
Type: Source **Sub Type:** Ground Water
Comments:
Well 2 (Well ID#: 1410462) was drilled on May 1, 2003 to a depth of 54.9 m with a well casing diameter of 152 mm. Well 2 receives its water from a water bearing zone higher in the bedrock.

During the initial testing of this well, the raw water quality was found to be of poor quality. Consulting hydrogeologists (Ian D. Wilson Associates Ltd, February 14, 2006) presented evidence that the original production well was hydraulically connected and adversely influencing the water quality of well 2. The original production well was abandoned on November 1, 2007 (Well ID#: 7053238) resolving the water quality issue. A GUDI assessment was completed on November 16, 2007 finding that this well is a true groundwater source and Well 2 was put into production on May 16, 2008.

Similar to "Well 1", this well was measured to be approximately 3.53 meters from an agricultural field that is actively farmed. This well was also measured to be at least 25.69 meters from the neighbouring property and is estimated by the owner's consulting engineer to be about 30 meters from the neighbouring septic system.

Site (Name): MONITORING WELL
Type: Other **Sub Type:** Ground Water
Comments:
The monitoring well (Well ID# 1410464) was drilled on May 6, 2003 to a depth of 14.6 m with a 50.8 mm casing. It is referred to as well "OW-4" in a report prepared by Ian D. Wilson Associates Ltd. (Feb. 2006), and as "Well 3" by operators of the Whitechurch DWS.

This well was not listed as a component of the DWS under Schedule A 1.0 of Drinking Water Works Permit 087-205, Issue 1 as of October 5, 2015. However, the measuring and recording of the static water level of the well was required each month under the Permit To Take Water.

This monitoring well (OW-4) was decommissioned in November 2015 by Keith Lang Well Drilling. Bentonite was not used to seal the well. Consultations with MOECC Technical Support staff recommended the abandoned well be left "as is" to preserve the integrity of the well casing and prevent source water contamination. Subsequently, signage was erected stating "No excavation shall occur on Township property without the consent of the Director of Public Works" in order to protect the well.

Site (Name): TREATMENT SYSTEM
Type: Treated Water POE **Sub Type:** Pumphouse
Comments:
Raw water is pumped into the pumphouse for treatment via a deep well 3.7 kW submersible pump rated at 3.28 L/s at 69 m TDH. There are two (2) raw water lines entering the pumphouse, one for each production well. Each raw water line entering the pumphouse is equipped with a magnetic flow meter. Both wells are on-line and have been since Well 2 was put into production on May 16, 2008.

Raw water is disinfected with sodium hypochlorite. There are two (2) chemical feed pumps (one for each well) each rated at 3.75 L/hr. There is one 114 L sodium hypochlorite storage tank, with secondary containment. Chlorinated water is then treated with sodium silicate for iron sequestering. The sodium silicate tank has secondary containment.

Chlorinated water is then directed to the pressure tanks. There are five (5) pressure tanks, each with an effective volume of 140L. Water is fed to the distribution system under constant pressure and these tanks are used to maintain pressure within the distribution system. In 2016 two Wellmate BAF 120 mixing tanks were installed connected in parallel with isolation and bypass valves. The water is then discharged through an enlarged 10 m by 500 mm diameter water main, which provides the necessary chlorine contact time for 2-log virus removal. As of 2016 there is a continuous free chlorine residual monitor upstream of the water contact main (pre-contact) to notify of low chlorine through the auto-dialer. At the point of entry to the distribution system there is the on-line SCADA free chlorine residual monitor.

There is no automatic shutoff valve for a low chlorine events since this was removed after the new pumphouse was built (Sept. 21 2007) since each event created a negative pressure episode, despite quick operator response times. Removal was after discussions with the Grey Bruce Health Unit.

In June 2016 a blow-off was installed just outside the pumphouse to remove improperly disinfected water in the event of a low chlorine event

The plant service water connection (flow to analyzers, sample taps, eye wash station) is equipped with a backflow prevention device.

The following was provided by the ORO, Nancy Mayhew on October 18, 2016.

