Ministry of the Environment and Climate Change

Safe Drinking Water Branch

Ottawa District Office
2430 Don Reid Drive
Ottawa ON K1H 1E1

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

Direction du contrôle de la qualité de l'eau potable

Bureau du district d'Ottawa
2430, chemin Don Reid
Ottawa (Ontario) K1H 1E1

February 23, 2016

Sent by Email: rmcgee@deepriver.ca

Town of Deep River
100 Deep River Road, P.O. Box 400
Deep River, Ontario
K0J 1P0

Attention: Mr. Ric McGee
Chief Administrative Officer/Clerk

Dear Mr. McGee:

Re: 2015-2016 Inspection Report

The enclosed report documents findings of the inspection that was performed at the Deep River drinking water system on December 10, 2015.

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

Please note that "Actions Required" are linked to incidents of non-compliance with regulatory requirements contained within an Act, a Regulation, or site-specific approvals, 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.

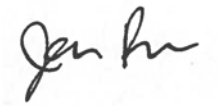
"Recommended Actions" convey information that the owner or operating authority should consider implementing in order to advance efforts already in place to address such issues as emergency preparedness, the fulsome availability of information to consumers, and conformance with existing and emerging industry 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 Jim Mahoney, Water Supervisor, at 613-548-6902.

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 councilors, 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,



Jen Bitten, B.Sc.
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JB

Enclosure

ec: Mike Grace, Manager, Environmental Health, Renfrew County and District Health Unit, 7 International Dr., Pembroke, ON K8A 6W5, mgrace@rcdhu.com
- Bruce Mighton, District Manager (A), Ministry of Natural Resources, Pembroke District Office, 31 Riverside Dr., Pembroke, ON K8A 8R6, bruce.mighton@ontario.ca
- Brad Sweet, Operations Manager, Ontario Clean Water Agency – Ottawa Valley Hub, 560 Abbie Lane, Petawawa, ON K8H 2X2, bsweet@ocwa.com
- Brenda Royce, Process & Compliance Technician, Ontario Clean Water Agency – Ottawa Valley Hub, 560 Abbie Lane, Petawawa, ON K8H 2X2, broyce@ocwa.com

c: File SI-RE-DE-RI-540 (2015)

Ministry of the Environment and Climate Change

DEEP RIVER DRINKING WATER SYSTEM

Inspection Report

Site Number:	220000923
Inspection Number:	1-BZINJ
Date of Inspection:	Dec 10, 2015
Inspected By:	Jen Bitten

Table of Contents:

OWNER INFORMATION:

Company Name:	DEEP RIVER, THE CORPORATION OF THE		
Street Number:	100	**Unit Identifier:**	
Street Name:	DEEP RIVER ROAD Rd		
City:	DEEP RIVER		
Province:	ON	**Postal Code:**	K0J 1P0

CONTACT INFORMATION

Type:	Owner	**Name:**	Ric McGee
Phone:	(613) 584-2000 x126	**Fax:**	(613) 584-3237
Email:	rmcgee@deepriver.ca		
Title:	CAO/Clerk, Town of Deep River		

Type:	Owner	**Name:**	Sean Patterson
Phone:	(613) 584-2000 x108	**Fax:**	(613) 584-3237
Email:	spatterson@deepriver.ca		
Title:	Director of Public Works, Town of Deep River		

Type:	Operating Authority	**Name:**	Brad Sweet
Phone:	(613) 687-2141	**Fax:**	(613) 687-7138
Email:	bsweet@ocwa.com		
Title:	Operations Manager, OCWA, Ottawa Valley Hub		

Type:	Operating Authority	**Name:**	Brenda Royce
Phone:	(613) 687-2141	**Fax:**	(613) 687-7138
Email:	broyce@ocwa.com		
Title:	Process and Compliance Technician, OCWA, Ottawa Valley Hub		

INSPECTION DETAILS:

Site Name:	DEEP RIVER DRINKING WATER SYSTEM
Site Address:	177 RIVER RD DEEP RIVER K0J 1P0
County/District:	Deep River
MOECC District/Area Office:	Ottawa District
Health Unit:	RENFREW COUNTY AND DISTRICT HEALTH UNIT
Conservation Authority	N/A
MNR Office:	Pembroke District Office
Category:	Large Municipal Residential

Site Number:	220000923
Inspection Type:	Unannounced
Inspection Number:	1-BZINJ
Date of Inspection:	Dec 10, 2015
Date of Previous Inspection:	Jan 27, 2015

COMPONENTS DESCRIPTION

Site (Name): MOE DWS Mapping
Type: DWS Mapping Point **Sub Type:**
Comments:
Not Applicable

Site (Name): SOURCE WATER
Type: Source **Sub Type:** Surface Water
Comments:
The Deep River Water Treatment Plant (WTP) obtains raw water from the Ottawa River. The Ottawa River watershed comprises an extensive drainage basin (approximately 146,000 square kilometers) with approximately 40% of the watershed entering the river upstream of the town. Land use upstream of Deep River is predominantly undeveloped forest with limited agricultural, forestry and mining activity. The communities upstream of Deep River include Rolphton, Stonecliffe, Deux Rivieres, Mattawa and Temiskaming. Other activities include the Rapides-des-Joachims (Da Swisha) Hydroelectric Generating Station, the Mattawa Hydroelectric Generating Station, Driftwood Provincial Park and Trans Canada Highway No. 17.

The Ottawa River water quality is characterized by low turbidity (0.8 - 5.3NTU), moderate to high colour (4 - 60TCU), and low alkalinity (9 - 34mg/L as CaCO3), which is typical for Northern Ontario, as stated in the Design Brief by Jp2g Consultants Inc. (December 2004). Results of sampling and testing between January 2000 and March 2003 indicate the pH ranges between 6.72 and 7.78; and Dissolved Organic Carbon (DOC) ranges from 5 - 7.4. With respect to microbiological contamination of the raw water, the Engineer's Report prepared by Azurix North America Engineering Corp. (January 2001) outlines that sewage bypassing at upstream municipalities is of concern. Azurix concludes that E. coli is present in approximately 50% of raw water samples, and total coliforms are present in about 75% of samples.

Site (Name): LOW LIFT PUMPING STATION
Type: Source **Sub Type:** Pumphouse
Comments:
The intake works for the Deep River WTP is located at the Low Lift Pumping Station and consists of a 750mm diameter intake extending approximately 91m into the Ottawa River terminating at a depth of approximately 9m below the surface. The low lift pumping station consists of a 9.14m by 1.52m by 5.64m deep low lift pump well and above ground building, equipped with two (2) vertical turbine pumps, one nominal capacity 71L/s or 6,100m³/d and one nominal capacity 141L/s or 12,200m³/d, and one (1) submersible pump nominal capacity of 83.1L/s at 25m TDH or 7,171m³/d; and a raw water main from the low lift pumping station to the water treatment plant.

Site (Name): WATER TREATMENT PROCESS
Type: Treated Water POE **Sub Type:** Treatment Facility

Comments:

The Deep River WTP comprises of the following:

• an in-line static mixer, 300mm diameter;

• three (3) package flocculation and clarification (Actiflo) units, each rated at raw water flow rate of 4,773m³/d, consisting of: a rapid mixing basin, an injection chamber, a maturation chamber and a high rate ballasted settling basin, scraper and inclined tube settlers; four (4) sand recirculation pumps (three duty and one standby); three (3) hydrocyclones; electrical and mechanical equipment and control;

• three (3) dual media sand and anthracite filters with a total area of 56.7m²;

• two (2) air scour blowers equipped with 18.6kW motor (one duty, one standby);

• two (2) backwash variable speed vertical turbine pumps (one duty, one standby) each rated at 236L/s at a TDH of 22m;

• piping and control to facilitate filter to waste;

• electrical and mechanical equipment and control;

• two (2) clear wells, one with a capacity of 1,364m³, and a second with a capacity of 1,507m³; and two (2) pump wells, one with a capacity of 90m³ and the other with a capacity of 110m³;

• four (4) vertical turbine high lift pumps (one duty, three standby), each rated at 87L/s at a TDH of 82m;

• a gaseous chlorine disinfection system consisting of two (2) banks of four (4) 68.2kg cylinders (one bank duty, one bank standby) and eight (8) weigh scales, three (3) V-notch chlorinators;

• chlorine solution lines, one leading to an injection point at the filter outlet header prior to the clear wells, and the other leading to an injection point in the pump well upstream of the high lift header; and,

• a chlorine gas scrubber system.

