Ministry of the Environment, Conservation and Parks
Eastern Region
Cornwall Area Office
113 Amelia Street, 1st Floor
Cornwall ON K6H 3P1
Phone: 613.933.7402
or 800.860.2760

Ministère de l'Environnement, de la Protection de la nature et des Parcs
Région de l'Est
Bureau du secteur de Cornwall
113, rue Amelia, 1e étage
Cornwall (Ontario) K6H 3P1
Tél: 613 933-7402
ou 800 860-2760

March 31, 2019

Sent by Email: passaly@hawkesbury.ca

The Corporation of The Town of Hawkesbury
600 Higginson Street
Hawkesbury, Ontario
K6A 1H1

Attention: Ms. Paula Assaly, Mayor

Dear Ms. Assaly:

Re: 2018-2019 Inspection Report

The enclosed report documents findings of the inspection that was performed at the Hawkesbury drinking water system on February 14, 2019.

Two sections of the report, namely "Non-compliance with Regulatory Requirements and Actions Required" and "Summary of Recommendations and Best Practice Issues", typically cite due dates for the submission of information or plans to my attention.

Please note that "Non-compliance with Regulatory Requirements and Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, licenses, permits, orders, or instructions. Such violations could result in the issuance of mandatory abatement instruments including orders, tickets, penalties, or referrals to the ministry's Investigations and Enforcement Branch. There are no "Non-compliance with Regulatory Requirements and Actions Required" noted in this report.

"Summary of Recommendations and Best Practice Issues" convey information that the owner or operating authority should consider implementing 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 industry

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 continues to adhere to an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal/external risk experts. The Inspection Rating Record (IRR), appended to the inspection report, provides the ministry, the system owner and the local Public Health Unit with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. Please note the IRR methodology document, also appended to the inspection report, describes how the risk model was improved to better reflect any health related and administrative non-compliance issues that may be cited in our inspection reports. IRR ratings are published in the ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Charlie Primeau, Water Compliance Supervisor, at 613-521-3450 ext 239.

Section 19 of the Safe Drinking Water Act, 2002 (Standard of Care) cites a number of obligations of individuals who exercise decision-making authority over municipal drinking water systems. The ministry encourages individuals, particularly municipal councillors, to take steps to be well 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.

Thank you for the assistance afforded to me during the conduct of the compliance assessment. Should you have any questions regarding the content of the enclosed report, please do not hesitate to contact me.

Yours truly,

James Peets
Inspector / Provincial Officer, Badge No. 1289
Safe Drinking Water Branch
Cornwall Office
613-933-2729
james.peets@ontario.ca
JPP/

Enclosure

ec: Mr. Martin Perron, Environmental Service Superintendent, The Town of Hawkesbury, 815 Main Street East, Hawkesbury, ON K6A 1H1
email: mperron@hawkesbury.ca

- Mr. Rami Basha, Program Coordinator, Safe Water, Eastern Ontario Health Unit, 1000 Pitt Street, Cornwall, ON K6J 5T1
email: rbasha@eohu.ca

- Dr. Paul Roumeliotis, Medical Officer of Health, Eastern Ontario Health Unit, 1000 Pitt Street, Cornwall, ON K6J 5T1
email: proumeliotis@eohu.ca

- Ms. Sandra Mancini, Team Lead, Engineering - South Nation Conservation, P.O. Box 29, 38 Victoria Street, Finch, ON K0C1K0
email: smancini@nation.on.ca

c: File SI- PR-HA-MA-540 (2018)

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Ontario

Ministry of the Environment, Conservation and Parks

HAWKESBURY DRINKING WATER SYSTEM

Inspection Report

Site Number:	220002832
Inspection Number:	1-I8XR0
Date of Inspection:	Feb 14, 2019
Inspected By:	James Peets

OWNER INFORMATION:

Company Name:	HAWKESBURY, THE CORPORATION OF THE TOWN OF		
Street Number:	600	**Unit Identifier:**	
Street Name:	HIGGINSON St		
City:	HAWKESBURY		
Province:	ON	**Postal Code:**	K6A 1H1

CONTACT INFORMATION

Type:	Owner	**Name:**	Paula Assaly
Phone:	(613) 632-0106 x2223	**Fax:**	(613) 636-2096
Email:	passaly@hawkesbury.ca		
Title:	Mayor		

Type:	Operating Authority	**Name:**	Martin Perron
Phone:	(613) 632-3112	**Fax:**	(613) 632-5861
Email:	mperron@hawkesbury.ca		
Title:	Environmental Service Superintendent		

Type:	Health Unit	**Name:**	Rami Basha
Phone:	(613) 933-1375 x269	**Fax:**	(613) 933-7930
Email:	rbasha@eohu.ca		
Title:	Program Manager - Eastern Ontario Health Unit		

Type:	Medical Officer of Health	**Name:**	Dr. Paul Roumeliotis
Phone:	(613) 933-1375	**Fax:**	(613) 933-7930
Email:	proumeliotis@eohu.ca		
Title:	Medical Officer of Health - Eastern Ontario Health Unit		

Type:	South Nation Conservation	**Name:**	Sandra Mancini
Phone:	(613) 984-2948 x223	**Fax:**	(613) 984-2872
Email:	smancini@nation.on.ca		
Title:	Team Lead, Engineering - South Nation Conservation		

INSPECTION DETAILS:

Site Name:	HAWKESBURY DRINKING WATER SYSTEM
Site Address:	670 MAIN ST W HAWKESBURY K6A 2J3
County/District:	Hawkesbury
MECP District/Area Office:	Cornwall Area Office
Health Unit:	EASTERN ONTARIO HEALTH UNIT
Conservation Authority:	South Nation Conservation Authority
MNR Office:	Kemptville District Office
Category:	Large Municipal Residential
Site Number:	220002832
Inspection Type:	Announced

Inspection Number: 1-I8XR0
Date of Inspection: Feb 14, 2019
Date of Previous Inspection: Dec 20, 2017

COMPONENTS DESCRIPTION

Site (Name): Raw Water Inlet
Type: Source **Sub Type:** Surface
Comments:
A 1,650 mm dia. 40 m meters long intake pipe extends into the river. A 9.25 m rock filled square timber crib with three 600 mm openings covered by steel grating 6 x 25 mm bars submerged 4 to 5 metres is used as the inlet.

Site (Name): Low Lift Pumping Station
Type: Source **Sub Type:** Pumphouse
Comments:
A steel-clad brick pump station located 630 meters north of the WTP houses a concrete wet well, an inlet gate valve, two 10 mm stainless mesh screens in series and two alternating vertical turbine pumps equipped with variable frequency drives (VFDs). A 750 mm diameter pre-stressed concrete pipes conveys raw water to the treatment plant.

Site (Name): Chemical Dosing System
Type: Source **Sub Type:** Treatment Facility
Comments:
The following chemicals are used at the Hawkesbury WTP:
• Aluminium Sulphate (Alum) as a coagulant for treatment process in summer;
• Pre-Hydroxylated Aluminum Sulphate (PHAS) as a coagulant for treatment process in winter;
• Sodium Silicate to form activated silica;
• Sodium Aluminate to form activated silica;
• Activated silica as a coagulant aid for treatment process;
• Chlorine gas for zebra mussel control, primary and secondary chlorination;
• Calcium carbonate for pH adjustment;
• Polyphosphate ENV 24P10 for corrosion control in the distribution system;
• Hydrofluosilicic Acid;
• Sodium Hypochlorite 12% for re-chlorination.
Chemicals are contained in FRP, plastic and tote tanks, one ton chlorine gas cylinders and a lime slaker.

Site (Name): Treatment Process
Type: Source **Sub Type:** Treatment Facility
Comments:
A raw water magnetic flow meter is located ahead of two baffled, contact flash mixing tanks where PHAS is added. The flash mixer outlet then flow to two different process units after activated silica is added:
1. An Infilco Accelerator/Reactor Upflow Clarifier is a conventional solids contact, sludge blanket clarifier. Flocculation occurs in a central mixing cone that reaches down but does not touch the bottom of the clarifier that surrounds it. Formed sludge settles to the bottom and clarified water flows up to effluent troughs. Settling tubes help sludge to sink back to the bottom and is then drawn out of the bottom of the clarifier.
2. A Degremont Infilco Ultrapulsator is a solids contact, sludge blanket clarifier. Flashed mixed raw water enters a center mixing zone inside a sealed chamber "pulsator". By applying and releasing the vacuum, formed floc is forced in and out of perforated pipes connected to the bottom of the "pulsator". These bottom pipes permit a sludge blanket ion a clarifier which surrounds the "pulsator". The up and down motion of sludge caused by the pulsations forms a uniform sludge blanket that filters newly introduced floc and clarified water rises to the upper section the clarifier.

Pipes with perforations then accept and decant clarified water into an effluent trough. As sludge builds up, it overflows weirs into a slanted basin that periodically removes it.

Site (Name): Filtration
Type: Treated Water POE **Sub Type:** Treatment Facility
Comments:
Water from the clarifiers enters a splitter box before being distributed to three rectangular dual media (sand/anthracite) filters with underdrains. Chlorine gas may be seasonally injected pre-filters.

Site (Name): Backwash
Type: Source **Sub Type:** Treatment Facility
Comments:
Filters are backwashed by a split casing centrifugal pump and an air scour provided by a blower. Filtered water then is discharged to the clear wells.

Site (Name): Residuals Treatment System
Type: Source **Sub Type:** Treatment Facility
Comments:
Sludge from the sedimentation process drains into a concrete tank with a hopper and sludge pump discharged to the sanitary sewer. A 250 mm dia. overflow to a ditch by the plant and then to the Ottawa River.
Filter backwash water drains to two backwash tanks where the supernatant is pumped to a storm sewer using a vertical turbine pump. Settled backwash sludge is pumped to the sanitary sewer.
A 400 mm overflow from these tanks will convey supernatant to a ditch by the plant and then to the Ottawa River.

Site (Name): Reservoirs
Type: Treated Water POE **Sub Type:** Reservoir
Comments:
Two interconnected clear wells receive water from the filters effluent trough. Lime, Fluoride, polyphosphate and a chlorine gas solution are added to the filter effluent pipe before it enters the clear well. Cell No. 1 has a sump pit located in the high lift pump room which discharges to a storm sewer. Cell No. 2 has an emergency overflow sump manhole that discharges to a ditch.

Site (Name): High Lift Pumps
Type: Treated Water POE **Sub Type:** Pumphouse
Comments:
There are four split casing centrifugal pumps used to distribute treated water to the system. Three of these are identical and have a split drive able to switch to diesel power when required. The fourth pump is electric driven only.

Site (Name): Distribution System
Type: Treated Water POE **Sub Type:** Other
Comments:
The distribution system serves a population of approximately 10,154 in the Town of Hawkesbury. The system has an estimated 30 km of distribution pipe made up mostly of polyethylene, cement reinforced pipe and ductile iron pipe. They range from 100 mm to 750 mm. There are approximately 3867 water services, 375 hydrants and 350 valves connected to the Hawkesbury system.

Site (Name): Spence Avenue Booster Pump Station

Type: Treated Water POE **Sub Type:** Booster Station
Comments:
Sodium hypochlorite is injected in two VFD controlled centrifugal pumps to re-chlorinate the system.

Site (Name): Standpipe
Type: Treated Water POE **Sub Type:** Reservoir
Comments:
A 3,600 cubic meter standpipe is located on Spence Avenue near the Spence Avenue Booster Station.

Site (Name): Stand Alone Systems
Type: Treated Water POE **Sub Type:** Other
Comments:
The Hawkesbury WTP also provides water to three Stand Alone systems in the Champlain Township.