As per the Procedure for Disinfection of Drinking Water in Ontario
Inactivation Requirements: 2-log removal of viruses
Average pre-treatment water pH range: pH 7.5 - 8
Average pre-treatment water temperature (oC): 7.5 - 8°C
CT – Concentration * Time to meet inactivation requirements = CT 4
Baffle ratio – (T10/T Ratio) = 1.0 BF

Contact Water Main: (SDR26 PVC, 0.466 m ID x 10 m)
Volume Capacity (m^3): 1.7088 m^3
Maximum permitted flow rate (m^3/min) = 0.197 m^3/min
Effective contact time @ max flow (min) = 8.674 minutes

Minimum Disinfection Residual Concentration (mg/L) = 0.47 mg/L

Therefore, a minimum free chlorine concentration of 0.47 mg/L is required to meet primary disinfection at maximum flow rate.

NOTE: During flushing, flows may be just under 3.5 L/s (0.210 m^3/min)... therefore, a minimum free chlorine concentration of 0.50 mg/L would be required to meet primary disinfection during flushing or elevated flow rates.

- The Whitechurch Municipal Drinking Water Licence is # 087-105 Issue 2, expires May 19, 2021
- The Whitechurch Drinking Water Works Permit is # 087-205 Issue 2, issued May 20, 2016.
- The Permit to Take Water (Wells 1 & 2): 1124-A4DMYC Issued Dec. 11, 2015.
- Operational Plan #: 087-405, Operating Authority#; 087-OA1

Permit To Take Water (PTTW) History
- 3110-7AHJR3 Issued: Jan. 11, 2008 Expiry: Feb. 28, 2016
- 2013-A3ZR37 Issued: Nov. 13, 2015 Expiry: Nov. 28, 2025
- 1124-A4DMYC Issued: Dec. 11, 2015 Expiry: Nov. 28, 2025

MDWL Schedule E: Pathogen Log Removal/Inactivation Credits

Whitechurch Wells 1 & 2
Minimum Disinfection Required: 2 log removal/inactivation of Viruses
Disinfection Credits Assigned: 2+ log removal/ inactivation of Viruses via Chlorination (CT: contact pipe)

Site (Name): STANDBY POWER
Type: Other **Sub Type:** Other
Comments:
A 15 kW diesel generator and fuel system has been installed outside adjacent to the pumphouse in a sound attenuated, weather-proof enclosure.

Site (Name): DISTRIBUTION SYSTEM
Type: Other **Sub Type:** Other
Comments:
The Whitechurch system serves approximately 96 residents and the distribution system has 37 service connections. Distribution mains consisted of two (2) inch plastic piping (PVC and polyethylene) with 3/4 inch service connections. The Whitechurch water system has two (2) dedicated sample stations, each one located near the dead ends of water mains. The system also has two dedicated blowoff stations, one located at the extreme north end of the system, and one located at the extreme east end of Amberley Road. There are no hydrants or isolation valves associated with the distribution system. There is no storage/reservoir associated with this system.

The Township received funding through the Canada 150 Community Infrastructure Program to off-set the cost of road base improvements and paving of Whitechurch Street, new sidewalk and replacement of the existing Whitechurch Distribution Water lines with 4 inch PVC. Completion date was June 16, 2017.

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 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.

  On August 12, 2020 Heather Lovely met with ORO, Nancy Mayhew, to inspect the Whitechurch Drinking Water System (DWS). The site inspection included the treatment system located in the pump house, two production wellheads and the diesel generator.

  The Whitechurch DWS is located in the Township of Huron-Kinloss and Veolia Water Canada is the operating authority of the drinking water system on behalf of the municipality (owner).

  The inspection period for this report is from the date of the last inspection, July 24, 2019, to the date of the current inspection, August 12, 2020.

  Note: A new MDWL (087-105, Issue 4) and DWWP (087-205, Issue 3) were issued on September 11, 2020, just after the inspection review period for this report.

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.**

  During the inspection review period there 216 raw samples taken and tested for either E. coli or total coliforms. In seven (7) instances total coliforms were detected with results ranging from 1 to 6 c.f.u./100mL. The presence of E. coli was not detected in any raw water samples taken during this time.