The chemical storage and feed systems consist of the following:

• a primary coagulant (PAS8) feed system consisting of one (1) 6,600L tank and one (1) 21,200L capacity liquid coagulant tank, one (1) 3100L day tank and two (2) chemical feed metering pumps (one duty, one standby) with a flow capacity of 40L/hr and chemical feed line prior to the Actiflo units;

• pH/alkalinity adjustment consisting of two (2) 51,200L tanks of liquid caustic soda, two (2) 3100L day tanks and four (4) chemical feed metering pumps (two duty, two standby) each with a flow capacity of 60L/hr and chemical feed lines to the raw water pipe (pre-alkalinity) just upstream of the static mixer, and to the distribution header;

• coagulant aid for the water treatment clarifiers consisting of two (2) dry polymer preparation systems each consisting of 3100L dissolving tank with mixer; four (4) chemical feed metering pumps (three duty, one standby) each with a flow capacity of 90L/hr and chemical feed lines to the three package treatment units injection chambers;

• coagulant aid for the wastewater clarifier unit consisting of two (2) dry polymer preparation systems each consisting of 3100L dissolving tank with mixer; three (3) chemical feed metering pumps (two duty, one standby) each with a flow capacity of 45L/hr and chemical feed lines to the hydrocyclones reject pipe, and to surge tank pumps discharge pipe;

• coagulant aid for the dewatering centrifuge consisting of two (2) dry polymer preparation systems each consisting of 800L dissolving tank with mixer; two (2) chemical feed metering pumps (one duty, one standby) each with a flow capacity of 90L/hr and chemical feed lines to the sludge dewatering centrifuge inlet; and,

• dechlorination chemical (sodium bisulfite) feed system, which is currently not operational (210L storage tank and two (2) chemical feed metering pumps) and;

• hydrofluosilicic acid feed system consisting of a 210L storage tank and two (2) chemical feed metering pumps (one duty, one standby) each with a flow capacity of 4L/hr and chemical feed line to the distribution header.

Process instrumentation for the WTP consists of nine (9) turbidimeters continuously monitoring the raw water, Actiflo units (clarified water), filter effluent, treated water and the wastewater clarifier supernatant; six (6) pH meters continuously monitoring the raw water feed to clarifiers after the static mixer, Actiflo units (at the end of each unit prior to the filters), treated water prior to and after final pH adjustment; one (1) chlorine analyzer monitoring prior to clearwell #1 to provide early indication of changes in residual; two (2) chlorine residual analyzers continuously monitoring the treated water at the end of the clear wells and before leaving the WTP (on the discharge header); one sulfite ion monitor continuously monitoring the wastewater clarifier supernatant discharge pipe (not in use); and a fluoride ion analyzer continuously monitoring the fluoride residual in the treated water on the distribution header.

The residue management facility (wastewater treatment) consists of two (2) filter backwash wastewater surge tanks, each approximately 113m^3, equipped with two (2) transfer pumps; wastewater tube settlers clarifier with supernatant discharge line to the river; and a sludge thickener tank equipped with two sludge pumps that convey the thickened sludge to a dewatering centrifuge with supernatant discharge to wastewater surge tanks.

The WTP is further equipped with a standby 600kW diesel generator complete with fuel storage tank for back-up power.

Site (Name): ELEVATED STORAGE TANK

Type: Other **Sub Type:** Reservoir

Comments:

The Town of Deep River stores treated water in a 1,513m^3 elevated water storage tank (30.5m) located on the corner of Deep River Road and Highway 17, south of the water treatment plant. Treated water flows by gravity from the tower into the municipal distribution system. Water level sensors contained within the elevated storage tank activate/deactivate operation of the high lift pumps. The reservoir is contained within a locked security perimeter fence. A small cinder block structure located near the base of the tower and within the perimeter fencing contains all valves necessary for draining and isolating the tower.

Site (Name): DISTRIBUTION SYSTEM

Type: Other **Sub Type:** Other

Comments:

The Deep River drinking water system services a population of approximately 4216 persons. Construction of the Town of Deep River's Water Distribution System was initiated in 1945, and has seen numerous extensions and modifications over the past sixty years. The Town's consumers are not provided with individual water meters.

The water mains are constructed of mostly cast iron, ductile iron and polyvinyl chloride (PVC), and range in diameter from 102mm (4 inches) to 406mm (16 inches). There is approximately 75km of water mains within the distribution system and approximately 236 hydrants and hydrant valves.

Site (Name): PROCESS WASTEWATER

Type: Other **Sub Type:** Other

Comments:

Process wastewater is generated from filter backwashing, filter to waste activities and from the sand residuals and drainage from the Actiflo treatment process (Actiflo waste). The filter backwash wastewater and Actiflo wastewater discharge to the wastewater surge tanks and the wastewater lamella tube settlers clarifier; while the Actiflo overflow, clearwell overflow and filter to waste discharge directly to the ditch and the river. The hydrocyclone waste discharges to the lamella clarifier.

The residue management system (wastewater treatment) includes two (2) filter backwash wastewater surge tanks; wastewater tube settlers clarifier with dechlorinated supernatant discharge line to the

river; and a sludge thickener tank equipped with two sludge pumps that convey the thickened sludge to a dewatering centrifuge with supernatant discharge to the wastewater surge tanks.

There is a sodium bisulfite feed system that is operational but it is not being used. There is currently no need to dechlorinate the supernatant being discharged to the Ottawa River as there is no chlorine present in the supernatant being discharged to the river. Dewatered sludge is trucked to the local landfill for disposal.

INSPECTION SUMMARY

INTRODUCTION

* **The primary focus of this inspection is to confirm compliance with Ministry of the Environment and Climate Change (MOECC) legislation as well as evaluating conformance with ministry drinking water 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.

Deep River Drinking Water System is owned by the Town of Deep River and operated by the Ontario Clean Water Agency.

An inspection of the Deep River Drinking Water System occured on December 10, 2015. It was attended by Ministry of the Environment and Climate Change Water Inspector Jen Bitten and Ontario Clean Water Agency staff Brenda Royce, Stephen Bird and Chris Murphy.

The inspection period referenced throughout this report includes January 27, 2015 - December 10, 2015.

Deep River DWS Licenses & Permits:

Municipal Drinking Water License (MDWL) #189-101 [Issue #1], expires on January 30, 2016. The renewal application was submitted prior to the due date of July 31, 2015 as required. A renewed MDWL and DWWP have been issued over the course of this inspection.

Drinking Water Works Permit (DWWP) #189-201 [Issue #1]

Permit to Take Water (PTTW) #8528-9ECQJP, expires on December 31, 2023

SOURCE

* **There were no obvious potential sources of pollution or activities in or around the source that could impair source water quality.**

Renfrew County is not located within a Source Protection Area and there is no conservation authority.

PERMIT TO TAKE WATER

* **The owner had a valid PTTW for all of the production sources.**

Permit to Take Water #8528-9ECQPJ, expiring on December 31, 2023.

* **The maximum water takings were in accordance with those allowed under the PTTW.**

Maximum taking from the Ottawa River under the PTTW is 15911m³/day and all raw water takings are well within this limit. The maximum raw taking since the last inspection was 5887m³/day. Maximum flow rate of 12274L/min (204.6L/s) was also not exceeded over the inspection period.

CAPACITY ASSESSMENT

CAPACITY ASSESSMENT

* **There was sufficient monitoring of flow as required by the Permit and Licence or Approval issued under Part V of the SDWA**

  Flows are measured at various locations within the plant including flow into filters #1-3 (combined together for raw values), various backwash/wastewater flows and treated flows.

* **Flow measuring devices were calibrated or verified in accordance with the requirements of a Permit and Licence or Approval issued under Part V of the SDWA.**

  Annual verification records were provided for all flow meters.

