Table of Contents:

Ontario

Ministry of the Environment, Conservation and Parks

CASSELMAN DRINKING WATER SYSTEM

Inspection Report

Site Number:	210001219
Inspection Number:	1-I8XE0
Date of Inspection:	Feb 13, 2019
Inspected By:	James Peets

OWNER INFORMATION:

Company Name:	CASSELMAN, THE CORPORATION OF THE VILLAGE OF		
Street Number:	751	**Unit Identifier:**	
Street Name:	ST. JEAN St		
City:	CASSELMAN		
Province:	ON	**Postal Code:**	K0A 1M0

CONTACT INFORMATION

Type:	Owner	**Name:**	Linda Desjardins-Bergeron
Phone:	(613) 764-3139 x517	**Fax:**	(613) 764-5709
Email:	ldesjardins-bergeron@casselman.ca		
Title:	Chief Administrative Officer - Village of Casselman		

Type:	Operating Authority	**Name:**	Maurice Benoit
Phone:	(613) 679-4631	**Fax:**	(613) 679-4735
Email:	mbenoit@ocwa.com		
Title:	Senior Operations Manager, Prescott Russell Cluster - Ontario Clean Water Agency		

Type:	Operating Authority	**Name:**	Michelle Gordon
Phone:	(613) 675-1920	**Fax:**	(613) 675-2622
Email:	mgordon@ocwa.com		
Title:	Process Compliance Technician - Ontario Clean Water Agency		

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

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

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

INSPECTION DETAILS:

Site Name:	CASSELMAN DRINKING WATER SYSTEM
Site Address:	832 LAVAL ST CASSELMAN K0A 1M0
County/District:	Casselman
MECP District/Area Office:	Cornwall Area Office
Health Unit:	EASTERN ONTARIO HEALTH UNIT

Conservation Authority:
MNR Office:
Category: Large Municipal Residential
Site Number: 210001219
Inspection Type: Announced
Inspection Number: 1-I8XE0
Date of Inspection: Feb 13, 2019
Date of Previous Inspection: Dec 11, 2017

COMPONENTS DESCRIPTION

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

Site (Name): RAW WATER
Type: Source **Sub Type:** Surface
Comments:
The Casselman Water Treatment Plant draws water from the South Nation River. The intake crib is located in the middle of the river at a depth of 7 m below mean river level. Raw water is drawn through a wire mesh screen at the intake and flows into a raw water well (equipped with three low lift pumps, an inlet gate and removable screens) situated below the water treatment plant.

Site (Name): TREATED WATER
Type: Treated Water POE **Sub Type:** Treatment Facility
Comments:
The Casselman Water Treatment Plant is located at 832 Laval Street, Casselman, Ontario.

At the treatment plant raw water from the South Nation River flows into a raw water well where it receives potassium permanganate. Water is fed through the raw water header where it may receive sodium hydroxide (no longer in use), an injection of aqueous chlorine solution (mix of chlorine gas and treated water), and receives coagulant upstream of the in-line static mixer.

Water is then pumped into one of two Actiflo® process units that provide coagulation, flocculation, clarification, and filtration. Effluent from the Actiflo® units is then directed to the filtered water holding tank from which it is pumped through a header pipe that receives an injection of aqueous chlorine solution (mix of chlorine gas and treated water).

The chlorinated water is then directed through one of two parallel UV reactors. Water then flows to a 415 m3 baffled clearwell located beneath the treatment plant, and a 440 m3 clearwell located adjacent to the main building where it is pumped alternately by three high lift vertical turbine high lift pumps into the distribution system. Chemical Feed Systems include:

i) Coagulant Feed System consisting of four 5000 L capacity polyethylene coagulant storage tanks; 2 variable speed metering pumps to feed alum into the raw water header upstream of the in-line static mixer;

ii) Polymer Feed System consisting of one 2270 L polyethylene solution storage tank and mixer with 3 variable speed metering pumps to feed polymer into the injection tank, coagulation tank and hydrocyclone on the treatment units;

iii) Chlorination System consisting of 2 wall mounted vacuum chlorinators with automatic switchover regulators to draw chlorine gas from cylinders and blend with treated water to create an aqueous chlorine solution for feeding into the raw water header and the filtered water header.