  Since January 2010 there have been 1055 raw water samples tested for E. coli and in two (2) samples E. coli was detected with results of 1 and 2 c.f.u./100mL (0.2%). Both of these samples were collected in May 2014.

  Water Well Records (Well #1 - Well ID #1410462, Well #2 - Well ID #1410463) document that the annular space for both wells is filled with high solids bentonite. However, both wells are all very close (less than 4 m) from an agricultural field that is actively farmed. This represents a potential risk to the source water of Whitechurch DWS.

Source

For that reason, Source Protection Program staff are in frequent contact with the farming operator.

Mary Lynn MacDonald, Risk Management Official for the Ausable Bayfield Maitland Valley Source Protection Region, confirmed that there is a Risk Management Plan (RMP) in place for the farmland adjacent to the Whitechurch DWS. The RMP is for pesticide application. There is no manure being applied to the property, and there is a prohibition agreement with the farmer acknowledging that manure application is prohibited within 100 metres of the municipal well. Under the Province's Table of Drinking Water Threats, circumstances dictate that fertilizer application is not considered a significant threat to drinking water at this particular location, and therefore fertilizer is not part of the RMP.

In addition, Mary Lynn MacDonald also noted the following risks to the Whitechurch DWS:
• Septic system for the community centre - on adjacent property
• Heating oil tank (double-walled) in the basement of the community centre
• Fuel storage for the generator

It is worth noting that Operating Authority staff are aware of the threats to the Whitechurch source water and have copies of the Wellhead Protection Area (WHPA) maps from the Maitland Valley Source Protection Area – Updated Assessment Report on the wall in the pump house. The wellheads are secure and the land immediately around the wellheads is contoured to ensure surface water does not pool and potentially impact the source water.

- **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.**

  Conditions 16.2.8, 16.2.9 and 16.2.10 of Schedule B of Municipal Drinking Water Licence 087-101, Issue 3 prescribe that the Whitechurch DWS Operations and Maintenance Manual must include a well inspection and maintenance program that includes the following:
  • An inspection schedule for all wells associated with the drinking water system, including all production wells, stand-by wells, test wells and monitoring wells;
  • Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well 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.

  The Operating Authority is adhering to these conditions as specified under section L-OM-18 "Well Inspection and Maintenance Plan" of the Lucknow DWS Operations and Maintenance Manual. The Whitechurch DWS Operations and Maintenance is currently being updated to include the same procedures.

  The procedure states that raw water (quality and quantity) trend data and well pump performance will be reviewed each year and a Licenced Well Contractor will be contacted to examine the well if a deterioration is noted (>25% compared to the historic average).

  This data was included in the "Whitechurch Annual and Summary Report – For the 2019 Operating Year", that was prepared by the ORO and presented to the owner. The report states the following for both Well 1 and Well 2:

  • "The raw turbidity has remained consistent based on the 10-year historical average. There is no concern at this time."
  • "The well level has remained consistent based on the 10-year historical average. There is no concern at this time."
  • "Flows are consistent based on the 4-year historical average. There are no concerns at this time."

Capacity Assessment

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.**

  Flow measurement conditions 2.1.1 and 2.1.2 (Schedule C) of the MDWL (087-105 issue 2) state flow rate and volume of water into the treatment subsystem and into the distribution subsystem must be recorded daily. There are two separate raw water lines entering the pump house and both are equipped with a magnetic flow meter. There is no flow meter to measure volume of water sent to the distribution system as this DWS is a flow-through system.

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

  The DWWP (087-205, Issues 2) does not stipulate a maximum flow rate, however, the MDWL (087-105, Issue 3) specifies the rated capacity as 283 m3/day. There were no exceedances of the rated capacity within the inspection period with the greatest volume of water taken being 21.99 m3/day on January 11, 2020 from Well 2. The average daily water volume treated in 2019 for both wells was 17.44 m3/day or 6.2% of the rated capacity.

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.**

  Equipment was installed as per Schedule A of DWWP (087-205, Issue 2) and there is no Schedule C in the DWWP. In 2016 changes were made to the Whitechurch DWS including the addition of a continuous free chlorine residual monitor on the upstream side of the water contact main to notify of low chlorine through the auto-dialer. In addition, two Wellmate BAF 120 mixing tanks were installed connected in parallel with isolation and bypass valves.