  It is noted that the flow meter that measures flow from filter #3 failed the annual verification in December 2015 and plans to be fixed.

* **The owner was in compliance with the conditions associated with maximum flow rate or the rated capacity conditions in the Permit and Licence or Approval issued under Part V of the SDWA.**

  Municipal Drinking Water Licence #189-101 specifies a rated capacity for the treatment system of 13638m³/day. A review of treated flows over the inspection period indicates a maximum treated flow of 4573m³/day.

* **Records of flows and any capacity exceedances were made in accordance with the Permit and Licence or Approval issued under Part V of the SDWA.**

  Flows are recorded on a daily basis. There were no capacity exceedances over the inspection period.

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.**

  A watermain extension was completed on Thomas Street. A Form 1 complete with drawings was completed as required.

  Under the renewed DWWP, Forms 1-3 must be completed prior to the modified or replaced components being placed into service.

* **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.**

  A Form 2 was completed for the addition of the pre-clearwell chlorine analyzer.

  Under the renewed DWWP, Forms 1-3 must be completed prior to the modified or replaced components being placed into service.

* **Records indicated that the treatment equipment was operated in a manner that achieved the design capabilities required under Ontario Regulation 170/03 or a Permit, Licence or Approval issued under Part V of the SDWA at all times that water was being supplied to consumers.**

  A tour of the plant facilities was provided by the operators. The operators record a significant amount of data and readings throughout the process for the Deep River WTP on the Daily Rounds Sheets and Operational Summary sheets. These readings are manually entered into and managed by a data management program. The information recorded allows the operators to respond to changes in the raw water quality and adjust the process as required.

  The distribution system is also operated by OCWA. Additional maintenance work was completed on the tower in 2015 and the inside of the tower has been re-ligned.

TREATMENT PROCESSES

* **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.**

  A review of results indicates that there are no issues maintaining residuals >0.05mg/L.

* **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 Permit and Licence issued under Part V of the SDWA.**

* **Up-to-date plans for the drinking-water system were available in accordance with the Permit and Licence issued under Part V of the SDWA.**

  The addition of the chlorine analyzer prior to the clearwell is to be added to the process drawing.

* **The facility and equipment appeared to be maintained and in a fit state of repair.**

  The plant and surrounding area is well maintained, tidy and organized.

* **The Operator-in-Charge had ensured that all equipment used in the processes was monitored, inspected, and evaluated.**

  An Operator In Charge (OIC) is noted in the logbook each day and completes regular checks of the system.

* **Based on information provided by the owner/operator, it was not likely that contaminants entering the floor drains would have come in contact with the source water or treated water.**

  Floor drains are connected to the sanitary system.

* **Measures were taken to ensure that pesticides were not applied, stored, or mixed in the immediate vicinity of source(s), treatment, and storage facilities.**

TREATMENT PROCESS MONITORING

* **Primary disinfection chlorine monitoring was being conducted at a location approved by Permit, Licence or Approval issued under Part V of the SDWA, or at/near a location where the intended CT had just been achieved.**

  Chlorine residuals are measured at the end of the clearwells in order to monitor primary disinfection at the plant. A new chlorine analyzer was installed prior to the clearwell to provide operators with an early warning of issues with chlorine dosing.

* **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.**

  There are three (3) package Actiflo units providing flocculation and clarification processes, which is then directed to three (3) dual media filters. Each filter is equipped with a dedicated turbidity analyzer, continuously measuring filter effluent turbidity.

  Once filter effluent turbidity reaches 0.3NTU, water is sent to waste, the Actiflo units will shutdown and no water is directed to the clearwells.

TREATMENT PROCESS MONITORING

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

  Operators follow an in-house laboratory schedule to complete the distribution chlorine residuals. Operators take at least one (1) chlorine residual within the distribution system on a daily basis (weekdays) with four (4) taken on one day and three (3) taken on another, separated by at least forty-eight (48) hours.

* **Records confirmed that the maximum free chlorine residual in the distribution system was less than 4.0 mg/L or that the combined chlorine residual was less than 3.0 mg/L.**

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

* **Samples for chlorine residual analysis were tested using an acceptable portable device.**

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

  The chlorine analyzers both alarm at 1.0mg/L and will shutdown the plant.

  The three (3) turbidity analyzers alarm at 0.3NTU and will filter to waste.

* **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.**

  Continuous analyzers are verified on a monthly basis using calibrated hand held analyzers.

PROCESS WASTEWATER

* **The process wastewater and residual solids/sludges were being treated, handled and disposed of in accordance with the design requirements approved under the Permit and Licence or Approval issued under Part V of the SDWA.**

  Wastewater generated by the treatment process is directed to the clarifier then to the dewatering centrifuge. The clarified water is directed back to the Ottawa River and is monitored for total suspended solids and turbidity. The dewatered sludge is hauled to landfill.

* **The process wastewater discharge quality and discharge monitoring program complied requirements established in the Permit and Licence or Approval issued under Part V of the SDWA.**

  Municipal Drinking Water License #189-101, states a Residue Management requirement for a Total Suspended Solids (TSS) annual average of 25mg/L, discharging directly to the Ottawa River. The system has no issues meeting this limit and the 2015 annual average was 1.5mg/L.

DISTRIBUTION SYSTEM

DISTRIBUTION SYSTEM

* **The owner had up-to-date documents describing the distribution components as required.**

  The main drawing for the Town of Deep River distribution system is listed in the DWWP (Schedule A, Table 1). Any updates to this map must be completed within twelve (12) months of completing the change under Schedule B, Condition 3.5. Watermains added or extended in 2010 and 2012 have not yet been added to the main drawing, now known as Town of Deep River Distribution Map, July 2015. The most recent extension, completed in 2015, is also not on this map; however, separate drawings are available with the Form 1 requirements showing the components for all changes that have been completed.

* **There is a backflow prevention program, policy and/or bylaw in place.**

  The Town has a bylaw that new residential or commercial buildings, or any retrofit done on the sanitary sewer, be equipped with backflow prevention valves.

  OCWA now has an operator who is qualified to test backflow preventers. Any backflow prevention devices within the water or sewage system should be tested and inspected on annual basis.

  The Ministry released A Guide for Drinking Water System Owners Seeking to Undertake a Backflow Prevention Program which can be found at:

  https://www.ontario.ca/document/guide-drinking-water-system-owners-seeking-undertake-backflow-prevention-program

* **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.**

* **Existing parts of the distribution system that were taken out of service for inspection, repair or other activities that may lead to contamination, and all new parts of the distribution system that came in contact with drinking water, were disinfected in accordance with Schedule B, Condition 2.3 of the Drinking Water Works Permit.**

  Work in the distribution system is overseen by OCWA operators.

* **The owner had implemented a program for the flushing of watermains as per industry standards.**

  The entire system is flushed twice per year - spring and fall. Each hydrant is operated and inspected during the flushing and any problems are noted.

* **Records confirmed that disinfectant residuals were routinely checked at the extremities and "dead ends" of the distribution system.**

  Operators check the dead ends of the distribution system on a weekly basis.

* **A program for inspecting and exercising valves did not exist.**

  Valves in the distribution system are operated as needed. A program for exercising and inspecting these valves is recommended.

* **There was a program in place for inspecting and operating hydrants.**

  Hydrants are inspected and operated during the spring and fall flush.

* **There was a by-law or policy in place limiting access to hydrants.**

  Contractors who need to use a hydrant to obtain water contacts the operators in order to connect to the hydrant. The Town prohibits parking within 3m of fire hydrants.

DISTRIBUTION SYSTEM

* **The owner has undertaken efforts to identify, quantify and reduce sources of apparent water loss.**

  Users of the water system are charged a flat rate and are not metered for usage. The implementation of a metering system can be costly and labour intensive.

  Operators monitor the amount of raw water produced and the treated water entering the distribution system on a daily basis; however, there is no method for verifiying water use and loss in the distribution system. The system does experience watermain breaks and are repaired as needed.