GPS coordinates: NAD 83, Zone 18, 0492370 E / 5017559 N.

Site (Name): DISTRIBUTION SYSTEM
Type: Other **Sub Type:** Other
Comments:
The distribution system consists of approximately 20 km of PVC watermains that were installed in 1976 and 1977. The system supplies water to approximately 1000 service connections that serve a population of approximately 2,835. The operating authority reports that there were 128 hydrants installed on the system.

Site (Name): WATER TOWER
Type: Other **Sub Type:** Reservoir
Comments:
A 1,575 cubic meter capacity elevated storage tank is located at 758 Breboeuf Street. It is a steel tank that sits atop a concrete pedestal.

GPS coordinates: NAD 83, Zone 18, 0493526 E / 5017933 N.

INSPECTION SUMMARY:

Introduction

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

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

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

  The current Permit to Take Water, number 6067-9EGMS2, allows for a maximum daily water taking of 3,182,200 litres. The maximum daily amount taken by the Casselman WTP in 2018 was 2,546,000 litres in January.

Source

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

  Turbidity, Manganese, temperature and colour are all monitored daily.

Permit To Take Water

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

Capacity Assessment

- **There was sufficient monitoring of flow as required by the Municipal Drinking Water Licence or Drinking Water Works Permit issued under Part V of the SDWA.**

  Casselman DWS is equipped with two raw water flow meters, one located on each inlet line to the two treatment trains, one flow meter located post-filter measuring the flow volume of filtered water entering the filtered water holding tank, and one treated water flow meter located past the highlift pumps. Additionally, each of the two filters are equipped with a filtered water flow meter.

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

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

  MDWL Number 173-101, Issue Number 3, Schedule C, 1.0 Performance Limits, 1.1 Rated Capacity states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed 3182 m3/day. The maximum treated daily flow for 2018 was 2154 m3 in July.

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

Treatment Processes

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

- **The owner had evidence that all required Director Notifications under Condition 2.4 of Schedule B of the Drinking Water Works Permit were made during the inspection period.**

  In 2018 the system switched coagulants.

- **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.**

  In 2018 the system switched coagulants.

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

- **Records confirmed that the water treatment equipment which provides chlorination or chloramination for secondary disinfection purposes was operated so that at all times and all locations in the distribution system the chlorine residual was never less than 0.05 mg/l free or 0.25 mg/l combined.**

- **The primary disinfection equipment was equipped with alarms or shut-off mechanisms that satisfied the standards described in Section 1-6 (1) of Schedule 1 of Ontario Regulation 170/03.**

  The UV reactors in the Casselman DWS are equipped with alarms and lockouts which initiate a plant shutdown in the event that the UV dose drops below the required 40 mJ/cm2.

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

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

  All plans are kept at the Casselman WTP.

Treatment Process Monitoring

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

- **Operators were aware of the operational criteria necessary to achieve primary disinfection within the drinking water system.**

  In addition, minimums are also posted in hard copy on the wall in the control room.

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

Treatment Process Monitoring

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

  Secondary disinfectant residual in the distribution system is monitored continuously via online analyzer located at the Casselman Sewage Pumping Station. Additionally, distribution chlorine residual is tested during routine microbiological sampling.

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

  Review of system logbooks confirms that continuous monitoring data are reviewed every weekday. Weekend results are checked on Monday. A long weekend resulting from a statutory holiday results in the scheduling of an operator to visit the WTP on that weekend.

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

  The portable, handheld analysers are checked and calibrated once per year by Hach.

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

- **Continuous monitoring equipment that was being utilized to fulfill O. Reg. 170/03 requirements was performing tests for the parameters with at least the minimum frequency specified in the Table in Schedule 6 of O. Reg. 170/03 and recording data with the prescribed format.**

- **The owner and operating authority ensured that the primary disinfection equipment had a recording device that continuously recorded the performance of the disinfection equipment.**

  The ultraviolet light reactors measure UV dosage.

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

Process Wastewater

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

  All process wastewater and residual solids/sludges go directly to the sanitary sewage collection system.