The Village of L'Orignal has a population of approx. 1950 is served by the Hawkesbury WTP using a 300 mm diameter insulated concrete pressure pipe through a metering chamber at the Hawkesbury/Champlain Border. The transmission line runs parallel to County Road No. 4. The L'Orignal Standpipe and Re-Chlorination/Booster Station with 4 centrifugal pumps located an Arcand Street receives the water. The L'Orignal distribution system consists of approx. 14.6 km of 150 to 300 mm piping with valves hydrants and services.

The Laurentian Park Distribution System receives treated water from the Hawkesbury Water Treatment Plant (WTP) distribution system. The Laurentian Park DS has approximately 1.8 kilometers of 200 mm watermain, 6 fire hydrants and serves 40 residences.

The Village of Vankleek Hill has a population of approx. 1900 and is served by the Hawkesbury Chloramination/Booster Pumping Station located at 1501 Highway 34, Township of Champlain. It uses an 8 km 400 mm watermain to feed the Vankleek Hill distribution system which consists of approx. 14.6 km of 150 to 300 mm piping, 84 fire hydrants, street valves, five pressure reducing valves (PRV) to regulate six pressure zones. The Vankleek Hill Elevated Standpipe/Booster Pumping Station is located at 39 Home Avenue, Vankleek Hill and receives the water from the 400 mm watermain.

Site (Name): Auxiliary power
Type: Other **Sub Type:** Pumping Station Generator(s)
Comments:
A 45 kW diesel gen-set supplies power to the WTP in case of power outages.
A 6 kW diesel gen-set supplies power to the Spence Avenue Booster Pump Station in case of power outages.

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

INSPECTION SUMMARY:

Introduction

- **The primary focus of this inspection is to confirm compliance with Ministry of the Environment, Conservation and Parks (MECP) legislation as well as evaluating conformance with ministry drinking water policies and guidelines during the inspection period. The ministry utilizes a comprehensive, multi-barrier approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as management practices.**

  This drinking water system is subject to the legislative requirements of the Safe Drinking Water Act, 2002 (SDWA) and regulations made therein, including Ontario Regulation 170/03, "Drinking Water Systems" (O.Reg. 170/03). This inspection has been conducted pursuant to Section 81 of the SDWA.

  This inspection report does not suggest that all applicable legislation and regulations were evaluated. It remains the responsibility of the owner to ensure compliance with all applicable legislative and regulatory requirements.

Source

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

  Turbidity, temperature and colour are monitored.

Permit To Take Water

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

  The current PTTW is Number 6624-9KBRAJ.

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.**

  The flowmeter for treated water leaving the water treatment plant failed in the flooding event that occurred December 10, 2017. A temporary flowmeter was installed in January 2018. A successful bid and contract to purchase and install a new flowmeter was awarded, with final installation to be completed by the end of the year.

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

  The final treated water pump has been calibrated, but displays inaccuracies and is influenced by the selection of highlift pump.

- **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.**

- **Appropriate records of flows and any capacity exceedances were made in accordance with the Municipal Drinking Water Licence issued under Part V of the SDWA.**

Treatment Processes

- **The owner had ensured that all equipment was installed in accordance with Schedule A and Schedule C of the Drinking Water Works Permit.**

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

- **The 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.**

- **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.**

  Monitoring of the chemicals used to assist filtration is performed by the SCADA system. A review of the data for the inspection period indicates that all chemical feeds were continuously operated during production. Filtration provides further log removal credits for giardia and viruses. A review of the monthly data for the inspection period indicates that the filters consistently provided water that stayed below 0.3 NTU 95% of the time. Gaseous chlorine mixed with water and injected at the clear well inlet provides primary disinfection. Data indicates that chlorine gas was dosed into the system consistently while the plant was producing potable water. Continuous free chlorine analyzers ensure CT for primary disinfection is achieved. A continuous free chlorine analyzer between the clear wells is configured to alarm if the free chlorine residual drops, permitting the operators to react proactively to a chlorine feed failure. A free chlorine analyzer at the point where treated water enters the drinking water distribution system monitors the primary residual. The SCADA system monitors and calculates the real time CT achieved and compares it with the CT required. Alarms for process monitoring, chemical feed flows, reservoir contents, free chlorine levels, and flow rates inform the operators if CT levels do not meet at a minimum 2-log (99%) removal or inactivation of Cryptosporidium oocytes, 3-log (99.9%) removal or inactivation of Giardia cysts and 4-log (99.99%) removal or inactivation of viruses prior to the first consumer.
  Turbidity monitoring of the raw water, clarifier and filter effluents and treated water is interlocked with the WTP SCADA system to ensure optimal process control during the WTP's operation. A free chlorine residual analyzer in the distribution system, located at the water tower, monitors the levels to ensure proper secondary disinfection.

- **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 owner had evidence indicating that all chemicals and materials that come in contact with water within the drinking water system met the AWWA and ANSI standards in accordance with the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

- **Up-to-date plans for the drinking-water system were kept in a place, or made available in such a manner, that they could be readily viewed by all persons responsible for all or part of the operation of the drinking water system in accordance with the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

  All paper copies are available at the plant. Also, all electronics versions are available on all drinking water system laptop computers.

Treatment Process Monitoring

- **Primary disinfection chlorine monitoring was conducted at a location approved by Municipal Drinking**

Treatment Process Monitoring

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.

Primary disinfection chlorine is monitored just after the clearwell and before leaving the plant.

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**
- **Continuous monitoring of each filter effluent line was being performed for turbidity.**
- **The secondary disinfectant residual was measured as required for the distribution system.**

  The secondary disinfectant chlorine residual is measured at the Hawkesbury water tower.
- **Operators were examining continuous monitoring test results and they were examining the results within 72 hours of the test.**

  Operators were examining continuous monitoring test results 7 days per week.
- **Samples for chlorine residual analysis were tested using an acceptable portable device.**

  The Hach portable chlorine residual testers are calibrated yearly by Cleartech.
- **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.**
- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**
- **All continuous analysers were calibrated, maintained, and operated, in accordance with the manufacturer's instructions or the regulation.**

  The continuous chlorine and fluoride analysers were calibrated yearly by Cleartech.

Process Wastewater

- **The process wastewater and residual solids/sludges were treated, handled and disposed of in accordance with the design requirements approved under the Drinking Water Works Permit and the Municipal Drinking Water Licence.**

  The process wastewater and residual solids/sludges are directed to the sanitary collection system. However, samples are still collected and analysed as required by the municipal drinking water licence, in the event of an overflow from the WTP wastewater collection reservoir.
- **The process wastewater discharge monitoring program and discharge quality complied with requirements established in the Municipal Drinking Water Licence Issued under Part V of the SDWA.**

  The process wastewater and residual solids/sludges are directed to the sanitary collection system. However, samples are still collected and analysed as required by the municipal drinking water licence, in the event of an overflow from the WTP wastewater collection reservoir.

Distribution System

- **The owner had up-to-date documents describing the distribution components as required.**
- **There is a backflow prevention program, policy and/or bylaw in place.**

  The Town of Hawkesbury has BY-LAW N° 59-2012: A By-law on Backflow Prevention.
- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

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

  As per the Watermain Disinfection Procedure.
- **The owner had implemented a program for the flushing of watermains as per industry standards.**

  The municipal operators use unidirectional flushing with guidance from a unique proprietary software.
- **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**
- **A program was in place for inspecting and exercising valves.**

  This is conducted during system flushing.
- **There was a program in place for inspecting and operating hydrants.**

  This is conducted during system flushing, along with yearly capacity testing.
- **There was a by-law or policy in place limiting access to hydrants.**

  The Town of Hawkesbury has BY-LAW N° 32-2006: A by-law to regulate the use of water for lawn and garden watering and for car wash events in the Corporation of the Town of Hawkesbury.
  Article 5 states: "No person shall use a hydrant without first obtaining written authorization from the Director of Technical Services."
- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

  Pressures in the distribution system are measured at the plant and at the Tower.
- **The donor had provided an Annual Report to the receiver stand alone distribution system(s) connected to this system.**

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**
- **The operations and maintenance manuals contained plans, drawings and process descriptions sufficient for the safe and efficient operation of the system.**

Operations Manuals

- **The operations and maintenance manuals met the requirements of the Drinking Water Works Permit and Municipal Drinking Water Licence issued under Part V of the SDWA.**

Logbooks

- **Logbooks were properly maintained and contained the required information.**
- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**
- **For every required operational test and every required sample, a record was made of the date, time, location, name of the person conducting the test and result of the test.**
- **The operator-in-charge ensured that records were maintained of all adjustments made to the processes within his or her responsibility.**
- **Logs or other record keeping mechanisms were available for at least five (5) years.**

Contingency/Emergency Planning

- **Spill containment was not provided for process chemicals and/or standby power generator fuel.**

  The exterior diesel storage tank is double-walled with a concrete containment structure. The indoor diesel storage tank is double-walled. Process chemicals have spill containment with the exception of sodium hydroxide and zinc.
- **Clean-up equipment and materials were in place for the clean up of spills.**
- **Standby power generators were tested under normal load conditions.**

  Standby power generators were tested under normal load conditions on a weekly basis.

Security

- **All storage facilities were completely covered and secure.**
- **Air vents and overflows associated with reservoirs and elevated storage structures were equipped with screens.**
- **The owner had provided security measures to protect components of the drinking water system.**

  Fencing prevents access to the raw water pumping station (PS) and the Spence Avenue Booster PS/Elevated storage tower. A motion detector is also installed at the raw water PS. The water treatment plant is not fenced; however all buildings including the former have monitored entry alarms. The WTP has newly installed video surveillance cameras. The public must request entry through an intercom at the WTP.

Consumer Relations

- **The owner and/or operating authority undertook efforts to promote water conservation and reduce water losses in their system.**

Consumer Relations

The Town of Hawkesbury has BY-LAW N° 32-2006: A by-law to regulate the use of water for lawn and garden watering and for car wash events in the Corporation of the Town of Hawkesbury. The operators also have a leak detection program in place, and report the lowest water losses in 10 years.

Certification and Training

- **The overall responsible operator had been designated for each subsystem.**
- **Operators in charge had been designated for all subsystems which comprised the drinking-water system.**

  All operators have been designated as operator in charge.
- **All activities that were undertaken by uncertified persons in the DW subsystems were overseen by persons having the prescribed qualifications.**
- **All operators possessed the required certification.**
- **Only certified operators made adjustments to the treatment equipment.**
- **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

Water Quality Monitoring

- **All microbiological water quality monitoring requirements for raw water samples were being met.**
- **All microbiological water quality monitoring requirements for distribution samples were being met.**
- **All microbiological water quality monitoring requirements for treated samples were being met.**
- **All inorganic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**
- **All organic water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**
- **All haloacetic acid water quality monitoring requirements prescribed by legislation are being conducted within the required frequency and at the required location.**
- **All trihalomethane water quality monitoring requirements prescribed by legislation were conducted within the required frequency and at the required location.**
- **All nitrate/nitrite water quality monitoring requirements prescribed by legislation were conducted within the required frequency for the DWS.**
- **All sodium water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

Water Quality Monitoring

- **The required daily samples were being taken at the end of the fluoridation process.**
- **The owner ensured that water samples were taken at the prescribed location.**
- **All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking Water Works Permit were being met.**

  Additional requirement of a maximum concentration limit of 25 mg/L of Total Suspended Solids (TSS) in the discharge as a condition in the residue management plan of the municipal drinking water licence.
- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**
- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**
- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**
- **The owner indicated that the required records are kept and will be kept for the required time period.**

Water Quality Assessment

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

Reporting & Corrective Actions

- **All reporting requirements for lead sampling were complied with as per schedule 15.1-9 of O. Reg. 170/03.**
- **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 Annual Report containing the required information was prepared by February 28th of the following year.**
- **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**
- **All changes to the system registration information were provided within ten (10) days of the change.**
- **The owner had evidence that all required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period.**

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. **Spill containment was not provided for process chemicals and/or standby power generator fuel.**
   The exterior diesel storage tank is double-walled with a concrete containment structure. The indoor diesel storage tank is double-walled. Process chemicals have spill containment with the exception of sodium hydroxide and zinc.