  Guidance on determining water loss in the distribution system can be found in the Infraguide: Water Use and Loss in Water Distribution Systems, A Best Practice by the National Guide to Sustainable Municipal Infrastructure. This document can be found online at the Federation of Canadian Municipalities (FCM) website:

  https://www.fcm.ca/home.htm

* **The distribution system pressure was monitored to alert the operator of conditions which may have lead to loss of pressure below the value under which the system is designed to operate.**

  Pressure leaving the plant is alarmed and operators are notified if the pressure drops below the alarm set point.

* **Based on the records available the owner was able to maintain proper pressures in the distribution system.**

  During the work on the tower in 2015, pressure in the system was maintained by the highlift pumps. An incident of low pressure was reported during a power outage and there is a pressure drop during the time it takes for the standby generator to start, approximately thirty-six (36) seconds. This was reported as required.

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.**

* **The operations and maintenance manuals did meet the requirements of the Permit and Licence or Approval issued under Part V of the SDWA.**

  Municipal Drinking Water Licence #189-101, Schedule B, Section 16.0 states the requirements for the contents of the Operations and Maintenance Manuals. The renewed Licence will specifically require CT calculations be added to the manual, which is already included.

LOGBOOKS

* **Logs for the drinking water subsystem(s) contained the required information.**

  There are two (2) logbooks for the system - a treatment plant logbook and the distribution system logbook. Both logbooks were reviewed and operators record detailed logs of actions taken. The distribution logbook contains drawings of work completed, clearly noting valves, pipes and locations.

* **Logbook entries were made in chronological order.**

LOGBOOKS

* **The record system allowed the reader to unambiguously identify the person who made the logbook entry.**

* **Entries in the logbook were made only by appropriate and authorized personnel.**

* **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 provided for process chemicals and/or standby power generator fuel.**

* **Clean-up equipment and materials were in place for the clean up of spills.**

  A spill kit is located on-site.

* **Standby power generators were tested under normal load conditions.**

  The standby generator is tested on a monthly 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.**

  The plant is surrounded by a fence with locking gate, kept locked when operators are not present. The plant and low lift station are both equipped with intrusion alarms. The tower is fenced with locking gate and ladder access is restricted.

CONSUMER RELATIONS

CONSUMER RELATIONS

* **Water conservation was being practiced by the owner or operating authority.**

  The Town has a bylaw restricting water usage for lawn watering during the summer months.

* **Required documents were available free-of-charge during normal business hours at a location accessible to the public.**

  Documents are available at the Town office and/or on the Town's website. The Town's website is to be updated with the most recent annual reports.

* **The owner did take effective steps to advise users of the water system of the availability of Annual Reports, including posting a copy on a web site, if applicable.**

  Residents are notified via newsletter that the reports area available at the Town office or website.

CERTIFICATION AND TRAINING

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

  The Overall Responsible Operator (ORO) is noted in the logbook each day.

  Deep River WTP is a Class III Water Treatment plant and the distribution system is classified as a Class I Water Distribution system.

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

  Operators In Charge (OIC) are also noted in the logbook each day. All operators designated OIC are appropriately licenced.

* **All activities that were undertaken by uncertified persons in the DW subsystems were overseen by persons having the prescribed qualifications.**

  OCWA provides the properly certified operators who oversee work completed in the system.

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

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

* **Operator certificates or water quality analyst certificates were displayed in a conspicuous location at the workplace or at the premises from which the subsystem was managed.**

* **The classification certificates of the subsystems were conspicuously displayed at the workplace or at premises from which the subsystem was managed.**

* **An adequately licenced operator was designated to act in place of the overall responsible operator when the overall responsible operator was unable to act.**

* **The owner/operating authority was aware of the operator training and record keeping requirements, and they were taking reasonable steps to ensure that all operators receive the required training.**

WATER QUALITY MONITORING

WATER QUALITY MONITORING

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

  Raw water samples are required weekly under Schedule 10-4, testing for E.coli and total coliform.

  A review of results provided show that all samples were taken and analyzed as required.

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

  The number of distribution samples required each month is determined by the population of the system under Schedule 10-2 - a minimum of eight (8) distribution samples per month with an additional sample for every 1000 people served by the system with at least one (1) sample taken per week. Deep River DWS serves a population of approximately 4200 people, requiring twelve (12) distribution samples each month, testing for E.coli, total coliform and 25% of samples tested for Heterotrophic Plate Count (HPC).

  A review of results provided show that all samples were taken and analyzed as required.

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

  Treated water samples are required on a weekly basis under Schedule 10-3, testing for E.coli, total coliform and HPC.

  A review of results provided show that all samples were taken and analyzed as required.

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

  Inorganic (Schedule 23) parameters are required every twelve (12) months under Schedule 13-2 for a surface water source. These were completed on January 13, 2015, previous samples were completed in January 2014.

  All results were well within the Ontario Drinking Water Quality Standards (ODWQS).

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

  Organic (Schedule 24) parameters are required every twelve (12) months under Schedule 13-4 for a surface water source. These were completed on January 13, 2015, previous samples were completed in January 2014.

  All results were well within the Ontario Drinking Water Quality Standards (ODWQS).

  As of January 1, 2016, Ontario Regulation 170/03 was amended to remove thirteen (13) pesticides and the addition of MCPA to the list. A copy of the Update Bulletin is included in the Appendices which summarizes these changes.

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

  THM sampling is required every three (3) months from a point in the distribution system that is likely to have elevated THM levels (ie. the farthest point) under Schedule 13-6. The ODWQS for THMs is 100µg/L, based on the running average (RAA) of the last four (4) sample results. The current running annual average, as of October 2015, is 88.5µg/L.

  As of January 1, 2016, Ontario Regulation 170/03 was amended for THM sampling and reporting requirements. Labs are no longer required to calculate the RAA, resamples are no longer required and the RAA calculation has changed. A copy of the Update Bulletin is included in the Appendices which summarizes these changes.

WATER QUALITY MONITORING

* **Trihalomethane samples were being collected from a point in the distribution system or connected plumbing system that was likely to have an elevated potential for the formation of trihalomethanes.**

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

  Nitrate/nitrite sampling is required every three (3) months from the treated water location under Schedule 13-7. These samples have been taken and analyzed as required.

  Nitrate results ranged from 0.11-0.23mg/L, well within the ODWQS of 10.0mg/L.

  Nitrite results were consistently less than 0.10mg/L, also well within the ODWQS of 1.0mg/L.

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

  Sodium sampling is required every 60 months. It was last sampled for on January 7, 2014 as required and indicated a result of 14.0mg/L. Notification to the local Medical Officer of Health is required for results >20mg/L and the aesthetic objective for sodium is 200mg/L.

  Sodium sampling is required again in 2019.

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

  Fluoride is continuously monitored prior to the distribution system.

* **The owner ensured that water samples were taken at the prescribed location.**

* **All water quality monitoring requirements imposed by the Permit and Licence or Approval issued under Part V of the SDWA were being met.**

  Municipal Drinking Water License #189-101, states a Residue Management requirement for a Total Suspended Solids (TSS) annual average of 25mg/L, discharging directly to the Ottawa River. The system has no issues meeting this limit and the 2015 annual average was 1.5mg/L.

* **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**

  Deep River DWS is exempt from lead sampling under Schedule 15.1-5 (9).

  Lead samples in the distribution system were required during both 2015 sampling periods. This sampling was completed at three (3) locations within the distribution system with lead results of <0.001mg/L, well within the ODWQS of 0.01mg/L. Alkalinity and pH were also tested as required.

  Lead will be due for sampling in the distribution system again in the December 15, 2017 - April 15, 2018 and June 15, 2018 - October 15, 2018 sampling periods. Alkalinity and pH testing remains required during each of the sampling periods of each year.

* **The owner was conducting sampling beyond the minimum legislative requirements.**

  Operators complete additional chlorine residuals at the extremities of the system. Samples are often taken in response to complaints. THMs are tested at the treated water location as well as in the distribution system. Numerous process control samples are also taken in order to monitor the process.