- **The process wastewater discharge monitoring program and discharge quality complied with requirements established in the Municipal Drinking Water Licence Issued under Part V of the SDWA.**

  It is still possible for there to be overflow from the waste water holding reservoir. In the event that there is discharge other than to the sanitary sewage collection system, monitoring is conducted appropriately.

Distribution System

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

- **There is no backflow prevention program, policy and/or bylaw in place.**

  The Municipality should consider enacting a backflow prevention program.

Distribution System

- **The owner had a program or maintained a schedule for routine cleanout, inspection and maintenance of reservoirs and elevated storage tanks within the distribution system.**

  The policy is to inspect the water tower every 5 years. The tower is reportedly due for an inspection this year. The clearwell is inspected yearly.

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

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

  Flushing is conducted three times per year.

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

- **A program was in place for inspecting and exercising valves.**

  The goal is to have all of the valves inspected and excercised in a 4 year cycle.

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

  Hydrants are inspected yearly during flushing and winterizing procedures.

- **There was no by-law or policy in place limiting access to hydrants.**

  The Municipality should consider enacting a by-law limiting access to hydrants.

- **The owner was able to maintain proper pressures in the distribution system and pressure was monitored to alert the operator of conditions which may lead to loss of pressure below the value under which the system is designed to operate.**

  The water level in the tower is monitored.

Operations Manuals

- **Operators and maintenance personnel had ready access to operations and maintenance manuals.**

  All operations and maintenance manuals are kept at the Casselman WTP.

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

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

Logbooks

- **Logbooks were properly maintained and contained the required information.**

- **Records or other record keeping mechanisms confirmed that operational testing not performed by continuous monitoring equipment was being done by a certified operator, water quality analyst, or person who suffices the requirements of O. Reg. 170/03 7-5.**

Logbooks

Only certified operators are employed at the Casselman DWS.

- **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.**

  The diesel fuel tank is a double-walled unit.
- **Clean-up equipment and materials were in place for the clean up of spills.**

  There are absorption materials and the spill response trailer is stored at the WTP.
- **Standby power generators were tested under normal load conditions.**

  The generator is tested monthly.

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 Casselman water treatment plan, water tower, and sewage pumping station (housing the online distribution chlorine residual analyzer) are equipped with contact alarms and mechanical locks. In addition, the treatment facility is fenced and monitored by Ranguard Security from Cornwall, Ontario.

Consumer Relations

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

  All users of the system are metered. The operators attempt to locate and repair leaks quickly. Lawn water restrictions are enacted on occasion.

Certification and Training

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

  The operator in charge is assigned on a rotational, weekly basis. The operator in charge also serves as the on-call operator.

Certification and Training

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

Water Quality Monitoring

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

  A sample was collected for sodium analysis on January 5, 2015 and a resample, due to exceedance of the standard, was collected on January 13, 2015. A sample for the analysis of sodium is next required to be collected within 90 days of January 5, 2020.
- **All fluoride water quality monitoring requirements prescribed by legislation were conducted within the required frequency.**

  A sample for analysis of fluoride was collected on April 14, 2015. A sample for the analysis of fluoride is next required to be collected within 90 days of April 14, 2020.
- **The owner ensured that water samples were taken at the prescribed location.**
- **All water quality monitoring requirements imposed by the Municipal Drinking Water Licence and Drinking**

Water Quality Monitoring

Water Works Permit were being met.

- **All sampling requirements for lead prescribed by schedule 15.1 of O. Reg. 170/03 were being met.**
- **Records confirmed that chlorine residual tests were being conducted at the same time and at the same location that microbiological samples were obtained.**
- **The drinking water system owner submitted written notices to the Director that identified the laboratories that were conducting tests for parameters required by legislation, Order, Drinking Water Works Permit or Municipal Drinking Water Licence.**
- **The owner indicated that the required records are kept and will be kept for the required time period.**

Water Quality Assessment

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

  Records showed that all water sample results taken during the inspection review period did not exceed the values of tables 1, 2 and 3 of the Ontario Drinking Water Quality Standards with the exception of the water sample results that generated the following Adverse Water Quality Incidents (AWQIs):

  AWQI Number 138549, 1/12/2018 09:23:00 AM, Rolling Annual Average (RAA) for total trihalomethanes 107 ug/L. A single result of 62.6 ug/L has reduced RAA to 107 ug/L. The system looks to be back on track to recover from a previous single elevated sample result.