   Recommendation:

   The municipality should install spill containment for all process chemicals.

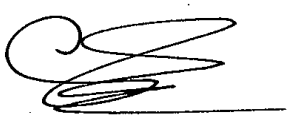
SIGNATURES

Inspected By: James Peets

Signature: (Provincial Officer)

Reviewed & Approved By: Charlie Primeau

Signature: (Supervisor)



Review & Approval Date: 31/03/2019

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

MUNICIPAL DRINKING WATER LICENCE,

DRINKING WATER WORKS PERMIT, AND

CERTIFICATES OF APPROVAL

Ontario

MUNICIPAL DRINKING WATER LICENCE

Licence Number: 177-101
Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this municipal drinking water licence is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Town of Hawkesbury

600 Higginson Street
Hawkesbury ON K6A 1H1

For the following municipal residential drinking water system:

Hawkesbury Drinking Water System

This municipal drinking water licence includes the following:

Schedule	Description
Schedule A	Drinking Water System Information
Schedule B	General Conditions
Schedule C	System-Specific Conditions
Schedule D	Conditions for Relief from Regulatory Requirements
Schedule E	Pathogen Log Removal/Inactivation Credits

DATED at TORONTO this 12th day of February, 2016

Signature

Indra R. Prashad, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Information

System Owner	**The Corporation of the Town of Hawkesbury**
Licence Number	**177-101**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule A Issue Date	**February 12th, 2016**

The following information is applicable to the above drinking water system and forms part of this licence:

Licence

Licence Issue Date	2016-02-12
Licence Expiry Date	2021-02-10
Application for Licence Renewal Date	2020-08-11

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Hawkesbury Drinking Water System	177-201	February 8, 2016

Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Ottawa River	6624-9KBRAJ	May 22, 2014

Financial Plans

The Financial Plan Number for the Financial Plan required to be developed for this drinking water system in accordance with O. Reg. 453/07 shall be:	177-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	177-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan No.	Operating Authority No.
The Town of Hawkesbury Drinking Water System	The Town of Hawkesbury	177-401	177-OA1

Schedule B: General Conditions

System Owner	**The Corporation of the Town of Hawkesbury**
Licence Number	**177-101**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule B Issue Date	**February 12th, 2016**

1.0 Definitions

1.1 Words and phrases not defined in this licence and the associated drinking water works permit shall be given the same meaning as those set out in the SDWA and any regulations made in accordance with that act, unless the context requires otherwise.

1.2 In this licence and the associated drinking water works permit:

"**adverse effect**", "**contaminant**" and "**natural environment**" shall have the same meanings as in the EPA;

"**alteration**" may include the following in respect of this drinking water system:

(a) An addition to the system,
(b) A modification of the system,
(c) A replacement of part of the system, and
(d) An extension of the system;

"**compound of concern**" means a contaminant that, based on generally available information, may be emitted from a component of the drinking water system to the atmosphere in a quantity that is significant either in comparison to the relevant point of impingement limit or if a point of impingement limit is not available for the compound, then based on generally available toxicological information, the compound has the potential to cause an adverse effect as defined by the EPA at a point of impingement;

"**Director**" means a Director appointed pursuant to section 6 of the SDWA for the purposes of Part V of the SDWA;

"**drinking water works permit**" means the drinking water works permit for the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"emission summary table" means the table that was prepared by a Professional Engineer in accordance with O. Reg. 419/05 and the procedure document listing the appropriate point of impingement concentrations of each compound of concern emitted from a component of the drinking water system and providing comparison to the corresponding point of impingement limit;

"EPA" means the *Environmental Protection Act*, R.S.O. 1990, c. E.19;

"**financial plan**" means the financial plan required by O. Reg. 453/07;

"**licence**" means this municipal drinking water licence for the municipal drinking water system identified in Schedule A of this licence;

"**operational plan**" means an operational plan developed in accordance with the Director's Directions – Minimum Requirements for Operational Plans made under the authority of subsection 15(1) of the SDWA;

"**owner**" means the owner of the drinking water system as identified in Schedule A of this licence;

"**permit to take water**" means the permit to take water that is associated with the taking of water for purposes of the operation of the drinking water system, as identified in Schedule A of this licence and as amended from time to time;

"**point of impingement**" means any point in the natural environment that is not on the same property as the source of the contaminant and as defined by section 2 of O. Reg. 419/05;

"**point of impingement limit**" means the appropriate standard from Schedule 1, 2 or 3 of O. Reg. 419/05 and if a standard is not provided for a compound of concern, the appropriate criteria listed in the Ministry of the Environment and Climate Change publication titled "Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)", dated February 2008, as amended;

"**procedure document**" means the Ministry of the Environment and Climate Change procedure titled "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" dated July 2005, as amended;

"**Professional Engineer**" means a Professional Engineer who has been licenced to practice in the Province of Ontario;

"**provincial officer**" means a provincial officer appointed pursuant to section 8 of the SDWA;

"**publication NPC-300**" means the Ministry of the Environment and Climate Change publication titled "Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning" dated August 2013, as amended;

"**SDWA**" means the *Safe Drinking Water* Act, 2002, S.O. 2002, c. 32;

"**sensitive populations**" means any one or a combination of the following locations where the health effects of nitrogen oxides emissions from emergency generators shall be considered using the point of impingement limit instead of the Ministry of the Environment and Climate Change screening level for emergency generators:

(a) health care units (e.g., hospitals and nursing homes),
(b) primary/junior public schools,
(c) day-care facilities, and
(d) playgrounds;

"**subsystem**" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts);

"**surface water**" means water bodies (lakes, wetlands, ponds - including dug-outs), water courses (rivers, streams, water-filled drainage ditches), infiltration trenches, and areas of seasonal wetlands;

2.0 Applicability

2.1 In addition to any other requirements, the drinking water system identified above shall be established, altered and operated in accordance with the conditions of the drinking water works permit and this licence.

3.0 Licence Expiry

3.1 This licence expires on the date identified as the licence expiry date in Schedule A of this licence.

4.0 Licence Renewal

4.1 Any application to renew this licence shall be made on or before the date identified as the application for licence renewal date set out in Schedule A of this licence.

5.0 Compliance

5.1 The owner and operating authority shall ensure that any person authorized to carry out work on or to operate any aspect of the drinking water system has been informed of the SDWA, all applicable regulations made in accordance with that act, the drinking water works permit and this licence and shall take all reasonable measures to ensure any such person complies with the same.

6.0 Licence and Drinking Water Works Permit Availability

6.1 At least one copy of this licence and the drinking water works permit shall be stored in such a manner that they are readily viewable by all persons involved in the operation of the drinking water system.

7.0 Permit to Take Water and Drinking Water Works Permit

7.1 A permit to take water identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

7.2 A drinking water works permit identified in Schedule A of this licence is the applicable permit on the date identified as the Schedule A Issue Date.

8.0 Financial Plan

8.1 For every financial plan prepared in accordance with subsections 2(1) and 3(1) of O. Reg. 453/07, the owner of the drinking water system shall:

8.1.1 Ensure that the financial plan contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence; and

8.1.2 Submit a copy of the financial plan to the Ministry of Municipal Affairs and Housing within three (3) months of receiving approval by a resolution of municipal council or the governing body of the owner.

9.0 Interpretation

9.1 Where there is a conflict between the provisions of this licence and any other document, the following hierarchy shall be used to determine the provision that takes precedence:

9.1.1 The SDWA*;*

9.1.2 A condition imposed in this licence that explicitly overrides a prescribed regulatory requirement;

9.1.3 A condition imposed in the drinking water works permit that explicitly overrides a prescribed regulatory requirement;

9.1.4 Any regulation made under the SDWA;

9.1.5 Any provision of this licence that does not explicitly override a prescribed regulatory requirement;

9.1.6 Any provision of the drinking water works permit that does not explicitly override a prescribed regulatory requirement;

9.1.7 Any application documents listed in this licence, or the drinking water works permit from the most recent to the earliest; and

9.1.8 All other documents listed in this licence, or the drinking water works permit from the most recent to the earliest.

9.2 If any requirement of this licence or the drinking water works permit is found to be invalid by a court of competent jurisdiction, the remaining requirements of this licence and the drinking water works permit shall continue to apply.

9.3 The issuance of and compliance with the conditions of this licence and the drinking water works permit does not:

9.3.1 Relieve any person of any obligation to comply with any provision of any applicable statute, regulation or other legal requirement, including the *Environmental Assessment Act*, R.S.O. 1990, c. E.18; and

9.3.2 Limit in any way the authority of the appointed Directors and provincial officers of the Ministry of the Environment and Climate Change to require certain steps be taken or to require the owner to furnish any further information related to compliance with the conditions of this licence or the drinking water works permit.

9.4 For greater certainty, nothing in this licence or the drinking water works permit shall be read to provide relief from regulatory requirements in accordance with section 46 of the SDWA, except as expressly provided in the licence or the drinking water works permit.

10.0 Adverse Effects

10.1 Nothing in this licence or the drinking water works permit shall be read as to permit:

10.1.1 The discharge of a contaminant into the natural environment that causes or is likely to cause an adverse effect; or

10.1.2 The discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters.

10.2 All reasonable steps shall be taken to minimize and ameliorate any adverse effect on the natural environment or impairment of the quality of water of any waters resulting from the operation of the drinking water system including such accelerated or additional monitoring as may be necessary to determine the nature and extent of the effect or impairment.

10.3 Fulfillment of one or more conditions imposed by this licence or the drinking water works permit does not eliminate the requirement to fulfill any other condition of this licence or the drinking water works permit.

11.0 Change of Owner or Operating Authority

11.1 This licence is not transferable without the prior written consent of the Director.

11.2 The owner shall notify the Director in writing at least 30 days prior to a change of any operating authority identified in Schedule A of this licence.

11.2.1 Where the change of operating authority is the result of an emergency situation, the owner shall notify the Director in writing of the change as soon as practicable.

12.0 Information to be Provided

12.1 Any information requested by a Director or a provincial officer concerning the drinking water system and its operation, including but not limited to any records required to be kept by this licence or the drinking water works permit, shall be provided upon request.

13.0 Records Retention

13.1 Except as otherwise required in this licence or the drinking water works permit, any records required by or created in accordance with this licence or the drinking water works permit, other than the records specifically referenced in section 12 of O. Reg. 170/03, shall be retained for at least 5 years and made available for inspection by a provincial officer, upon request.

14.0 Chemicals and Materials

14.1 All chemicals and materials used in the alteration or operation of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372.

14.1.1 In the event that the standards are updated, the owner may request authorization from the Director to use any on hand chemicals and materials that previously met the applicable standards.

14.1.2 The requirement for the owner to comply with NSF/372 shall come into force no later than February 12, 2018.

14.2 The most current chemical and material product registration documentation from a testing institution accredited by either the Standards Council of Canada or by the American National Standards Institution ("ANSI") shall be available at all times for each chemical and material used in the operation of the drinking water system that comes into contact with water within the system.