  The pre-contact chlorine analyzer is listed in Schedule A of the renewed DWWP (087-205, Issue 3) that was issued on September 11, 2020.

- **The owner/operating authority was in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.**

  There was one Form 2 completed during the inspection review period for the replacement of 3 pressure tanks that include pressure relief valves (drain). Each tank was a Wellmate brand with volume of 450 L. Owner representative and ORO, Nancy Mayhew signed the Form 2 on January 6, 2020, with the work completed in February 2020.

- **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.**

  There were no (0) Adverse Water Quality Incidents within the inspection time frame and no indication that improperly disinfected water was distributed 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.**

  The free chlorine residual was measured each day, with consistent measurements above 0.05 mg/L. The lowest free chlorine residual value within the inspection time frame was 0.73 mg/L on July 27, 2020.

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

  Procedure No. W-OM-09 of the Whitechurch Operations and Maintenance Manual refers to the ministry's Watermain Disinfection Procedure (2015) and AWWA disinfection standards (section 14).

Treatment Processes

2.3 All parts of the drinking water system in contact with drinking water which are:
2.3.1 Added, modified, replaced, extended; or 2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:
a) Until March 11, 2021, the ministry's Watermain Disinfection Procedure, dated November 2015 and as of March 12, 2021, the ministry's Watermain Disinfection Procedure, dated August 1, 2020;
b) AWWA C652 – Standard for Disinfection of Water-Storage Facilities;
c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and
d) AWWA C654 – Standard for Disinfection of Wells.

Therefore, if watermains are installed or repaired within the Whitechurch DS system, the Ministry's updated "Watermain Disinfection Procedure, dated August 2020, must be followed after March 11, 2021. Prior to March 11, 2021, the Ministry's Watermain Disinfection procedure dated November 2015 is to be followed.

Treatment Process Monitoring

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

  The chlorine residual analyzer is installed at a point in the DWS after chlorination and the water contact main (where CT has been achieved) to ensure primary disinfection has been achieved before water enters the distribution system. There is also a pre-contact watermain chlorine analyzer to provide early warning of low chlorine events.

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

  The free chlorine residual was measured every day during the inspection period with measurements above 0.05 mg/L.

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

  The ORO provided SCADA login information (Excel file format) for each month to demonstrate how often operators reviewed SCADA data remotely. For any remote review period greater than 72 hours (n=18), the SCADA Daily Operating Log was reviewed to determine length of time between SCADA information reviews. These monthly logs are kept at the Veolia Ripley office the Huron-Kinloss SCADA information is reviewed and a Trend Report is printed to provide explicit data for each pump house and the specific period of time being reviewed.

  SCADA trend information was consistently reviewed within 72 hours. Often the SCADA data reviewed involves more than 72 hours of information since operators typically review several days for each review, i.e. there is overlap with the previous review period.

  (Note: The SCADA login history does not record when operators review information in the office. Remote SCADA login is recorded in the login history as it is intended to be a fool-proof way to prevent any unauthorized changes to the DWS.)

- **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.**

  At the time of the inspection, the free chlorine ``low`` alarm set point for the SCADA was 1.0 mg/L and the Sensaphone alarm set point was 1.0 mg/L. The SCADA "lowlow" alarm was set to 0.5 mg/L. Under maximum flow conditions a free chlorine residual of 0.47 mg/L is needed to meet primary disinfection requirements.

Treatment Process Monitoring

The pre-contact chlorine residual monitor is set to alarm at a low of 1.0 mg/L with a high alarm set point of 5.5 mg/L.

- **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.**

  Continuous monitoring of free chlorine to achieve primary disinfection is recorded at a frequency of once every 2.5 minutes, which is more frequently than legislatively required.

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

  The continuous analyzers are checked daily, calibrated weekly and cleaned monthly as per manufacturer's instructions and the pumping tubes and supply tubing is replaced annually as the Operations Manual document: W-OM-13 - Instrument Calibration Schedule.