  AWQI Number 138554, 1/12/2018 01:59:33 PM, Rolling Annual Average (RAA) for total trihalomethanes 107 ug/L. Repeat reporting of AWQI Number 138549.

  AWQI Number 140121, 6/29/2018 09:35:25 AM, RAA for total trihalomethanes 108.5 ug/L.
  The system looks to be back on track to recover from a previous single elevated sample result.

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.**
- **All required notifications of adverse water quality incidents were immediately provided as per O. Reg. 170/03 16-6.**
- **All required written notices of adverse water quality incidents were provided as per O. Reg. 170/03 16-7.**
- **In instances where written notice of issue resolution was required by regulation, the notice was provided as per O. Reg. 170/03 16-9.**
- **All reporting requirements for lead sampling were complied with as per schedule 15.1-9 of O. Reg. 170/03.**
- **Where required continuous monitoring equipment used for the monitoring of chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person responded in a timely manner and**

Reporting & Corrective Actions

took appropriate actions.

- When the primary disinfection equipment, other than that used for chlorination or chloramination, has failed causing an alarm to sound or an automatic shut-off to occur, a certified operator responded in a timely manner and took appropriate actions.
- The Annual Report containing the required information was prepared by February 28th of the following year.
- Summary Reports for municipal council were completed on time, included the required content, and were distributed in accordance with the regulatory requirements.
- All changes to the system registration information were provided within ten (10) days of the change.
- The owner had evidence that all required notifications to all legal owners associated with the Drinking Water System had been made during the inspection period.

NON-COMPLIANCE WITH REGULATORY REQUIREMENTS AND ACTIONS REQUIRED

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

Not Applicable

SUMMARY OF RECOMMENDATIONS AND BEST PRACTICE ISSUES

This section provides a summary of all recommendations and best practice issues identified during the inspection period. Details pertaining to these items can be found in the body of the inspection report. In the interest of continuous improvement in the interim, it is recommended that owners and operators develop an awareness of the following issues and consider measures to address them.

1. **There is no backflow prevention program, policy and/or bylaw in place.**

   Recommendation:
   The Municipality should consider enacting a backflow prevention program.

2. **There was no by-law or policy in place limiting access to hydrants.**

   Recommendation:
   The Municipality should consider enacting a by-law limiting access to hydrants.

SIGNATURES

Inspected By:

James Peets

Signature: (Provincial Officer)

Reviewed & Approved By:

Charlie Primeau

Signature: (Supervisor)

Review & Approval Date: 31/03/2019

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

APPENDIX C

INSPECTION RATING RECORD

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

DWS Name:	CASSELMAN DRINKING WATER SYSTEM
DWS Number:	210001219
DWS Owner:	Casselman, The Corporation Of The Village Of
Municipal Location:	Casselman
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	February 13, 2019
Ministry Office:	Cornwall Area Office

Maximum Question Rating: 743

Inspection Module	Non-Compliance Rating
Permit To Take Water	0 / 12
Capacity Assessment	0 / 42
Treatment Processes	0 / 97
Process Wastewater	0 / 20
Distribution System	0 / 25
Operations Manuals	0 / 42
Logbooks	0 / 30
Certification and Training	0 / 57
Water Quality Monitoring	0 / 152
Reporting & Corrective Actions	0 / 121
Treatment Process Monitoring	0 / 145
TOTAL	**0 / 743**

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 31-MAR-19 (Inspection ID: 1-I8XE0).

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

DWS Name:	CASSELMAN DRINKING WATER SYSTEM
DWS Number:	210001219
DWS Owner:	Casselman, The Corporation Of The Village Of
Municipal Location:	Casselman
Regulation:	O.REG 170/03
Category:	Large Municipal Residential System
Type Of Inspection:	Detailed
Inspection Date:	February 13, 2019
Ministry Office:	Cornwall Area Office

Maximum Question Rating: 743

Inspection Risk Rating	**0.00%**

FINAL INSPECTION RATING:	**100.00%**

Inspection Rating Record Generated On 31-MAR-19 (Inspection ID: 1-I8XE0).