14.3 Conditions 14.1 and 14.2 do not apply in the case of the following:

14.3.1 Water pipe and pipe fittings meeting AWWA specifications made from ductile iron, cast iron, PVC, fibre and/or steel wire reinforced cement pipe or high density polyethylene (HDPE);

14.3.2 Articles made from stainless steel, glass, HDPE or Teflon®;

14.3.3 Cement mortar for watermain lining and for water contacting surfaces of concrete structures made from washed aggregates and Portland cement;

14.3.4 Gaskets that are made from NSF approved materials;

14.3.5 Food grade oils and lubricants, food grade anti-freeze, and other food grade chemicals and materials that are compatible for drinking water use; or

14.3.6 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment and Climate Change is satisfied that the chemical or material is acceptable for use within the drinking water system and the chemical or material is only used as permitted by the documentation.

15.0 Drawings

15.1 All drawings and diagrams in the possession of the owner that show any treatment subsystem as constructed shall be retained by the owner unless the drawings and diagrams are replaced by a revised or updated version showing the subsystem as constructed subsequent to the alteration.

15.2 Any alteration to any treatment subsystem shall be incorporated into process flow diagrams, process and instrumentation diagrams, and record drawings and diagrams within one year of the substantial completion of the alteration.

15.3 Process flow diagrams and process and instrumentation diagrams for any treatment subsystem shall be kept in a place, or made available in such a manner, that they may be readily viewed by all persons responsible for all or part of the operation of the drinking water system.

16.0 Operations and Maintenance Manual

16.1 An up-to-date operations and maintenance manual or manuals shall be maintained and applicable parts of the manual or manuals shall be made available for reference by all persons responsible for all or part of the operation or maintenance of the drinking water system.

16.2 The operations and maintenance manual or manuals, shall include at a minimum:

16.2.1 The requirements of this licence and associated procedures;

16.2.2 The requirements of the drinking water works permit for the drinking water system;

16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable:

a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and

b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;

16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;

16.2.5 Procedures for the operation and maintenance of monitoring equipment;

16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;

16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;

16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

16.4 The requirement for the owner to comply with condition 16.2.3 shall come into force on August 12, 2016.

Schedule C: System-Specific Conditions

System Owner	**The Corporation of the Town of Hawkesbury**
Licence Number	**177-101**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule C Issue Date	**February 12th, 2016**

1.0 System Performance

Rated Capacity

1.1 For each treatment subsystem listed in column 1 of Table 1, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the value identified as the rated capacity in column 2 of the same row.

Table 1: Rated Capacity

Column 1 Treatment Subsystem Name	Column 2 Rated Capacity (m^3/day)
Hawkesbury Water Treatment Plant	27,275

Maximum Flow Rates

1.2 For each treatment subsystem listed in column 1 of Table 2, the maximum flow rate of water that flows into a treatment subsystem component listed in column 2 shall not exceed the value listed in column 3 of the same row.

Table 2: Maximum Flow Rates

Column 1 Treatment Subsystem Name	Column 2 Treatment Subsystem Component	Column 3 Maximum Flow Rate (L/s)
Not Applicable	Not Applicable	Not Applicable

1.3 Despite conditions 1.1 and 1.2, a treatment subsystem may be operated temporarily at a maximum daily volume and/or a maximum flow rate above the values set out in column 2 of Table 1 and column 3 of Table 2 respectively for the purposes of fighting a large fire or for the maintenance of the drinking water system.

1.4 Condition 1.3 does not authorize the discharge into the distribution system of any water that does not meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Residue Management

1.5 In respect of an effluent discharged into the natural environment from a treatment subsystem or treatment subsystem component listed in column 1 of Table 3:

1.5.1 The annual average concentration of a test parameter identified in column 2 shall not exceed the value in column 3 of the same row; and

1.5.2 The maximum concentration of a test parameter identified in column 2 shall not exceed the value in column 4 of the same row.

Table 3: Residue Management

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Annual Average Concentration (mg/L)	Column 4 Maximum Concentration (mg/L)
Hawkesbury Water Treatment Plant	Total Suspended Solids	25 mg/L	Not Applicable

UV Disinfection Equipment Performance

1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, and while directing water to the distribution system:

1.6.1 The UV disinfection equipment shall be operated such that a continuous pass-through UV dose is maintained throughout the life time of the UV lamp(s) that is at least the minimum continuous pass-through UV dose set out in column 2 of the same row at the maximum design flow rate for the equipment;

1.6.2 In addition to any other sampling, analysis and recording that may be required, the ultraviolet light disinfection equipment shall test for the test parameters set out in column 4 of the same row at a testing frequency of once every five (5) minutes or less and record the test data at a recording frequency of once every four (4) hours or less;

1.6.3 If there is a UV disinfection equipment alarm, the test parameters set out in column 4 of the same row shall be recorded at a recording frequency of once every five minutes or less until the alarm condition has been corrected;

1.6.4 A monthly summary report shall be prepared at the end of each calendar month which sets out the time, date and duration of each UV equipment alarm, the volume of water treated during each alarm period and the actions taken by the operating authority to correct the alarm situation;

Table 4: UV Disinfection Equipment			
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	**Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm^2)**	**Column 3 Control Strategy**	**Column 4 Test Parameter**
Not Applicable	Not Applicable	Not Applicable	Not Applicable

2.0 Flow Measurement and Recording Requirements

2.1 For each treatment subsystem identified in column 1 of Table 1 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for:

2.1.1 The flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system.

2.1.2 The flow rate and daily volume of water that flows into the treatment subsystem.

2.2 For each treatment subsystem component identified in column 2 of Table 2 and in addition to any other flow measurement and recording that may be required, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of water that flows into the treatment subsystem component.

2.3 Where a rated capacity from Table 1 or a maximum flow rate from Table 2 is exceeded, the following shall be recorded:

2.3.1 The difference between the measured amount and the applicable rated capacity or maximum flow rate specified in Table 1 or Table 2;

2.3.2 The time and date of the measurement;

2.3.3 The reason for the exceedance; and

2.3.4 The duration of time that lapses between the applicable rated capacity or maximum flow rate first being exceeded and the next measurement where the applicable rated capacity or maximum flow rate is no longer exceeded.

3.0 Calibration of Flow Measuring Devices

3.1 All flow measuring devices that are required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change, shall be checked and calibrated in accordance with the manufacturer's instructions.

3.2 If the manufacturer's instructions do not indicate how often to check and calibrate a flow measuring device, the equipment shall be checked and calibrated at least once every 12 months during which the drinking water system is in operation.

3.2.1 For greater certainty, if condition 3.2 applies, the equipment shall be checked and calibrated not more than 30 days after the first anniversary of the day the equipment was checked and calibrated in the previous 12-month period.

4.0 Additional Sampling, Testing and Monitoring

Drinking Water Health and Non-Health Related Parameters

4.1 For each treatment subsystem or treatment subsystem component identified in column 1 of Tables 5 and 6 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 at the sampling frequency listed in column 3 and at the monitoring location listed in column 4 of the same row.

Table 5: Drinking Water Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Table 6: Drinking Water Non-Health Related Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sampling Frequency	Column 4 Monitoring Location
Not Applicable	Not Applicable	Not Applicable	Not Applicable

Environmental Discharge Parameters

4.2 For each treatment subsystem or treatment subsystem component identified in column 1 of Table 7 and in addition to any other sampling, testing and monitoring that may be required, sampling, testing and monitoring shall be undertaken for a test parameter listed in column 2 using the sample type identified in column 3 at the sampling frequency listed in column 4 and at the monitoring location listed in column 5 of the same row.

4.3 For the purposes of Table 7:

4.3.1 Manual Composite means the mean of at least three grab samples taken during a discharge event, with one sample being taken immediately following the commencement of the discharge event, one sample being taken approximately at the mid-point of the discharge event and one sample being taken immediately before the end of the discharge event; and

4.3.2 Automated Composite means samples must be taken during a discharge event by an automated sampler at a minimum sampling frequency of once per hour.

4.4 Any sampling, testing and monitoring for the test parameter Total Suspended Solids shall be performed in accordance with the requirements set out in the publication "Standard Methods for the Examination of Water and Wastewater", 21st Edition, 2005, or as amended from time to time by more recently published editions.

Table 7: Environmental Discharge Parameters

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Test Parameter	Column 3 Sample Type	Column 4 Sampling Frequency	Column 5 Monitoring Location
Hawkesbury Water Treatment Plant	Total Suspended Solids	Composite	Discharge Event	Point of Discharge to the Ottawa River

4.5 Pursuant to Condition 10 of Schedule B of this licence, the owner may undertake the following environmental discharges associated with the maintenance and/or repair of the drinking water system:

4.5.1 The discharge of potable water from a watermain to a road or storm sewer;

4.5.2 The discharge of potable water from a water storage facility or pumping station:

4.5.2.1 To a road or storm sewer; or

4.5.2.2 To a watercourse where the discharge has been dechlorinated and if necessary, sediment and erosion control measures have been implemented.

4.5.3 The discharge of dechlorinated non-potable water from a watermain, water storage facility or pumping station to a road or storm sewer;

4.5.4 The discharge of raw water from a groundwater well to the environment where if necessary, sediment and erosion control measures have been implemented; and

4.5.5 The discharge of raw water, potable water or non-potable water from a treatment subsystem to the environment where if necessary, the discharge has been dechlorinated and sediment and erosion control measures have been implemented.

5.0 Studies Required

5.1 Not Applicable

6.0 Source Protection

6.1 Not Applicable

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	**The Corporation of the Town of Hawkesbury**
Licence Number	**177-101**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule D Issue Date	**February 12th, 2016**

1.0 Lead Regulatory Relief

1.1 Any relief from regulatory requirements previously authorized by the Director in respect of the drinking water system under section 38 of the SDWA in relation to the sampling, testing or monitoring requirements contained in Schedule 15.1 of O. Reg. 170/03 shall remain in force until such time as Schedule 15.1 of O. Reg. 170/03 is amended after June 1, 2009.

2.0 Other Regulatory Relief

2.1 Not Applicable.

Schedule E: Pathogen Log Removal/Inactivation Credits

System Owner	**The Corporation of the Town of Hawkesbury**
Licence Number	**177-101**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule E Issue Date	**February 12th, 2016**

1.0 Primary Disinfection Pathogen Log Removal/Inactivation Credits

Hawkesbury Water Treatment Plant

Ottawa River [SURFACE WATER]

Minimum Log Removal/ Inactivation Required	Cryptosporidium Oocysts	Giardia Cysts [a]	Viruses [b]
Hawkesbury Water Treatment Plant	2	3	4

[a] At least 0.5 log inactivation of Giardia shall be achieved by the disinfection portion of the overall water treatment process.
[b] At least 2 log inactivation of viruses shall be achieved by disinfection.

Log Removal/Inactivation Credits Assigned [c]	Cryptosporidium Oocysts	Giardia Cysts	Viruses
Conventional Filtration	2	2.5	2
Chlorination [CT: Clearwells]	-	0.5+	2+

[c] Log removal/inactivation credit assignment is based on each treatment process being fully operational and the applicable log removal/inactivation credit assignment criteria being met.