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

WATER QUALITY MONITORING

* **The drinking water system owner had submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order Certificate of Approval (OWRA) or a Permit, Licence or Approval issued under Part V of the SDWA.**

  The new parameter under Schedule 24, MCPA, has been added to the Laboratory Services Notification for Deep River.

* **Based on information provided by the owner/operator, samples were being taken and handled in accordance with instructions provided by the drinking-water system's laboratories.**

* **The owner indicated that the required records are kept and will be kept for the required time period.**

WATER QUALITY ASSESSMENT

* **Records show that all water sample results taken during the review period met the Ontario Drinking Water Quality Standards (O. Reg. 169/03).**

REPORTING & CORRECTIVE ACTIONS

* **Corrective actions (as per Schedule 17) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

  One (1) Adverse Water Quality Incident (AWQI) related to pressure occurred during the work on the tower. AWQI #124357 was reported and actions were taken as required.

* **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**

  Verbal notifications are completed immediately to both the health unit and SAC.

* **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**

  Written notifications were completed as required.

* **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**

  The written resolution was provided immediately upon resolving the issue.

* **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.**

  Operators record call-ins in the logbook as well as a written call-in report. Records indicate the time the alarm was received, the time of arrival at the plant, actions taken to resolve the issue and time completed.

* **The Annual Report containing the required information was prepared by February 28th of the following year.**

  An Annual Report is prepared each year and submitted to municipal council.

REPORTING & CORRECTIVE ACTIONS

* **Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.**

  The Annual Report and Summary Report are included in one single report which is submitted to municipal council.

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

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. **A program for inspecting and exercising valves did not exist.**

   Valves are not regularly inspected or exercised.

   Recommendation:
   It is recommended that valves are inspected and exercised on a regular basis to ensure proper operation in the event of an emergency.

SIGNATURES

Inspected By:	Signature: (Provincial Officer):
Jen Bitten	
Reviewed & Approved By:	Signature: (Supervisor):
James Mahoney	
Review & Approval Date:	23/02/2016 (dd/mm/yyyy)

Note: This inspection does not in any way suggest that there is or has been compliance with applicable legislation and regulations as they apply or may apply to this facility. It is, and remains, the responsibility of the owner and/or operating authority to ensure compliance with all applicable legislative and regulatory requirements.

APPENDIX A

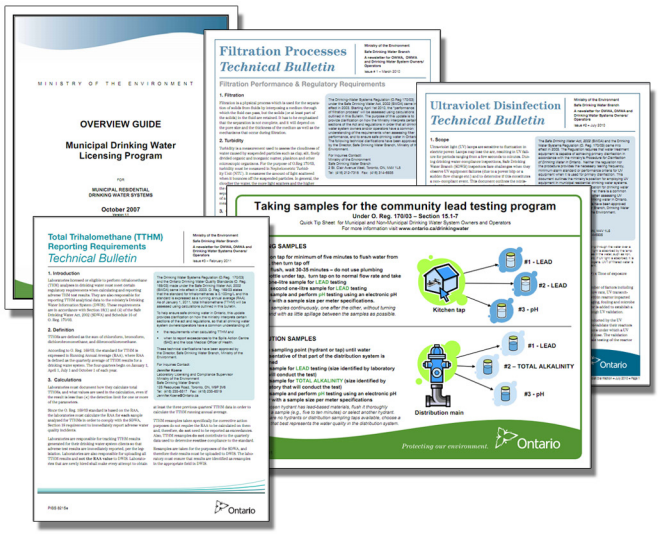
STAKEHOLDER SUPPORT

Key Reference and Guidance Material for Municipal Residential Drinking Water Systems

Many useful materials are posted on the Ministry of the Environment's **Drinking Water Ontario** website at **www.ontario.ca/drinkingwater** to help in the operation of your drinking water system.

Below is a list of key materials frequently used by owners and operators of municipal drinking water systems. To read or download these materials, go to **Drinking Water Ontario** and search in the **Resources** section by **Publication Number**.

Visit **Drinking Water Ontario** for more useful materials. Contact the Public Information Centre if you need assistance or have questions at 1-800-565-4923/416-325-4000 or **picemail.moe@ontario.ca**.



PUBLICATION NUMBER	PUBLICATION TITLE
4448e01	Procedure for Disinfection of Drinking Water in Ontario
7152e	Strategies for Minimizing the Disinfection Products Trihalomethanes and Haloacetic Acids
7467	Filtration Processes Technical Bulletin
7685	Ultraviolet Disinfection Technical Bulletin
8215	Total Trihalomethane (TTHM) Reporting Requirements Technical Bulletin (February 2011)
2601e	Overview Guide: Municipal Drinking Water Licensing Program
0000	Municipal Drinking Water Licensing Program Bulletin, Issue 1, January 2011
0000	Certification Guide for Operators and Water Quality Analysts
6560e	Taking Samples for the Community Lead Testing Program
7423e	Community Sampling and Testing for Lead: Standard and Reduced Sampling and Eligibility for Exemption
7128e	Drinking Water System Contact List
4449e01	Technical Support Document for Ontario Drinking Water Quality Standards

PIBS 8990b

Ontario

APPENDIX B

MUNICIPAL DRINKING WATER LICENCE & DRINKING WATER WORKS PERMIT

Ontario

MUNICIPAL DRINKING WATER LICENCE

Licence Number: 189-101
Issue Number: 1

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 Deep River

100 River Road
Deep River Box 400
ON

For the following municipal residential drinking water system:

Deep River 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

DATED at TORONTO this 31st day of January, 2011

Signature

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

Schedule A: Drinking Water System Information

System Owner	**Deep River, The Corporation of the Town of**
Licence Number	**189-101**
Drinking Water System Name	**Deep River Drinking Water System**
Schedule A Issue Date	**January 31st, 2011**

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

Licence

Licence Issue Date	January 31, 2011
Licence Expiry Date	January 30, 2016
Application for Licence Renewal Date	July 31, 2015

Drinking Water Works Permit

Drinking Water System Name	Permit Number	Issue Date
Deep River Drinking Water System	189-201	January 19, 2011

Permits to Take Water

Water Taking Location	Permit Number	Issue Date
Deep River Water Treatment Plant	3664-63ZP3C	25-Aug-2004

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:	189-301
Alternately, if one Financial Plan is developed for all drinking water systems owned by the owner, the Financial Plan Number shall be:	189-301A

Accredited Operating Authority

Drinking Water System or Operational Subsystems	Accredited Operating Authority	Operational Plan Number
Deep River Water Treatment Plant	Ontario Clean Water Agency	189-401
Deep River Distribution System	Ontario Clean Water Agency	189-401A

Schedule B: General Conditions

System Owner	**Deep River, The Corporation of the Town of**
Licence Number	**189-101**
Drinking Water System Name	**Deep River Drinking Water System**
Schedule B Issue Date	**January 31st, 2011**

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;

"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 and the conditions of this licence;

"**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;

"**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 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 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-205**" means the Ministry of the Environment publication titled "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)" dated October 1995, as amended;

"**publication NPC-207**" means the Ministry of the Environment draft technical publication titled "Impulse Vibration in Residential Buildings" dated November 1983, supplementing the Ministry of the Environment "Model Municipal Noise Control By-law, Final Report" dated August 1978;

"**publication NPC-232**" means the Ministry of the Environment publication titled "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)" dated October 1995, 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 generator(s) shall be considered using the point of impingement limit instead of the Ministry of the Environment screening level for emergency generator(s):

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

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 Permits to Take Water

7.1 A permit to take water identified in Schedule A of this licence is associated with the taking of water for purposes of the operation of the drinking water system and is the applicable permit on the date identified as the Schedule A Issue Date.

8.0 Financial Plan

8.1 The owner of the drinking water system, by the later of July 1, 2010 and the date that is six months after the date the first licence for the system is issued, shall prepare and approve financial plans for the system that satisfy the requirements prescribed under section 3 of O. Reg. 453/07.

8.2 The owner of the drinking water system shall ensure that every financial plan prepared in accordance with subsections 2 (1) and 3 (1) of O. Reg. 453/07 contains on the front page of the financial plan, the appropriate financial plan number as set out in Schedule A of this licence.