Operations Manuals

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

  The process schematic was updated to include the pre-contact chlorine analyzer and was submitted to the MECP for inclusion in the renewed Drinking Water Work Permit (087-205, Issue 3).

- **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.**

  Conditions 16.2.8, 16.2.9 and 16.2.10 of Schedule B of Municipal Drinking Water Licence 087-101, Issue 3 prescribe that the Whitechurch DWS Operations and Maintenance Manual must include a well inspection and maintenance program that includes the following:
  • An inspection schedule for all wells associated with the drinking water system, including all production wells, stand-by wells, test wells and monitoring wells;
  • Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well 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.

  The Operating Authority is currently reformatting all files and updating and the Whitechurch DWS Operations and Maintenance Manual to include the provisions above. The Operating Authority is currently using section L-OM-18 "Well Inspection and Maintenance Plan" of the Lucknow DWS Operations and Maintenance Manual in the management of the Whitechurch DWS, which states the following:

  "Above Ground
  A quick visual inspection of the area around all the wells should be conducted at every visit. This includes making sure the area around the well casings is sanitary, that the well caps/well heads are securely in place, and ensuring that all potential contamination sources are kept away from the wells.

  Below Ground
  A formal inspection of the production wells should occur every time a pump is to be pulled from the well."
  [Summary report criteria specified.]

  In addition, the procedure stipulates remedial action plans. The raw water (quality and quantity) trend data and well

Operations Manuals

pump performance will be reviewed each year and a Licenced Well Contractor will be contacted to examine the well if a deterioration is noted (>25% compared to the historic average). This data was included in the "Whitechurch Annual and Summary Report – For the 2019 Operating Year", that was prepared by the ORO and presented to the owner.

The Operating Authority is reminded that the Whitechurch DWS Operating and Maintenance Manual, section W-OM-18 "Well Inspection and Maintenance Plan" needs to be updated to include information specific to this DWS, e.g. well names.

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.**

  The pump house is attended daily by an operator, has appropriate signage, keyed lock entry and generator is in locked fenced area immediately adjacent to the pump house.

Certification and Training

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

  The Overall Responsible Operator for the Whitechurch DWS is Nancy Mayhew with Veolia Water Canada. The ORO for each day is noted in the pump house logbooks.

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

  The Operator-In-Charge (OIC) is designated for each day and documented in the pump house logbooks.

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

  The Whitechurch DWS is a small municipal residential system with a groundwater source and is therefore considered a limited groundwater subsystem under O. Reg. 128/04. Persons operating the Whitechurch DWS should hold, or be deemed to hold, a limited groundwater subsystem operator's certificate.

  On July 15, 2020, emergency order O. Reg. 75/20 Drinking Water System and Sewage Works under the Reopening of Ontario (A Flexible Response to Covid-19) Act, 2020 was amended.

  The amended emergency order extends all drinking water certificates and wastewater licences expiring between March 23, 2020 and October 31, 2020 to the later of the following dates:
  • the end of the sixth month after the original expiry date
  • the end of the third month after July 24, 2020 (termination of Ontario's declaration of emergency, O. Reg. 50/20)

  Under this emergency order Nancy Mayhew's Water Distribution Subsystem Class 3 certification is extended to January 31, 2021 (original expiry was July 31, 2020) and Ben Nethery's Water Treatment Subsystem Class 1 certification is extended to March 31, 2021 (original expiry September 30, 2020).

  Therefore, during the inspection period, there were primarily four (4) operators who did most of the operational checks and sampling for the Whitechurch DWS. All of these operators had adequate and current certification for the inspection period, including an operator with Operator in Training (OIT) certificates for Water Distribution and

Certification and Training

Supply Subsystem and Water Treatment Subsystem who worked under the direction of a certified operator.

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

Water Quality Monitoring

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

  Distribution samples were taken each week and tested for E. coli and total coliforms with the greatest period between sampling events of 8 days on two occasions during the inspection period. All samples within the inspection period resulted in no detection of E. coli or total coliforms. Almost all samples (98%) were tested for microbial Heterotrophic Plate Count (HPC) with results ranging from 0 to 5 c.f.u./1mL (average = 0.48 c.f.u./1mL).