Treatment Component	Log Removal/Inactivation Credit Assignment Criteria
Conventional Filtration	1. A chemical coagulant shall be used at all times when the treatment plant is in operation; 2. Chemical dosages shall be monitored and adjusted in response to variations in raw water quality; 3. Effective backwash procedures shall be maintained including filter-to-waste or an equivalent procedure during filter ripening to ensure that effluent turbidity requirements are met at all times; 4. Filtrate turbidity shall be continuously monitored from each filter; and 5. Performance criterion for filtered water turbidity of less than or equal to 0.3 NTU in 95% of the measurements each month shall be met for each filter.
Chlorination	1. Sampling and testing for free chlorine residual shall be carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario; and 2. At all times, CT provided shall be greater than or equal to the CT required to achieve the log removal credits assigned.
Primary Disinfection Notes	

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 177-201
Issue Number: 2

Pursuant to the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32, and the regulations made thereunder and subject to the limitations thereof, this drinking water works permit is issued under Part V of the *Safe Drinking Water Act*, 2002, S.O. 2002, c. 32 to:

The Corporation of the Town of Hawkesbury

600 Higginson Street
Hawkesbury ON K6A 1H1

For the following municipal residential drinking water system:

Hawkesbury Drinking Water System

This drinking water works permit includes the following:

Schedule	Description
Schedule A	Drinking Water System Description
Schedule B	General
Schedule C	All documents issued as Schedule C to this drinking water works permit which authorize alterations to the drinking water system
Schedule D	Process Flow Diagrams

DATED at TORONTO this 8th day of February, 2016

Signature

Aziz Ahmed, P.Eng.
Director
Part V, *Safe Drinking Water Act*, 2002

Schedule A: Drinking Water System Description

System Owner	**The Corporation of the Town of Hawkesbury**
Permit Number	**177-201**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule A Issue Date	**February 8th, 2016**

1.0 System Description

1.1 The following is a summary description of the works comprising the above drinking water system:

Overview

The **Hawkesbury Drinking Water System** consists of 1 drinking water treatment plant, a standpipe, booster pumping station and rechlorination system, and a distribution system.

Hawkesbury Water Treatment Plant

Name	Town of Hawkesbury Water Treatment Plant
Street Address	670 Main Street West, Hawkesbury Town, United Counties of Prescott and Russell, Ontario
UTM Coordinates	NAD83: UTM Zone 18: 529225 m E, 5050950 m N
System Type	Surface Water Treatment Plant
Description	An approximately 41.6 m x 47.0 m x 7.3 m high heated building housing all facilities described below as well as a laboratory, office workshop, washroom and lunch room
Notes	

Surface Water Supply

Intake Facilities

Description	Intake Crib and Pipe
Location	Located 40 metres from shore in the Ottawa River
Equipment	One (1) 9.25 m square timber with rock fill crib intake structure complete with three (3) separate 600 mm openings covered by a steel grating of 6 x 25 mm bars with 40 mm centers in both directions
	One (1) 1650 mm diameter raw water intake pipe which extends 40 m from the crib intake to the raw water pumping station wet well located on shore;
	A 40 mm diameter polyethylene chlorine solution feed pipe inside the raw water intake pipe for delivering sodium hypochlorite to the intake for controlling zebra mussels
Notes	

Low Lift Works

Low Lift Pumping Station

Description	An approximately 9.2 m x 12.5m x 6.0 m high building located over a 8.7 m x 3.2 m x 4.9 m s.w.d. wet well
UTM Coordinates	NAD83: UTM Zone 18: 529460 m E, 5051575 m N
Equipment	Two (2) screens consisting of 10 x 10 aluminum wire mesh over a frame of 5 mm x 31 mm aluminum bearing bars at 24 mm centers installed in series in the inlet channel to the low lift pumping station
	Two (2) vertical turbine low lift pumps of alternating duty, each rated at a maximum capacity of 27,648 m^3/d at 13.3 m TDH, each controlled by a variable frequency drive
	An ultrasonic level detector linked to a low level alarm located in the wet well
	One (1) common 750 mm diameter pre-stressed concrete pipe, complete with an in-line raw water flow meter (located inside the Water Treatment Plant) which conveys raw water to the flash mixing tank inside the plant
Notes	

Coagulation/Flocculation

Flash Mixing and Contact Tanks

Description	A 2.8 m x 2.4 m x 6.4 m flash mixing tank (nominal dimensions), equipped with a 3.7 kW mixer capable of generating a velocity gradient of 330 s^{-1}
Equipment	Two (2) contact tanks adjacent to the flash mixing tank, one tank sized 5.8 m x 2.4 m x 6 m and the other sized 3.85 m x 2.4 m x 6 m, with both baffled for plug flow
Notes	

Clarification

Settling Tanks

Description	Clarifiers
Equipment	One (1) center feed reactivator/clarifier with a central flocculation zone and a periphery clarification zone equipped with tube settlers set at 60° to the vertical (approximately 118 m^2 of clarification area); maximum flow: 15 000 m^3/day
	One (1) solids upflow type clarifier, complete with two (2) vacuum pumps, each with a pulse draw of 30% of the incoming flow. Clarifier is equipped with tube settlers set at 60° to the vertical, providing 128 m^2 of settling area; maximum flow: 25 000 m^3/ day
	Sludge piping for conveying sludge from the flocculation and clarification zones to a sludge settling tank
Notes	

Filtration

Filters

Description	Three (3) rectangular concrete dual media (sand/anthracite) filters with a filtration capacity of 9,091 m^3/d per filter
Dimensions	Dimensions of 5.9 m x 5.5 m each filter
Equipment	One (1) air scour blower for filter backwash operation with a rated capacity of 42,815 m^3/d
	Single turbidity meter with sample piping connected to the discharge from each filter effluent line
	Filter underdrain piping and automated backwash controls with provisions for filtering to waste
Notes	

Backwash Pumps

Description	One (1) split case backwash pump
Capacity	Rated capacity of 34,650 m^3/d at14 m TDH
Notes	

On-Site Storage

Reservoir

Description	Two (2) clearwell cells providing chlorine contact time
Dimensions	Storage volume of 2,240 m^3 for the first cell and 2,836 m^3 for the second cell
Equipment	Piping and appurtenances to allow the filtered water to be split between the two cells or directed to one or the other cell
	An ultrasonic level detector located in the emergency overflow chamber to monitor groundwater levels
	Drainage piping from Cell No. 1 connected to a sump pit located in the high lift pump room which discharges to a storm sewer, and from Cell No. 2 connected to a sump manhole which discharges to a municipal ditch
Notes	

High Lift Works

High Lift Pumps

Description	Four (4) split case high lift pumps
Capacity	Three (3) pumps which have a capacity of 9,160 m^3/d at 71 m TDH
	One (1) pump which has a capacity of 7,855 m^3/d at 71 m TDH
Equipment	Suction piping from the clearwell including appurtenances and pump discharge piping and appurtenances including a treated water flow meter in the common discharge header
	Pumps No's. 1, 2 and 4 equipped with emergency standby 115 kW diesel motors
Notes	

Waste Residual Management

Residuals Treatment System

Description	A three (3) cell concrete settling tank
Dimensions	One cell for clarifier sludge treatment (2.1 m x 9.0 m x 4.75 m deep with a hopper bottom) and two cells for backwash water treatment (8.2 m x 9.0 m x 4.5 m deep with a hopper bottom each cell)
Equipment	A 250 mm diameter overflow in the clarifier sludge tank that discharges via a ditch to the Ottawa River
	400 mm diameter overflows in both backwash tanks that discharge via a ditch to the Ottawa River
	Two (2) pumps in each backwash tank (a submersible pump which draws settled sludge from the bottom hopper and discharges it to the sanitary sewer, and a vertical turbine pump which conveys supernatant to the ditch that discharges to the Ottawa River)
	A submersible pump in the sludge tank which intermittently pumps settled clarifier sludge to the sanitary sewer
Notes	

Chemical Addition

PHAS - Pre Hydroxylated Aluminum Sulphate or Alum

Description	Pre Hydroxylated Aluminum Sulphate (PHAS) or Alum
Feed Point	Coagulant is conveyed to the flash mix tank and the flocculation zone of the reactivator-clarifier
Equipment	Two (2) 25,000L reinforced fiberglass bulk storage tanks
	Two (2) flow -paced chemical feed pumps for conveying coagulant to the flash mix tank and to the flocculation zone of the reactivator-clarifier
	Piping and appurtenances required to deliver the coagulant to the appropriate locations and monitor the flow rate
Notes	

Activated Silica

Description	Activated silica used for flocculation process
Feed Point	Upstream of the clarifiers
Equipment	Two (2) sodium aluminate chemical storage tanks
	One (1) sodium silicate chemical storage tank
	One (1) silicator
	One (1) eductor equipped with 9.6 m^3/d capacity rotameter to deliver warm dilution water to the silicator
	A compressed air system for delivering air to the silicator
	Two (2) chemical transfer pumps, each rated at 1.9 m^3/d, to transfer sodium silicate to the silicator
	Two (2) chemical transfer pumps, each rated at 0.48 m^3/d, to transfer sodium aluminate to the silicator
	One (1) eductor with a capacity of 864 m^3/d to transfer activated silica solution to a 900 L solution tank
	One (1) chemical feed pump with a capacity of 6.72 m^3/d for conveying activated silica solution into both contact tanks upstream of the clarifiers
Notes	

Chlorine

Description	Three (3) gas chlorinators, each equipped with a 45 kg/d rotameter
Feed Points	One chlorinator designated for prechlorination which delivers chlorine solution upstream of the filters.
	The second chlorinator designated for postchlorination and delivers chlorine solution either upstream of the clearwells or in the distribution header downstream of the high lift pumps (the two chlorinators are linked for backup purposes)
	Third chlorinator provides standby capacity
Equipment	Two (2) scales and the necessary appurtenances for automatic switchover once the supply of chlorine from the duty cylinder has been exhausted
	Three (3) on-line chlorine residual analyzers to measure free chlorine residual in the pre-chlorination and post-chlorination addition points, and at the discharge point from the first clearwell cell into the second cell
Notes	

Lime

Description	One (1) 52,000 L lime storage silo, complete with bottom hopper
Equipment	One (1) volumetric feeder equipped with a variable speed motor flow-paced to the raw water flow and a 0.56 kW feeder tank mixer for generating the lime slurry
	Piping and appurtenances for conveying the slurry to a point just upstream of Clearwell Cell No. 1
Notes	

Hydrofluosilicic Acid

Description	Hydrofluosilicic Acid
Feed Point	From 205 L drum containers to the common filter effluent line immediately upstream of the clearwells
Equipment	One (1) flow-paced hydrofluosilicic acid chemical feed pump
	One (1) low profile 0.75m x 0.75m portable weighing scale with a 500kg capacity for the measurement of HFS drum capacity
	One (1) on-line fluoride meter
	Piping and appurtenances required to deliver HFS to the appropriate
Notes	

Storage Reservoirs and Pumping Stations

Spence Avenue Booster Pump System

Location	780 Spence Street, Hawkesbury, Ontario
UTM Coordinates	NAD 83, Zone 18, 530875 m E, 5049342 m N
Equipment	Two (2) centrifugal pumps with VFDs, each rated at 227 L/s and 27 m TDH
	One (1) sodium hypochlorite chemical storage tank
	One (1) 7.6 L/min capacity circulating water pump
	Two (2) chemical feed pumps (one duty and one standby) with a feed line discharging into the standpipe discharge header
	One (1) on-line residual analyzer to measure free chlorine residual downstream of the feed point
	One (1) ultrasonic level detector to measure the available volume of sodium hypochlorite in the storage tank tied into the plant SCADA system
	Piping and appurtenances, instrumentation and controls, including a chlorine gas detector, alarm system and an eyewash station
Notes	

Hawkesbury Standpipe

Location	780 Spence Street, Hawkesbury, Ontario
UTM Coordinates	NAD83 Zone 18 530875 m E, 5049342 m N
Dimensions	Total volume is 5400 m^3, useable volume is 3600 m^3
Notes	

Emergency Power

Backup Power Supply for Water Treatment Plant

Description	One (1) 45 kW water cooled diesel engine generator set
Notes	

Backup Power Supply for Booster Pump Station

Description	One (1) 6 kW water cooled diesel engine generator set with automatic transfer switch
Notes	

Backup Power Supply for Raw Water Pumping Station

Description	One (1) 185 kW, diesel engine generator set with transfer switch
Notes	

Watermains

1.2 Watermains within the distribution system comprise:

1.2.1 Watermains that have been set out in each document or file identified in column 1 of Table 1.

Table 1: Watermains

Column 1 Document or File Name	Column 2 Date
Reseau De Distribution D'Eau Hawkesbury	April 2011

1.2.2 Watermains that have been added, modified, replaced or extended further to the provisions of Schedule C of this drinking water works permit on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

1.2.3 Watermains that have been added, modified, replaced or extended further to an authorization by the Director on or after the date identified in column 2 of Table 1 for each document or file identified in column 1.