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 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 of a change of any operating authority identified in Schedule A of this licence.

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 and NSF/61.

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 Food grade oils and lubricants; or

14.3.5 Any particular chemical or material where the owner has written documentation signed by the Director that indicates that the Ministry of the Environment 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 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;

16.2.4 Procedures for the operation and maintenance of monitoring equipment;

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

16.2.6 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.

Schedule C: System-Specific Conditions

System Owner	**Deep River, The Corporation of the Town of**
Licence Number	**189-101**
Drinking Water System Name	**Deep River Drinking Water System**
Schedule C Issue Date	**January 31st, 2011**

1.0 Performance Limits

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)
Deep River Water Treatment Plant	13,638

1.2 Despite condition 1.1, a treatment subsystem may be operated temporarily at a daily volume above the value set out in column 2 of Table 1 for the purposes of fighting a large fire or for the maintenance of the drinking water system.

1.3 Condition 1.2 does not authorize the discharge into the distribution system of any water that does not otherwise meet all of the requirements of this licence and all other regulatory requirements, including compliance with the Ontario Drinking Water Quality Standards.

Maximum Flow Rates

1.4 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

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)
Deep River Water Treatment Plant	Suspended Solids	25	Not Applicable

UV Disinfection Equipment Performance

1.6 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 4, 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.

Table 4: UV Disinfection Equipment Performance

Column 1 Treatment Subsystem or Treatment Subsystem Component Name	Column 2 Minimum Continuous Pass-Through UV Dose (mJ/cm^2)
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 must 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 must be checked and calibrated at least once every year during which the drinking water system is in operation.

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**
Deep River Water Treatment Plant	Suspended Solids	Composite	Monthly	Effluent pipe discharging to Ottawa River

UV Disinfection Equipment

4.5 For each treatment subsystem or treatment subsystem component listed in column 1 of Table 8 and in addition to any other sampling, analysis and recording that may be required, continuous monitoring and recording with a minimum testing/reading and recording frequency of every four (4) hours shall be carried out for the test parameters set out in column 3 of the same row.

Table 8: UV Disinfection Equipment		
Column 1 Treatment Subsystem or Treatment Subsystem Component Name	**Column 2 Control Strategy**	**Column 3 Test Parameter**
Not Applicable	Not Applicable	Not Applicable

5.0 Studies Required

Not applicable

Schedule D: Conditions for Relief from Regulatory Requirements

System Owner	**Deep River, The Corporation of the Town of**
Licence Number	**189-101**
Drinking Water System Name	**Deep River Drinking Water System**
Schedule D Issue Date	**January 31st, 2011**

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

Not applicable

Ontario

DRINKING WATER WORKS PERMIT

Permit Number: 189-201
Issue Number: 1

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 Deep River

100 River Road
Deep River Box 400
ON

For the following municipal residential drinking water system:

Deep River 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

DATED at TORONTO this 19th day of January, 2011

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 Deep River**
Permit Number	**189-201**
Drinking Water System Name	**Deep River Drinking Water System**
Schedule A Issue Date	**January 19th, 2011**

1.0 System Description

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

Overview

The **Deep River Drinking Water System** consists a conventional, chemically assisted water treatment plant and a distribution system serving the Town of Deep River.

Deep River Water Treatment Plant

Source	Deep River
Plant Location	River Road
UTM Coordinates	(NAD 83: UTM Zone 18: 307335.00 m E., 5109295.00 m N.)
Notes	

Low Lift Works

Intake Crib

Description	a 750 mm diameter intake extending approximately 91 meters into the Ottawa River terminating at a depth of approximately 9 meters below the surface;
Notes	

Low Lift Pumping Station

Description	a low-lift pumping station consisting of a 9.14 m by 1.52 m by 5.64 m deep low lift pump well and above ground building
Location	(NAD 83: UTM Zone 18: 307445.00m E, 5109325.00m N)
Equipment	two vertical turbine pumps: • one nominal capacity 71 L/s or 6,100 m^3/d and • one nominal capacity 141 L/s or 12,200 m^3/d and one submersible pump: • nominal capacity of 83.1 L/s at 25m TDH, 7,171 m^3/d
Notes	raw water main from the low lift pumping station to the water treatment plant

Treatment Plant

Mixing

Description	an in-line static mixer, 300 mm diameter;
Notes	

Flocculation and Clarification

Description	three (3) package flocculation and clarification (Actiflo) units, each rated at raw water flow rate of 4,773 m^3/day, consisting of:
Equipment	• a rapid mixing basin, an injection chamber, a maturation chamber and a high rate ballasted settling basin, scraper and inclined tube settlers; • four (4) sand recirculation pumps (three duty one stand by) • three (3) hydrocyclones; • electrical and mechanical equipment and control.
Notes	

Filtration

Description	three (3) dual media sand anthracite filters each with a surface area of 18.9 m^2; for a total area of 56.7 m^2
Equipment	• two (2) air scour blowers equipped with 18.6 kW motor (one duty, one standby)four (4) sand recirculation pumps (three duty one stand by • two (2) backwash variable speed vertical turbine pumps, (one duty, one standby) each rated at 236 L/s at a TDH of 22 m; • piping and control to facilitate filter to waste; • electrical and mechanical equipment and control.
Notes	

Treated Water Storage

Clearwells	• one (1) clearwell with a capacity of 1,364 m^3; • one (1) clearwell with a capacity of 1,507 m^3;
Pump Wells	• one (1) pump well with a capacity of 90 m^3; • one (1) pump well with a capacity of 110 m^3
Notes	

High Lift Pumps

Description	four (4) vertical turbine high lift pumps, (three duty, one standby) each rated at 87 L/s at a TDH of 82 m.
Notes	

Disinfection System

Description	gaseous chlorine disinfection system consisting of two (2) banks of four (4) 68.2 kg gas cylinders (one bank duty, one bank standby) and eight (8) weigh scales, three (3) V– notch chlorinators;
	chlorine solution lines, one leading to an injection point at the filter outlet header prior to the clearwell, and the other leading to an injection point in the pump well upstream the high lift header.
	Chlorine gas scrubber system;
Notes	

Chemical Storage and Feed Systems

Coagulant	Primary Coagulant feed system consisting of one (1) 6,600 L and one (1) 21,200 L capacity liquid coagulant, one (1) 3100 L day tank and two (2) (one duty, one standby) chemical feed metering pumps with a flow capacity of 40 L/hr;
pH Adjustment	pH/Alkalinity Adjustment consisting of two (2) 51,200 L per tank capacity liquid caustic soda, two (2) 3100 L per tank day tanks and four (4) (two duty, two standby) chemical feed metering pumps with a flow capacity of 60 L/hr each and chemical feed lines to raw water pipe (pre-alkalinity) just upstream of the static mixer, and to the distribution header;
Coagulant Aid	Coagulant aid for the water treatment clarifiers – two (2) dry polymer preparation systems each consisting of 3100 L dissolving tank with mixer; four (4) (three duty, one standby) chemical feed metering pumps with a flow capacity of 90 L/hr each and chemical feed lines to the three package treatment units injection chambers;
Wastewater Coagulant Aid	Coagulant aid for the wastewater clarifier consisting of two (2) dry polymer preparation systems each consisting of 3100 L dissolving tank with mixer; three (3) (two duty, one standby) chemical feed metering pumps with a flow capacity of 45 L/hr each and chemical feed lines to the hydrocyclones reject pipe, and to surge tank pumps discharge pipe;
	Coagulant aid for the dewatering centrifuge consisting of two (2) dry polymer preparation systems each consisting of 800 L dissolving tank with mixer; two (2) (one duty, one standby) chemical feed metering pumps with a flow capacity of 90 L/hr each and chemical feed line to the sludge dewatering centrifuge inlet;
Dechlorination	Dechlorination chemical feed system consisting of one (1) 210 L storage tank and two (2) (one duty, one standby) chemical feed metering pumps with a flow capacity of 2 L/hr each and chemical feed line to the wastewater clarifier supernatant discharge pipe;
Fluoridation	Hydrofluosilicic acid feed system consisting of one (1) 210 L storage tank and two (2) (one duty, one standby) chemical feed metering pumps with a flow capacity of 4 L/hr each and chemical feed line to the distribution header;
Notes	