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

  The Operating Authority sampled most of the O. Reg 170/03 Schedule 23 inorganic parameters on October 10, 2017 with all results, excluding barium, below the reportable threshold (0.06% - 1.28% maximum allowable concentration).

  Barium is also listed under O. Reg 170/03 Schedule 23, but quarterly sampling is required under Municipal Drinking Water License (MDWL) 087-105, Issue 3. Barium results for samples taken during the inspection period are as follows:
  • 12-Aug-2019 965 ug/L 97% MAC (1 mg/L)
  • 18-Nov-2019 806 ug/L 81% MAC (1 mg/L)
  • 10-Feb-2020 856 ug/L 86% MAC (1 mg/L)
  • 11-May-2020 791 ug/L 79% MAC (1 mg/L)

  Schedule 23 parameters are next due to be sampled October 2022. Barium sampling will continue to be required quarterly under the MDWL.

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

  The Operating Authority sampled O. Reg 170/03 Schedule 24 organic parameters of treated water from the pump house on October 10, 2017, with no exceedances. All results were below the reportable threshold (0-40% maximum allowable concentration). Schedule 24 parameters are next due to be sampled October 2022.

- **All haloacetic acid water quality monitoring requirements prescribed by legislation are not being conducted within the required frequency and at the required location.**

  Quarterly samples for total Haloacetic Acids (HAAs) were collected throughout the inspection period, with sampling intervals of 48 to 98 days. On one occasion the sampling interval was not within the legislative requirements (60-120 days). The ORO noticed that on May 13, 2019 the HAA sample had been taken at the pump house rather than within the distribution system and another sample was taken on June 25, 2019, 48 days before the third quarter sample (August 12, 2019).

  Results ranged from 5.3 (MDL) to 17.2 ug/L (n=5), with a Running Annual Average (RAA) of 6.8 ug/L. The standard for Haloacetic Acids is a RAA of 80 ug/L.

  On two occasions during the inspection time frame HAA sampling was conducted at the end of the distribution system. However, HAA samples are to be collected where there is a higher likelihood of elevated HAAs, which is at the beginning of the distribution system.

Water Quality Monitoring

By November 1, 2020, the Operating Authority will provide the author of this report documentation that operators have been reminded of the sampling requirements under O. Reg. 170/03 Schedule 13-6.1(1).

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

  Quarterly samples for trihalomethanes (THMs) within the inspection period were collected in Q3 and Q4 of 2019 and Q1 of 2020, with sampling intervals of 83 to 98 days. This is within the legislative requirements (60-120 days). Results ranged from 14 to 41 ug/L (n=3), less than the Ontario Drinking Water Quality Standard (ODWQS) of 100 ug/L. All of these samples were taken at the end of the distribution system as a site that is likely to have an elevated potential for the formation of THMs.

  A review of THM sampling results demonstrated that the owner of the Whitechurch DWS is eligible for the following exemption.

  O. Reg. 170/03 Schedule 13-6 (4)
  (4) Despite subsection (1) and subject to subsections (5) and (6), if the following conditions have been met after samples have been taken and tested under subsections (1) and (2) in at least 12 consecutive calendar quarters, a drinking water system that is a small municipal residential system or a non-municipal year-round residential system may cease sampling and testing for eight consecutive calendar quarters:
  1. No single test result obtained in the previous 12 consecutive calendar quarters indicated that the concentration of trihalomethanes was greater than 0.050 milligrams per litre.
  2. The drinking water system's raw water supply is the same source of raw water supply that was used in the calendar quarters referred to in paragraph 1.
  3. No alterations that may increase levels of trihalomethanes in the drinking water system have been made to the treatment equipment used in the calendar quarters referred to in paragraph 1.
  4. The owner or operating authority of the drinking water system did not receive a written direction described in subsection (6) from the Director during the calendar quarters referred to in paragraph 1.

  THM sampling results for the 12 consecutive calendar quarters between January 2017 and December 2019, ranged from 0.015 to 0.041 mg/L. Most recently THM sampling of the Whitechurch distribution system occurred on February 10, 2020, therefore, THM sampling will be required again in the second quarter of 2022, i.e. between April 1 and July 1, 2022.