Schedule B: General

System Owner	**The Corporation of the Town of Hawkesbury**
Permit Number	**177-201**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule B Issue Date	**February 8th, 2016**

1.0 Applicability

1.1 In addition to any other requirements, the drinking water system identified above shall be altered and operated in accordance with the conditions of this drinking water works permit and the licence.

1.2 The definitions and conditions of the licence shall also apply to this drinking water works permit.

2.0 Alterations to the Drinking Water System

2.1 Any document issued by the Director as a Schedule C to this drinking water works permit shall provide authority to alter the drinking water system in accordance, where applicable, with the conditions of this drinking water works permit and the licence.

2.2 All Schedule C documents issued by the Director for the drinking water system shall form part of this drinking water works permit.

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) The ministry's Watermain Disinfection Procedure, effective June 1, 2016;
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.

2.4 The owner shall notify the Director within thirty (30) days of the placing into service or the completion of any addition, modification, replacement or extension of the drinking water system which had been authorized through:

2.4.1 Schedule B to this drinking water works permit which would require an alteration of the description of a drinking water system component described in Schedule A of this drinking water works permit;

2.4.2 Any Schedule C to this drinking water works permit respecting works other than watermains; or

2.4.3 Any approval issued prior to the issue date of the first drinking water works permit respecting works other than watermains which were not in service at the time of the issuance of the first drinking water works permit.

2.5 For greater certainty, the notification requirements set out in condition 2.4 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

2.5.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03;

2.5.2 Constitutes maintenance or repair of the drinking water system; or

2.5.3 Is a watermain authorized by condition 3.1 of Schedule B of this drinking water works permit.

2.6 The owner shall notify the legal owner of any part of the drinking water system that is prescribed as a municipal drinking water system by section 2 of O. Reg. 172/03 of the requirements of the licence and this drinking water works permit as applicable to the prescribed system.

2.7 For greater certainty, any alteration to the drinking water system made in accordance with this drinking water works permit may only be carried out after other legal obligations have been complied with including those arising from the *Environmental Assessment Act*, *Niagara Escarpment Planning and Development Act*, *Oak Ridges Moraine Conservation Act, 2001* and *Greenbelt Act, 2005*.

3.0 Watermain Additions, Modifications, Replacements and Extensions

3.1 The drinking water system may be altered by adding, modifying, replacing or extending a watermain within the distribution system subject to the following conditions:

3.1.1 The design of the watermain addition, modification, replacement or extension:

a) Has been prepared by a Professional Engineer;

b) Has been designed only to transmit water and has not been designed to treat water;

c) Satisfies the design criteria set out in the Ministry of the Environment and Climate Change publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – June 2012”, as amended from time to time; and

d) Is consistent with or otherwise addresses the design objectives contained within the Ministry of the Environment and Climate Change publication “Design Guidelines for Drinking Water Systems, 2008”, as amended from time to time.

3.1.2 The maximum demand for water exerted by consumers who are serviced by the addition, modification, replacement or extension of the watermain will not result in an exceedance of the rated capacity of a treatment subsystem or the maximum flow rate for a treatment subsystem component as specified in the licence, or the creation of adverse conditions within the drinking water system.

3.1.3 The watermain addition, modification, replacement or extension will not adversely affect the distribution system's ability to maintain a minimum pressure of 140 kPa at ground level at all points in the distribution system under maximum day demand plus fire flow conditions.

3.1.4 Secondary disinfection will be provided to water within the added, modified, replaced or extended watermain to meet the requirements of O. Reg. 170/03.

3.1.5 The watermain addition, modification, replacement or extension is wholly located within the municipal boundary over which the owner has jurisdiction.

3.1.6 The owner of the drinking water system consents in writing to the watermain addition, modification, replacement or extension.

3.1.7 A Professional Engineer has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of condition 3.1.1.

3.1.8 The owner of the drinking water system has verified in writing that the watermain addition, modification, replacement or extension meets the requirements of conditions 3.1.2 to 3.1.6.

3.2 The authorization for the addition, modification, replacement or extension of a watermain provided for in condition 3.1 does not include the addition, modification, replacement or extension of a watermain that:

3.2.1 Passes under or through a body of surface water, unless trenchless construction methods are used;

3.2.2 Has a nominal diameter greater than 750 mm;

3.2.3 Results in the fragmentation of the drinking water system; or

3.2.4 Connects to another drinking water system, unless:

a) Prior to construction, the owner of the drinking water system seeking the connection obtains written consent from the owner or owner's delegate of the drinking water system being connected to; and

b) The owner of the drinking water system seeking the connection retains a copy of the written consent from the owner or owner's delegate of the drinking water system being connected to as part of the record that is recorded and retained under condition 3.3.

3.3 The verifications required in conditions 3.1.7 and 3.1.8 shall be:

3.3.1 Recorded on "Form 1 – Record of Watermains Authorized as a Future Alteration", as published by the Ministry of the Environment and Climate Change, prior to the watermain addition, modification, replacement or extension being placed into service; and

3.3.2 Retained for a period of ten (10) years by the owner.

3.4 For greater certainty, the verification requirements set out in condition 3.3 do not apply to any addition, modification, replacement or extension in respect of the drinking water system which:

3.4.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

3.4.2 Constitutes maintenance or repair of the drinking water system.

3.5 The document or file referenced in Column 1 of Table 1 of Schedule A of this drinking water works permit that sets out watermains shall be retained by the owner and shall be updated to include watermain additions, modifications, replacements and extensions within 12 months of the addition, modification, replacement or extension.

3.6 The updates required by condition 3.5 shall include watermain location relative to named streets or easements and watermain diameter.

4.0 Minor Modifications to the Drinking Water System

4.1 The drinking water system may be altered by adding, modifying or replacing the following components in the drinking water system:

4.1.1 Raw water pumps and treatment process pumps in the treatment system;

4.1.2 Coagulant feed systems in the treatment system, including the location and number of dosing points;

4.1.3 Valves;

4.1.4 Instrumentation and controls, including SCADA systems, and software associated with these devices;

4.1.5 Filter media, backwashing equipment and under-drains in the treatment system; or,

4.1.6 Spill containment works.

4.2 The drinking water system may be altered by adding, modifying, replacing or removing the following components in the drinking water system:

4.2.1 Treated water pumps and associated equipment;

4.2.2 Re-circulation devices within distribution system storage facilities;

4.2.3 In-line mixing equipment;

4.2.4 Chemical metering pumps and chemical handling pumps;

4.2.5 Chemical storage tanks (excluding fuel storage tanks) and associated equipment; or,

4.2.6 Measuring and monitoring devices that are not required by regulation, by a condition in the Drinking Water Works Permit, or by a condition otherwise imposed by the Ministry of the Environment and Climate Change.

4.3 The drinking water system may be altered by replacing the following:

4.3.1 Raw water piping, treatment process piping or treated water piping within the treatment subsystem;

4.3.2 Fuel storage tanks and spill containment works, and associated equipment; or

4.3.3 Coagulants and pH adjustment chemicals, where the replacement chemicals perform the same function;

a) Prior to making any alteration to the drinking water system under condition 4.3.3, the owner shall undertake a review of the impacts that the alteration might have on corrosion control or other treatment processes; and

b) The owner shall notify the Director in writing within thirty (30) days of any alteration made under condition 4.3.3 and shall provide the Director with a copy of the review.

4.4 Any alteration of the drinking water system made under conditions 4.1, 4.2 or 4.3 shall not result in:

4.4.1 An exceedance of a treatment subsystem rated capacity or a treatment subsystem component maximum flow rate as specified in the licence;

4.4.2 The bypassing of any unit process within a treatment subsystem;

4.4.3 A deterioration in the quality of drinking water provided to consumers;

4.4.4 A reduction in the reliability or redundancy of any component of the drinking water system;

4.4.5 A negative impact on the ability to undertake compliance and other monitoring necessary for the operation of the drinking water system; or

4.4.6 An adverse effect on the environment.

4.5 The owner shall verify in writing that any addition, modification, replacement or removal of drinking water system components in accordance with conditions 4.1, 4.2 or 4.3 has met the requirements of the conditions listed in condition 4.4.

4.6 The verifications and documentation required in condition 4.5 shall be:

4.6.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System", as published by the Ministry of the Environment and Climate Change, prior to the modified or replaced components being placed into service; and

4.6.2 Retained for a period of ten (10) years by the owner.

4.7 For greater certainty, the verification requirements set out in conditions 4.5 and 4.6 do not apply to any addition, modification, replacement or removal in respect of the drinking water system which:

4.7.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

4.7.2 Constitutes maintenance or repair of the drinking water system.

4.8 The owner shall update any drawings maintained for the drinking water system to reflect the modification or replacement of the works, where applicable.

5.0 Equipment with Emissions to the Air

5.1 The drinking water system may be altered by adding, modifying or replacing any of the following drinking water system components that may discharge or alter the rate or manner of a discharge of a compound of concern to the atmosphere:

5.1.1 Any equipment, apparatus, mechanism or thing that is used for the transfer of outdoor air into a building or structure that is not a cooling tower;

5.1.2 Any equipment, apparatus, mechanism or thing that is used for the transfer of indoor air out of a space used for the production, processing, repair, maintenance or storage of goods or materials, including chemical storage;

5.1.3 Laboratory fume hoods used for drinking water testing, quality control and quality assurance purposes;

5.1.4 Low temperature handling of compounds with a vapor pressure of less than 1 kilopascal;

5.1.5 Maintenance welding stations;

5.1.6 Minor painting operations used for maintenance purposes;

5.1.7 Parts washers for maintenance shops;

5.1.8 Emergency chlorine and ammonia gas scrubbers and absorbers;

5.1.9 Venting for activated carbon units for drinking water taste and odour control;

5.1.10 Venting for a stripping unit for methane removal from a groundwater supply;

5.1.11 Venting for an ozone treatment unit;

5.1.12 Natural gas or propane fired boilers, water heaters, space heaters and make-up air units with a total facility-wide heat input rating of less than 20 million kilojoules per hour, and with an individual fuel energy input of less than or equal to 10.5 gigajoules per hour; or

5.1.13 Emergency generators that fire No. 2 fuel oil (diesel fuel) with a sulphur content of 0.5 per cent or less measured by weight, natural gas, propane, gasoline or biofuel, and that are used for emergency duty only with periodic testing.

5.2 The owner shall not add, modify or replace a drinking water system component set out in condition 5.1 for an activity that is not directly related to the treatment and/or distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.13 shall not be used for non-emergency purposes including the generation of electricity for sale or for peak shaving purposes.

5.4 The owner shall prepare an emission summary table for nitrogen oxide emissions only, for each addition, modification or replacement of emergency generators identified in condition 5.1.13.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.13 is operated at all times to comply with the following limits:

5.5.1 For equipment other than emergency generators, the maximum concentration of any compound of concern at a point of impingement shall not exceed the corresponding point of impingement limit;

5.5.2 For emergency generators, the maximum concentration of nitrogen oxides at sensitive populations shall not exceed the applicable point of impingement limit, and at non-sensitive populations shall not exceed the Ministry of the Environment and Climate Change half-hourly screening level of 1880 ug/m^3 as amended; and

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-300, as applicable.