Instrumentation and Controls

Turbidity	• one (1) continuous turbidity monitor located on the inlet header to the water treatment plant; • three (3) continuous turbidity monitors located on the clarifier discharge; • three (3) continuous turbidity monitors located on the filter discharge; • one (1) continuous turbidity monitor located on the wastewater clarifier supernatant discharge pipe; • one (1) continuous turbidity monitor located on the distribution header.
pH	• one (1) continuous pH monitor located on raw water feed to clarifiers after static mixer; • three (3) continuous pH monitors located in the clarifiers; • one (1) continuous pH monitor located on the distribution header prior to final pH adjustment; • one (1) continuous pH monitor located on the distribution header after final pH adjustment.
Chlorine	• one (1) continuous chlorine analyzer located on the distribution header prior to final chlorine injection; • one (1) continuous chlorine analyzer located on the distribution header after final chlorine injection.
Fluoride	• one (1) continuous fluoride ion analyzer located on the distribution header.
SCADA	SCADA system connected to all project PLCs, with supervising personnel computer located in the office of the water treatment plant building.
Notes	

Residue Management Facility (Wastewater Treatment)

Description	two (2) filter backwash wastewater surge tanks, each approximately 113 m^3, equipped with two transfer pumps;
	wastewater tube settlers clarifier having a surface area of 21.8 m^2 with dechlorinated supernatant discharge line to the river;
	a sludge thickener tank of 179 m^3 equipped with two (2) sludge pumps that convey the thickened sludge to a dewatering centrifuge with supernatant discharge to wastewater surge tanks;
Notes	

Standby Power

Description	One (1) standby 600 kW diesel generator complete with fuel storage tank to run the generator for 24 hours under full load;
Notes	

Storage Reservoir

Description	1,513 m^3 elevated water tower located near the water treatment plant, on the corner of Deep River Road and Highway 17, south of the plant.
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
Map of the Distribution System	November 20, 2009

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	**Deep River, The Corporation of the Town of**
Permit Number	**189-201**
Drinking Water System Name	**Deep River Drinking Water System**
Schedule B Issue Date	**January 19th, 2011**

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 the provisions of the AWWA C651 – Standard for Disinfecting Water Mains; AWWA C652 – Standard for Disinfection of Water-Storage Facilities; AWWA C653 – Standard for Disinfection of Water Treatment Plants; or AWWA C654 – Standard for Disinfection of Wells; or an equivalent procedure.

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 publication “Watermain Design Criteria for Future Alterations Authorized under a Drinking Water Works Permit – March 2009”, as amended from time to time; and

d) Is consistent with or otherwise addresses, the design objectives contained within the Ministry of the Environment 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 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 Connects to another drinking water system; or

3.2.4 Results in the fragmentation of the drinking water system.

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

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 modifying or replacing the following components:

4.1.1 Raw water, treatment process or treated water pumps;

4.1.2 Chemical metering or chemical handling pumps;

4.1.3 Valves;

4.1.4 Instrumentation and controls;

4.1.5 Cathodic corrosion protection; or

4.1.6 Spill containment works.

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

4.2.1 Raw water, treatment process or treated water piping within the treatment subsystem.

4.3 The modification or replacement of a drinking water system component set out in condition 4.1 or the replacement of a drinking water system component set out in condition 4.2 must not result in:

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

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

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

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

4.3.5 A negative impact on the ability to undertake compliance and other monitoring; or

4.3.6 An adverse effect on the environment.

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

4.5 The verifications required in condition 4.4 shall be:

4.5.1 Recorded on "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System" as published by the Ministry of the Environment; and

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

4.6 For greater certainty, the verification requirements set out in conditions 4.4 and 4.5 do not apply to any modification or replacement in respect of the drinking water system which:

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

4.6.2 Constitutes maintenance or repair of the drinking water system.

4.7 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;

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 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; and

5.1.12 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 distribution of drinking water.

5.3 The emergency generators identified in condition 5.1.12 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 5.1.12.

Performance Limits

5.5 The owner shall ensure that a drinking water system component identified in conditions 5.1.1 to 5.1.12 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 half-hourly screening level of 1880 ug/m^3 as amended;

5.5.3 The noise emissions comply at all times with the limits set out in publication NPC-205 and/or publication NPC-232, as applicable; and

5.5.4 The vibration emissions comply at all times with the limits set out in publication NPC-207.

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 5.5.3 and 5.5.4 is being achieved, through noise abatement equipment and/or operational procedures.

5.8 The verifications required in condition 5.6 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.

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

5.9 For greater certainty, the verification 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 The following are authorized under this permit:

Not applicable.

APPENDIX C

PERMIT(S) TO TAKE WATER

Ontario

Ministry of the Environment
Ministère de l'Environnement

PERMIT TO TAKE WATER
Surface Water
NUMBER 8528-9ECQPJ

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 Deep River
PO Box 400
Deep River, Ontario
K0J 1P0
Canada

For the water taking from: Ottawa River

Located at: 177 River Rd
Deep River, County of Renfrew

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 Ottawa District Office.

(e) "Permit" means this Permit to Take Water No. 8528-9ECQPJ including its Schedules, if any, issued in accordance with Section 34 of the OWRA.

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

(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 September 23, 2013 and signed by Christopher Carroll, 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 **December 31, 2023**. 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	12,274	24	15,911,000	365	18 307340 5109278
						Total Taking:	15,911,000		

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.

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.

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***

This Permit cancels and replaces Permit Number 3664-63ZP3C, issued on 2004/08/25.

Dated at Kingston this 17th day of December, 2013.

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 8528-9ECQPJ, dated December 17, 2013.

APPENDIX D

INSPECTION RATING RECORD

Ministry of the Environment - Inspection Summary Rating Record (Reporting Year - 2015-2016)

DWS Name:	DEEP RIVER DRINKING WATER SYSTEM
DWS Number:	220000923
DWS Owner:	Deep River, The Corporation Of The
Municipal Location:	Deep River
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	December 10, 2015
Ministry Office:	Ottawa District

Maximum Question Rating: 762

Inspection Module	Non-Compliance Rating
Permit To Take Water	0 / 18
Capacity Assessment	0 / 42
Treatment Processes	0 / 111
Process Wastewater	0 / 20
Distribution System	0 / 25
Operations Manuals	0 / 42
Logbooks	0 / 42
Consumer Relations	0 / 8
Certification and Training	0 / 65
Water Quality Monitoring	0 / 160
Reporting & Corrective Actions	0 / 88
Treatment Process Monitoring	0 / 141
TOTAL	**0 / 762**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 18-FEB-16 (Inspection ID: 1-BZINJ).

Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2015-2016)

DWS Name:	DEEP RIVER DRINKING WATER SYSTEM
DWS Number:	220000923
DWS Owner:	Deep River, The Corporation Of The
Municipal Location:	Deep River
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	December 10, 2015
Ministry Office:	Ottawa District

Maximum Question Rating: 762

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 18-FEB-16 (Inspection ID: 1-BZINJ).

APPENDIX E

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.

PIBS 6797e

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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).