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

  Nitrates and nitrites are required to be sampled every three months. Nitrates and nitrites were sampled at the pump house with sampling events occurring between 84 and 98 days. This is within the legislative requirements (60-120 days).

  Nitrite and Nitrate had consistent results below the Minimum Detection Limit of the lab test and were recorded as 0.003 mg/L (0.03%MAC) and 0.006 mg/L (0.06%MAC) respectively during the inspection time frame, lower than the ODWQS of 10.0 mg/L.

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

  Sodium sampling is legislatively required every 60 months. Whitechurch DWS was most recently sampled for sodium on January 9, 2018, with a result of 17.9 mg/L. This sodium concentration is less than the reportable threshold of 20 mg/L. Sodium is due to be sampled again in January 2023.

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

Water Quality Monitoring

Fluoride sampling is required once every 60 months. Most recently fluoride was sampled on November 18, 2019 with a result of 1.09 mg/L, below the ODQWS of 1.5 mg/L. Fluoride sampling is due again in November 2024.

- **The owner was required to increase frequency of monitoring as a result of having exceeded half the value of an applicable ODWQS of a Schedule 13-2 or 13-4 parameter(s) and that increased monitoring was conducted.**

  Naturally occurring barium consistently yields test results greater than half of the standard prescribed in Schedule 2 of the Ontario Drinking Water Quality Standards (1 mg/L). Between January 1, 2010 and August 12, 2020 the average barium concentration was 0.917 mg/L, or 92% of MAC (n=45). Quarterly sampling of barium is required as a condition of the MDWL (087-105, issues 3 and 4).

- **All water quality monitoring requirements imposed by the MDWL or DWWP issued under Part V of the SDWA were being met.**

  Additional water quality monitoring has been conducted as per Condition 4.1 of MDWL 087-105, (Issue 3), specifically quarterly sampling of barium at the point of entrance to the distribution system. During the inspection period, quarterly samples for barium were collected results ranging from 791 to 965 ug/L. These results do not exceed the ODWQS of 1 mg/L (1000 ug/) but are 79% to 97% of the threshold limit.

  Note: Under Schedule C of the renewed MDWL (087-101, Issue 4), quarterly sampling of barium remains a condition (4.1). However, Schedule D of the MDWL provides the following regulatory relief.

  2.0 Other Regulatory Relief
  2.1 Barium
  Notwithstanding the provisions of O. Reg. 170/03 and subject to condition 2.2, if a result of sampling for barium required by the Licence, Table 5: Drinking Water Health Related Parameters exceeds the O. Reg. 169/03 Ontario Drinking Water Quality Standard for Barium the Owner is not required to make a report under section 18 of the Act.

  2.2 Annual Barium Reporting to Health Unit
  Barium sample reports shall be forwarded to the Grey Bruce Health Unit for review annually. The Owner shall take such steps as directed by the Medical Officer of Health as a result of the findings of the report.

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

  Records show that the free chlorine residual was measured for each set of microbiological samples taken during the inspection period.

Water Quality Assessment

- **Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards (O.Reg. 169/03).**

  There were no water quality results in which the measured parameter was greater than the respective ODWQS standard during the inspection period, although barium was quite close to exceedance at 96% of the MAC on August 12, 2019.

Reporting & Corrective Actions

- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and took appropriate actions.**

  The ORO provided a database export Excel file of the alarm history for each month of the inspection period. The alarm history review included examination of each alarm for the Lucknow DWS, plus the corresponding SCADA

Reporting & Corrective Actions

log-in information as well as the pump house and after-hours logbooks. If required additional SCADA information, e.g. free chlorine residual trend data, was reviewed.

Operators responded to alarms in an appropriate and timely manner.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

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

1. **All haloacetic acid water quality monitoring requirements prescribed by legislation are not being conducted within the required frequency and at the required location.**

   HAA sampling interval and location issues

   Action(s) Required:

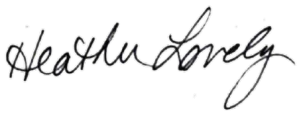
   By November 1, 2020, the Operating Authority will provide the author of this report documentation that operators have been reminded of the sampling requirements under O. Reg. 170/03 Schedule 13-6.1(1).