5.6 The owner shall verify in writing that any addition, modification or replacement of works in accordance with condition 5.1 has met the requirements of the conditions listed in condition 5.5.

5.7 The owner shall document how compliance with the performance limits outlined in condition 5.5.3 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications and documentation required in conditions 5.6 and 5.7 shall be:

5.8.1 Recorded on “Form 3 – Record of Addition, Modification or Replacement of Equipment Discharging a Contaminant of Concern to the Atmosphere”, as published by the Ministry of the Environment and Climate Change, prior to the additional, modified or replacement equipment being placed into service; and

5.8.2 Retained for a period of ten (10) years by the owner.

5.9 For greater certainty, the verification and documentation requirements set out in conditions 5.6 and 5.8 do not apply to any addition, modification or replacement in respect of the drinking water system which:

5.9.1 Is exempt from subsection 31(1) of the SDWA by subsection 9.(2) of O. Reg. 170/03; or

5.9.2 Constitutes maintenance or repair of the drinking water system.

5.10 The owner shall update any drawings maintained for the works to reflect the addition, modification or replacement of the works, where applicable.

6.0 Previously Approved Works

6.1 The owner may add, modify, replace or extend, and operate part of a municipal drinking water system if:

6.1.1 An approval was issued after January 1, 2004 under section 36 of the SDWA in respect of the addition, modification, replacement or extension and operation of that part of the municipal drinking water system;

6.1.2 The approval expired by virtue of subsection 36(4) of the SDWA; and

6.1.3 The addition, modification, replacement or extension commenced within five years of the date that activity was approved by the expired approval.

7.0 System-Specific Conditions

7.1 Not Applicable

8.0 Source Protection

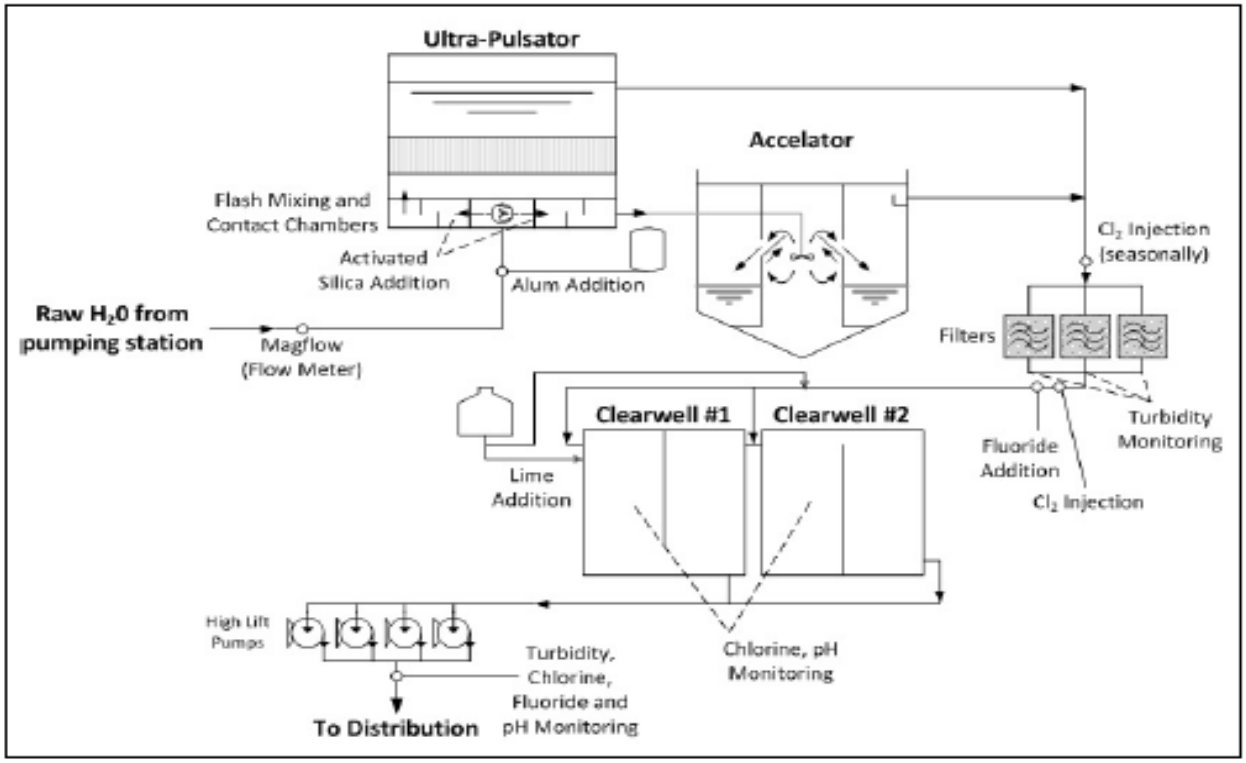
8.1 Not Applicable

Schedule D: Process Flow Diagrams

System Owner	**The Corporation of the Town of Hawkesbury**
Permit Number	**177-201**
Drinking Water System Name	**Hawkesbury Drinking Water System**
Schedule D Issue Date	**February 8th, 2016**

1.0 Process Flow Diagrams

Hawkesbury Water Treatment Plant



[Source: Operational Plan, Revision Number V7, May 25, 2015]

APPENDIX B

PERMIT TO TAKE WATER

Ontario

Ministry of the Environment
Ministère de l'Environnement

PERMIT TO TAKE WATER
Surface Water
NUMBER 6624-9KBRAJ

Pursuant to Section 34 of the Ontario Water Resources Act, R.S.O. 1990 this Permit To Take Water is hereby issued to:

The Corporation of the Town of Hawkesbury
600 Higginson Street
Hawkesbury, Ontario
K6A 1H1
Canada

For the water taking from: Ottawa River

Located at: 670 Main St W
Hawkesbury, United Counties of Prescott and Russell

For the purposes of this Permit, and the terms and conditions specified below, the following definitions apply:

DEFINITIONS

(a) "Director" means any person appointed in writing as a Director pursuant to section 5 of the OWRA for the purposes of section 34, OWRA.

(b) "Provincial Officer" means any person designated in writing by the Minister as a Provincial Officer pursuant to section 5 of the OWRA.

(c) "Ministry" means Ontario Ministry of the Environment.

(d) "District Office" means the Cornwall District Office.

(e) "Permit" means this Permit to Take Water No. 6624-9KBRAJ including its Schedules, if any, issued in accordance with Section 34 of the OWRA.

(f) "Permit Holder" means The Corporation of the Town of Hawkesbury.

(g) "OWRA " means the *Ontario Water Resources Act,* R.S.O. 1990, c. O. 40, as amended.

You are hereby notified that this Permit is issued subject to the terms and conditions outlined below:

TERMS AND CONDITIONS

1. Compliance with Permit

1.1 Except where modified by this Permit, the water taking shall be in accordance with the application for this Permit To Take Water, dated February 13, 2014 and signed by Richard Guertin, and all Schedules included in this Permit.

1.2 The Permit Holder shall ensure that any person authorized by the Permit Holder to take water under this Permit is provided with a copy of this Permit and shall take all reasonable measures to ensure that any such person complies with the conditions of this Permit.

1.3 Any person authorized by the Permit Holder to take water under this Permit shall comply with the conditions of this Permit.

1.4 This Permit is not transferable to another person.

1.5 This Permit provides the Permit Holder with permission to take water in accordance with the conditions of this Permit, up to the date of the expiry of this Permit. This Permit does not constitute a legal right, vested or otherwise, to a water allocation, and the issuance of this Permit does not guarantee that, upon its expiry, it will be renewed.

1.6 The Permit Holder shall keep this Permit available at all times at or near the site of the taking, and shall produce this Permit immediately for inspection by a Provincial Officer upon his or her request.

1.7 The Permit Holder shall report any changes of address to the Director within thirty days of any such change. The Permit Holder shall report any change of ownership of the property for which this Permit is issued within thirty days of any such change. A change in ownership in the property shall cause this Permit to be cancelled.

2. General Conditions and Interpretation

2.1 Inspections

The Permit Holder must forthwith, upon presentation of credentials, permit a Provincial Officer to carry out any and all inspections authorized by the OWRA, the *Environmental Protection Act* , R.S.O. 1990, the *Pesticides Act* , R.S.O. 1990, or the *Safe Drinking Water Act*, S. O. 2002.

2.2 Other Approvals

The issuance of, and compliance with this Permit, does not:

(a) relieve the Permit Holder or any other person from any obligation to comply with any other applicable legal requirements, including the provisions of the *Ontario Water Resources Act* , and the *Environmental Protection Act* , and any regulations made thereunder; or

(b) limit in any way any authority of the Ministry, a Director, or a Provincial Officer, including the authority to require certain steps be taken or to require the Permit Holder to furnish any further information related to this Permit.

2.3 Information

The receipt of any information by the Ministry, the failure of the Ministry to take any action or require any person to take any action in relation to the information, or the failure of a Provincial Officer to prosecute any person in relation to the information, shall not be construed as:

(a) an approval, waiver or justification by the Ministry of any act or omission of any person that contravenes this Permit or other legal requirement; or

(b) acceptance by the Ministry of the information's completeness or accuracy.

2.4 Rights of Action

The issuance of, and compliance with this Permit shall not be construed as precluding or limiting any legal claims or rights of action that any person, including the Crown in right of Ontario or any agency thereof, has or may have against the Permit Holder, its officers, employees, agents, and contractors.

2.5 Severability

The requirements of this Permit are severable. If any requirements of this Permit, or the application of any requirements of this Permit to any circumstance, is held invalid or unenforceable, the application of such requirements to other circumstances and the remainder of this Permit shall not be affected thereby.

2.6 Conflicts

Where there is a conflict between a provision of any submitted document referred to in this Permit, including its Schedules, and the conditions of this Permit, the conditions in this Permit shall take precedence.

3. Water Takings Authorized by This Permit

3.1 **Expiry**

This Permit expires on **May 21, 2024**. No water shall be taken under authority of this Permit after the expiry date.

3.2 Amounts of Taking Permitted

The Permit Holder shall only take water from the source, during the periods and at the rates and amounts of taking specified in Table A. Water takings are authorized only for the purposes specified in Table A.

Table A

	Source Name / Description:	Source: Type:	Taking Specific Purpose:	Taking Major Category:	Max. Taken per Minute (litres):	Max. Num. of Hrs Taken per Day:	Max. Taken per Day (litres):	Max. Num. of Days Taken per Year:	Zone/ Easting/ Northing:
1	Ottawa River	River	Municipal	Water Supply	25,000	24	20,000,000	365	18 529460 5051575
						Total Taking:	20,000,000		

4. Monitoring

4.1 The Permit Holder shall maintain a record of all water takings. This record shall include the dates and times of water takings, and the total measured amounts of water pumped per day for each day that water is taken under the authorization of this Permit. A separate record shall be maintained for each source. The Permit Holder shall keep all required records up to date and available at or near the site of the taking and shall produce the records immediately for inspection by a Provincial Officer upon his or her request.

4.2 The total amounts of water pumped shall be measured using a properly calibrated flow meter and totalizer.

5. Impacts of the Water Taking

5.1 Notification

The Permit Holder shall immediately notify the local District Office of any complaint arising from the taking of water authorized under this Permit and shall report any action which has been taken or is proposed with regard to such complaint. The Permit Holder shall immediately notify the local District Office if the taking of water is observed to have any significant impact on the surrounding waters. After hours, calls shall be directed to the Ministry's Spills Action Centre at 1-800-268-6060.

5.2 For Surface-Water Takings
The taking of water (including the taking of water into storage and the subsequent or simultaneous withdrawal from storage) shall be carried out in such a manner that streamflow is not stopped and is not reduced to a rate that will cause interference with downstream uses of water or with the natural functions of the stream.