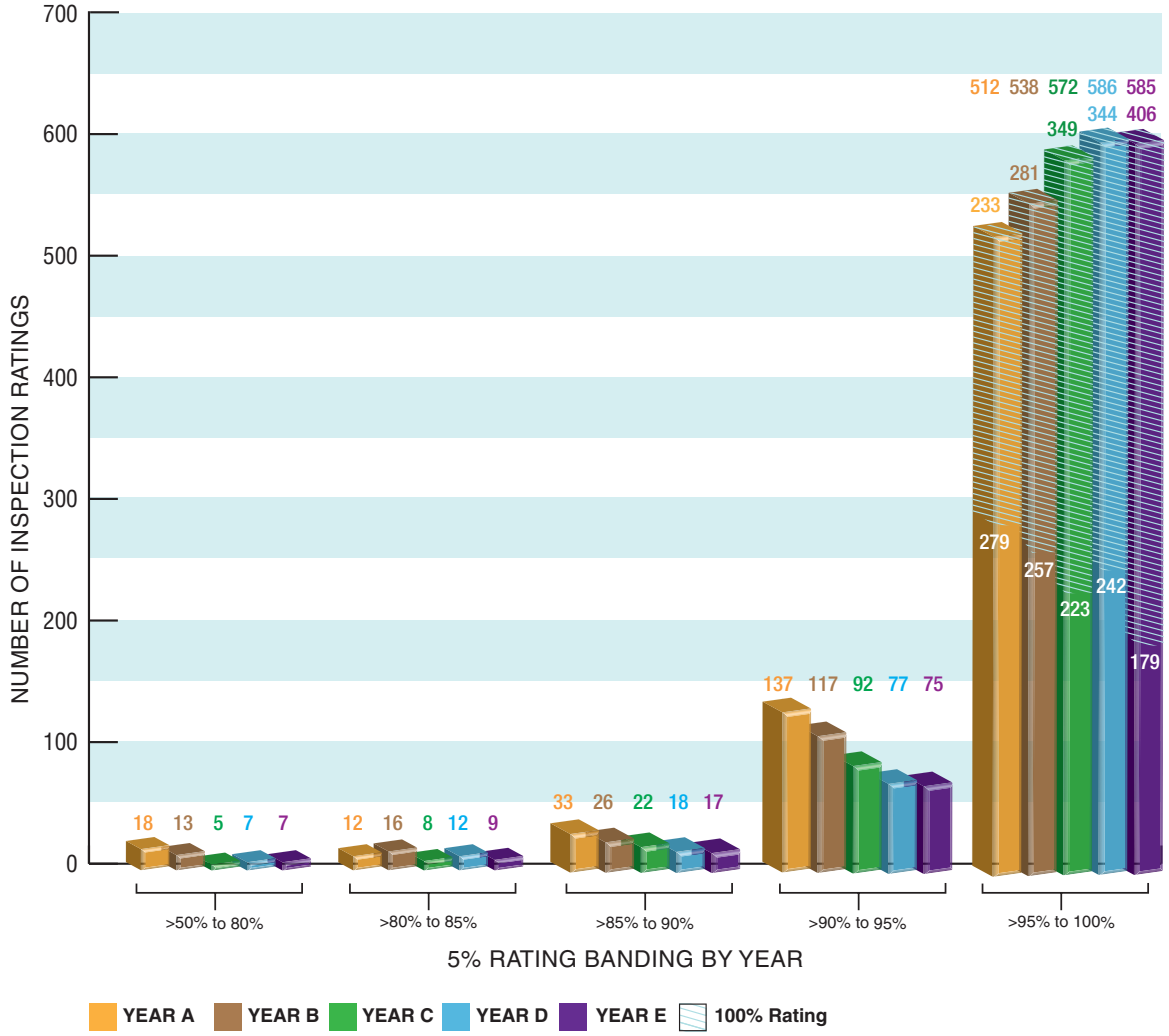
The risk ratings of all non-compliant answers are summed and divided by the sum of the risk ratings of all questions asked (maximum question rating). The resulting inspection risk rating (as a percentage) is subtracted from 100 per cent to arrive at the final inspection rating.

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 F

REGULATORY AMENDMENTS UPDATE BULLETIN
CHANGES TO O.REG. 170/03 AND O.REG. 169/03

Regulatory Amendments
UPDATE Bulletin

Ministry of the Environment & Climate Change

Safe Drinking Water Branch

An update for Ontario Regulation 170/03 Systems

CHANGES TO O. REG 170/03 AND O. REG 169/03

Attention owners and operators of drinking water systems,

Upcoming changes to Ontario Drinking Water Quality Standards (OWDQS), and testing and reporting requirements found in Ontario Regulation 170/03 and 169/03 under the Safe Drinking Water may impact your drinking water system

Ontario is acting on internationally recognized scientific research and expert advice to align Ontario with current science and best practices.

To reduce the burden on drinking water system owners and operators, the changes will be phased-in over the next four years.

Effective January 1, 2016:

1. Removal of 13 pesticides from the standards and testing requirements

You will no longer need to test for 13 pesticides. These pesticides have not been detected in Ontario drinking water for at least 10 years and have been removed from the list of drinking water standards and the list of organic chemical testing requirements:

Aldicarb
Aldrin + Dieldrin
Bendiocarb
Chlordane (total)
Cyanazine
Dichlorodiphenyltrichloroethance (DDT) + metabolites
Dinoseb
Heptachlor + Heptachlor Epoxide
Lindane (total)
Methoxychlor
Parathion
Temephos
2,4,5 – Trichlorophenoxy acetic acid (2,4,5-T)

2. Addition of 2 methyl-4-chlorophenoxyacetic acid (MCPA)

You will need to include the test for MCPA when you are scheduled to test for Schedule 24 organic chemical parameters (once every one, three, or five years depending on your system and source).

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You need to submit a Laboratory Services Notification (LSN) form to the Ministry of the Environment and Climate Change (MOECC) to indicate the licensed laboratory that will be testing your MCPA samples. You must submit this form before your Schedule 24 sampling cycle date. Email the form to LSB.Reg170_LSB@ontario.ca.

If you are unable to get MCPA included with the rest of the Schedule 24 parameters by your normal sample date for the first test cycle following January 1, 2016, the MCPA test can still be carried out separately as long as it is done prior to the end of the first, third, or fifth calendar year, depending on your system and source.

Click here for a list of Ontario Licensed Laboratories.

3. New sampling, testing and reporting requirements for trihalomethanes (THMs)
a) Calculating and Reporting THM samples

Laboratories are no longer responsible for calculating a drinking water system's running annual average (RAA). You will be responsible for calculating the RAA and reporting it to the ministry.

You will be required to calculate a new RAA and notify existing authorities of any adverse test results within seven days of the end of every calendar quarter. You will no longer be required to make contact with existing authorities by telephone for a THM report.

Resamples will no longer be required as part of the prescribed corrective actions for adverse results for THMs because multiple test results are already used in calculating the THM RAA.

How to calculate the Running Annual Average (RRA) for THMs

Starting January 1, 2016, a new calculation method for THMs will come into effect. The Ontario standard for THMs is 0.100 mg/L, expressed as a RAA of quarterly testing results.

The quarters are defined as:

- January 1st to March 31st
- April 1st to June 30th
- July 1st to September 30th
- October 1st to December 31st

The **RAA of calendar quarterly results** for THM must be calculated each calendar quarter using the following formula:

[A+B+C+D] ÷ 4

"A" is the average of all* the results from the samples tested in that calendar quarter

"B" is the average of all* the results from the samples tested in the calendar quarter immediately after "A"

"C" is the average of all* the results from the samples tested in the calendar quarter immediately after "B"

"D" is the average of all*the results from the samples tested in the calendar quarter immediately after "C"

*If more than one test is taken in a quarter, the previous calculation **using only the highest THM sample result will be invalid**. All THM sample results must be used to determine the new average value for each calendar quarter.

b) Reduced THM sampling schedule for small systems

A reduced THM sampling schedule will be available to small municipal and non-municipal year round residential systems. If none of your system's THM sample results from the last 12 consecutive calendar quarters exceed half of the THM standard (0.100 mg/L), you will not need to submit THM samples for the next eight consecutive quarters.

Following eight consecutive quarters without sampling, THM samples must be submitted for four consecutive quarters to establish your reduced sampling schedule of every third year.

Once on the reduced schedule, if your system's treatment equipment, water chemistry, or water source changes at any time, contact the ministry to determine if you are still eligible..

Additional future changes:

January 1, 2017:

- New testing requirements for HAAs
- Updated standards for carbon tetrachloride, benzene, vinyl chloride, chlorate, chlorite and MCPA

January 1, 2018:

- Updated standard for arsenic

January 1, 2020:

- New standard for HAAs and reporting requirements along with an opportunity for reduced sampling of HAAs for smaller systems

For additional information please contact your local water inspector or the Public Information Centre.

We are committed to providing accessible customer service.

If you need accessible formats or communications supports, please contact us.