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.

Not Applicable

SIGNATURES

Inspected By:	Signature: (Provincial Officer)
Heather Lovely	
Reviewed & Approved By:	Signature: (Supervisor)
Mark Smith	
Review & Approval Date:	October 19, 2020

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 SUMMARY RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2020-2021)

DWS Name:	WHITECHURCH DRINKING WATER SYSTEM
DWS Number:	220008863
DWS Owner:	Huron-Kinloss, The Corporation Of The Township Of
Municipal Location:	Huron-Kinloss
Regulation:	O.REG 170/03
Category:	Small Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	August 12, 2020
Ministry Office:	Owen Sound District Office

Maximum Question Rating: 441

Inspection Module	Non-Compliance Rating
Source	0 / 14
Capacity Assessment	0 / 30
Treatment Processes	0 / 81
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	8 / 99
Reporting & Corrective Actions	0 / 21
Treatment Process Monitoring	0 / 112
TOTAL	**8 / 441**

Inspection Risk Rating	**1.81%**

FINAL INSPECTION RATING:	**98.19%**

Inspection Rating Record Generated On 19-OCT-20 (Inspection ID: 1-O7BT9).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2020-2021)

DWS Name:	WHITECHURCH DRINKING WATER SYSTEM
DWS Number:	220008863
DWS Owner:	Huron-Kinloss, The Corporation Of The Township Of
Municipal Location:	Huron-Kinloss
Regulation:	O.REG 170/03
Category:	Small Municipal Residential System
Type Of Inspection:	Focused
Inspection Date:	August 12, 2020
Ministry Office:	Owen Sound District Office

Non-compliant Question(s)	Question Rating
Water Quality Monitoring	
Are all haloacetic acid water quality monitoring requirements prescribed by legislation conducted within the required frequency and at the required location?	8
TOTAL QUESTION RATING	8

Maximum Question Rating: 441

Inspection Risk Rating	**1.81%**
FINAL INSPECTION RATING:	**98.19%**

Inspection Rating Record Generated On 19-OCT-20 (Inspection ID: 1-O7BT9).

APPENDIX B

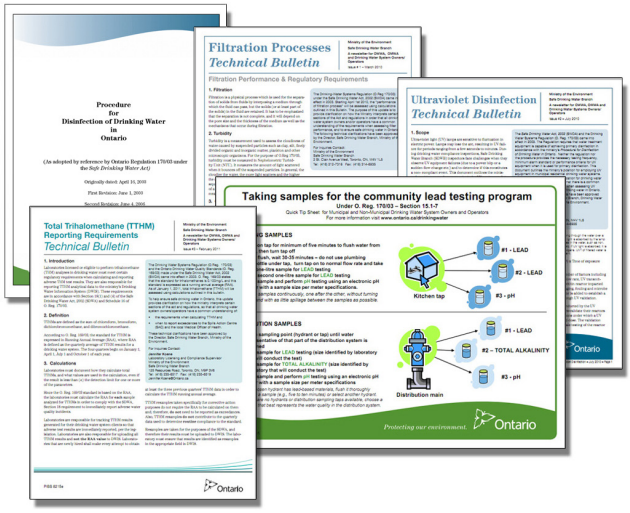
REFERENCE GUIDE FOR STAKEHOLDERS

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

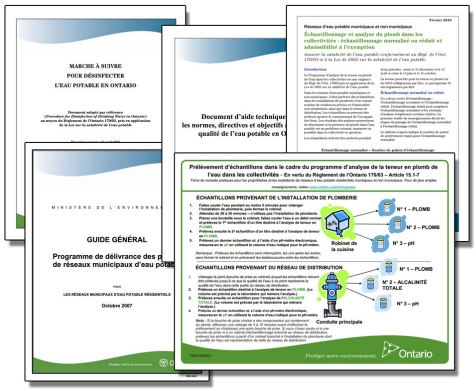
PIBS 8990b01

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