5.3 The taking of water shall be carried out in such a manner as to prevent the disruption or removal of any fish, invertebrates, or sediment from the Ottawa River.

6. Director May Amend Permit
The Director may amend this Permit by letter requiring the Permit Holder to suspend or reduce the taking to an amount or threshold specified by the Director in the letter. The suspension or reduction in taking shall be effective immediately and may be revoked at any time upon notification by the Director. This condition does not affect your right to appeal the suspension or reduction in taking to the Environmental Review Tribunal under the *Ontario Water Resources Act* , Section 100 (4).

The reasons for the imposition of these terms and conditions are as follows:

1. Condition 1 is included to ensure that the conditions in this Permit are complied with and can be enforced.

2. Condition 2 is included to clarify the legal interpretation of aspects of this Permit.

3. Conditions 3 through 6 are included to protect the quality of the natural environment so as to safeguard the ecosystem and human health and foster efficient use and conservation of waters. These conditions allow for the beneficial use of waters while ensuring the fair sharing, conservation and sustainable use of the waters of Ontario. The conditions also specify the water takings that are authorized by this Permit and the scope of this Permit.

In accordance with Section 100 of the Ontario Water Resources Act, R.S.O. 1990, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 101 of the Ontario Water Resources Act, R.S.O. 1990, as amended, provides that the Notice requiring the hearing shall state:

1. The portions of the Permit or each term or condition in the Permit in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

In addition to these legal requirements, the Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Permit to Take Water number;
6. The date of the Permit to Take Water;
7. The name of the Director;
8. The municipality within which the works are located;

This notice must be served upon:

The Secretary
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto ON
M5G 1E5
Fax: (416) 314-4506
Email: ERTTribunalsecretary@ontario.ca

AND

The Director, Section 34
Ministry of the Environment
1259 Gardiners Rd, PO Box 22032
Kingston, ON
K7P 3J6

Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal:

by telephone at (416) 314-4600 ***by fax at (416) 314-4506*** ***by e-mail at www.ert.gov.on.ca***

Dated at Kingston this 22nd day of May, 2014.

Gillian Dagg-Foster
Director, Section 34
Ontario Water Resources Act , R.S.O. 1990

Schedule A

This Schedule “A” forms part of Permit To Take Water 6624-9KBRAJ, dated May 22, 2014.

APPENDIX C

INSPECTION RATING RECORD

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

DWS Name: HAWKESBURY DRINKING WATER SYSTEM
DWS Number: 220002832
DWS Owner: Hawkesbury, The Corporation Of The Town Of
Municipal Location: Hawkesbury
Regulation: O.REG 170/03
Category: Large Municipal Residential System
Type Of Inspection: Detailed
Inspection Date: February 14, 2019
Ministry Office: Cornwall Area Office

Maximum Question Rating: 646

Inspection Module	Non-Compliance Rating
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 76
Process Wastewater	0 / 20
Distribution System	0 / 29
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 57
Water Quality Monitoring	0 / 152
Reporting & Corrective Actions	0 / 45
Treatment Process Monitoring	0 / 141
TOTAL	**0 / 646**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 01-APR-19 (Inspection ID: 1-I8XR0).

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

DWS Name:	HAWKESBURY DRINKING WATER SYSTEM
DWS Number:	220002832
DWS Owner:	Hawkesbury, The Corporation Of The Town Of
Municipal Location:	Hawkesbury
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	February 14, 2019
Ministry Office:	Cornwall Area Office

Maximum Question Rating: 646

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 01-APR-19 (Inspection ID: 1-I8XR0).

APPENDIX D

INSPECTION RATING RECORD METHODOLOGY

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

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

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

MOE reviews the risk rating methodology every three years.

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

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

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

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

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

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

Determining Potential to Compromise the Delivery of Safe Water

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

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

RISK = LIKELIHOOD × CONSEQUENCE
(of the consequence)

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

TABLE 1:

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

TABLE 2:

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

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

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

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

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

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

TABLE 3:

Does the Operator in Charge ensure that the equipment and processes are monitored, inspected and evaluated?							
Risk = Likelihood × Consequence							
C=1	C=2	C=3	C=4	C=5	C=6	C=7	C=8
Medium Administrative Consequence	**Major** Administrative Consequence	**Minor** Environmental Consequence	**Minor** Health Consequence	**Medium** Environmental Consequence	**Major** Environmental Consequence	**Medium** Health Consequence	**Major** Health Consequence
L=4 (Almost Certain)	L=1 (Unlikely	L=2 (Possible)	L=3 (Likely)	L=3 (Likely)	L=1 (Unlikely	L=3 (Likely)	L=2 (Possible)
R=4	**R=2**	**R=6**	**R=12**	**R=15**	**R=6**	**R=21**	**R=16**

Application of the Methodology to Inspection Results

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

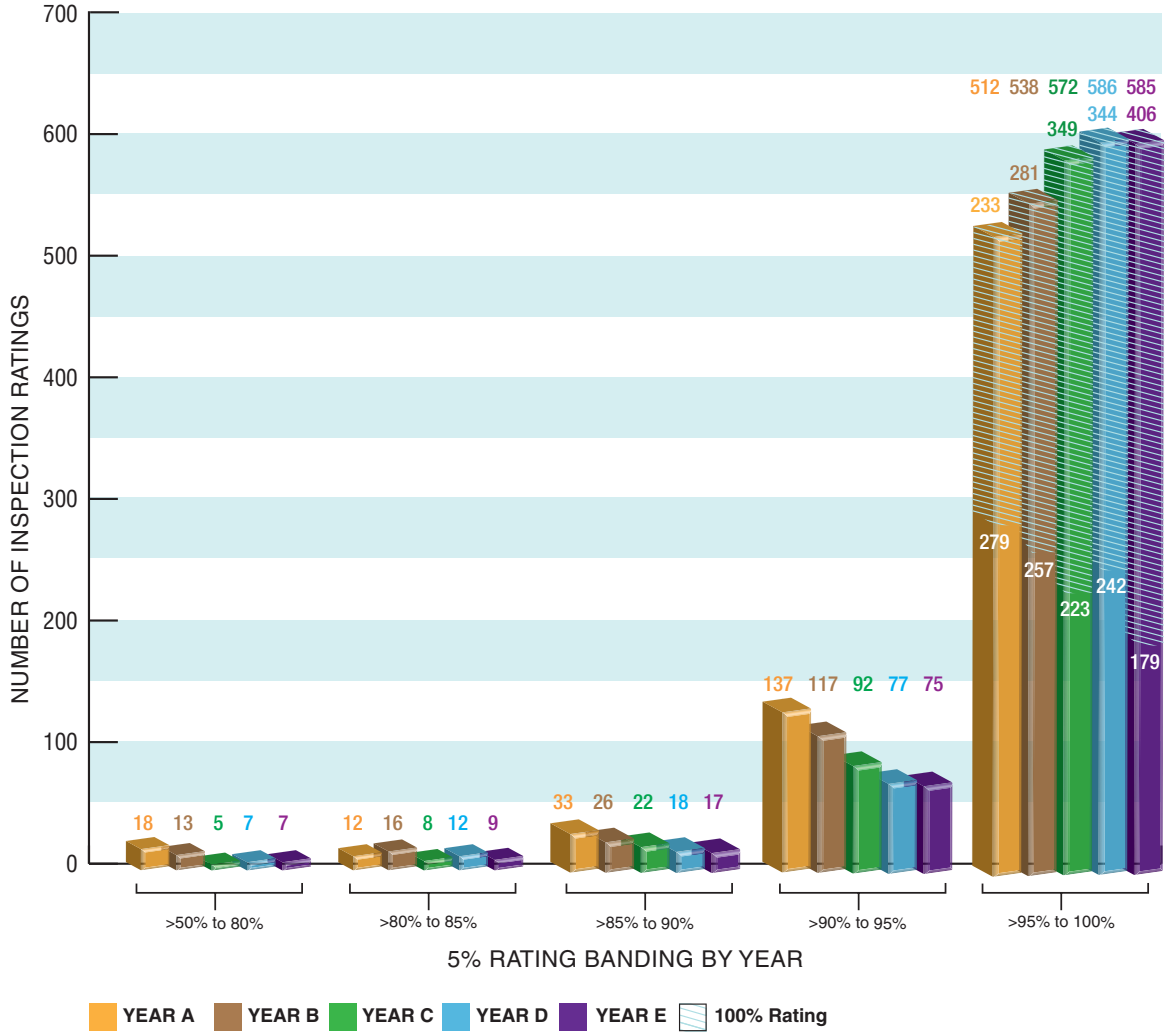
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

Application of the Methodology for Public Reporting

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

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

Figure 1: Year Over Year Distribution of MRDWS Ratings



Reporting Results to MRDWS Owners/Operators

A summary of inspection findings for each system is generated in the form of an Inspection Rating Record (IRR). The findings are grouped into the 15 possible modules of the inspection protocol, which would provide the system owner/operator with information on the areas where they need to improve. The 15 modules are:

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

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

APPENDIX E

KEY REFERENCE AND GUIDANCE MATERIAL FOR

MUNICIPAL RESIDENTIAL DRINKING WATER SYSTEMS

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 Ministry if you need assistance or have questions at 1-866-793-2588 or waterforms@ontario.ca.

For more information on Ontario's drinking water visit www.ontario.ca/drinkingwater

PUBLICATION TITLE	PUBLICATION NUMBER
FORMS: Drinking Water System Profile Information Laboratory Services Notification Adverse Test Result Notification	 012-2149E 012-2148E 012-4444E
Taking Care of Your Drinking Water: A Guide for Members of Municipal Councils	Website
Procedure for Disinfection of Drinking Water in Ontario	Website
Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids	Website
Filtration Processes Technical Bulletin	Website
Ultraviolet Disinfection Technical Bulletin	Website
Guide for Applying for Drinking Water Works Permit Amendments, & License Amendments	Website
Certification Guide for Operators and Water Quality Analysts	Website
Guide to Drinking Water Operator Training Requirements	9802E
Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption	Website
Drinking Water System Contact List	7128E01
Ontario's Drinking Water Quality Management Standard - Pocket Guide	Website
Watermain Disinfection Procedure	Website
List of Licensed Laboratories	Website

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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 ministère au 1-866-793-2588, ou encore à waterforms@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

TITRE DE LA PUBLICATION	NUMÉRO DE PUBLICATION
Renseignements sur le profil du réseau d'eau potable Avis de demande de services de laboratoire Avis de résultats d'analyse insatisfaisants et de règlement des problèmes	012-2149F 012-2148F 012-4444F
Prendre soin de votre eau potable - Un guide destiné aux membres des conseils municipaux	Site Web
Marche à suivre pour désinfecter l'eau portable en Ontario	Site Web
Stratégies pour minimiser les trihalométhanes et les acides haloacétiques de sous-produits de désinfection	Site Web
Filtration Processes Technical Bulletin (en anglais seulement)	Site Web
Ultraviolet Disinfection Technical Bulletin (en anglais seulement)	Site Web
Guide de présentation d'une demande de modification du permis d'aménagement de station de production d'eau potable	Site Web
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	Site Web
Guide sur les exigences relatives à la formation des exploitants de réseaux d'eau potable	9802F
Échantillonnage et analyse du plomb dans les collectivités : échantillonnage normalisé ou réduit et admissibilité à l'exemption	Site Web
Liste des personnes-ressources du réseau d'eau potable	Site Web
L'eau potable en Ontario - Norme de gestion de la qualité - Guide de poche	Site Web
Procédure de désinfection des conduites principales	Site Web
Laboratoires autorisés	Site Web

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