

Ministry of the Environment,
Conservation and Parks

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

Barrie District

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March 17, 2021

John Pinsent, Chief Administrative Officer
The Corporation of the Township of Ramara
2297 Highway 12, PO Box 130
Brechtin, ON L0K 1B0
(email jpinsent@ramara.ca)

Dear Mr. Pinsent

**RE: Communal Drinking Water Inspection Report #1- O72UT
Davy Drive Drinking Water System
Date of MECP inspection: November 17, 2020**

Please find enclosed the Ministry of the Environment, Conservation and Parks Inspection Report for the Davy Drive Drinking Water System (Water Works # 220007141) inspection. The physical inspection process took place on November 17, 2020.

The primary focus of this inspection was to confirm compliance with Ministry's legislation and control documents, as well as conformance with Ministry drinking water related policies for the inspection period. The Ministry is implementing a rigorous and comprehensive approach in the inspection of water systems that focuses on the source, treatment, and distribution components as well as water system management practices.

In order to measure individual inspection results, the Ministry has established an inspection compliance risk framework based on the principles of the Inspection, Investigation & Enforcement (II&E) Secretariat and advice of internal and risk experts. The Inspection Summary Rating Record (IRR), included as Appendix A of the inspection report, provides the Ministry, the system owner and the associated Public Health Units with a summarized quantitative measure of the drinking water system's annual inspection and regulated water quality testing performance. IRR ratings are published (for the previous inspection year) in the Ministry's Chief Drinking Water Inspector's Annual Report. If you have any questions or concerns regarding the rating, please contact Sheri Broeckel, Drinking Water Program Supervisor, at 705-716-3712.

If you have any questions or concerns regarding this inspection report, please contact the undersigned at 705-791-6359.

Respectfully,



Aaron Mattson
Drinking Water Inspector
Barrie District Office
Drinking Water and Environmental Compliance Division
Ministry of the Environment, Conservation and Parks

Cc: *Kathy Sipos, Director of Infrastructure, Township of Ramara* ksipos@ramara.ca
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Barrie District Office File, MECP



Ministry of the Environment, Conservation and Parks

**DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
Inspection Report**

Site Number:	220007141
Inspection Number:	1-O72UT
Date of Inspection:	Nov 17, 2020
Inspected By:	Aaron Mattson

OWNER INFORMATION:

Company Name:	RAMARA, THE CORPORATION OF THE TOWNSHIP OF		
Street Number:	2297	Unit Identifier:	
Street Name:	HIGHWAY 12 Hwy		
City:	BRECHIN		
Province:	ON	Postal Code:	L0K 1B0

CONTACT INFORMATION

INSPECTION DETAILS:

Site Name:	DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
Site Address:	7230 DAVY Drive RAMARA ON L0K 2B0
County/District:	RAMARA
MECP District/Area Office:	Barrie District
Health Unit:	SIMCOE MUSKOKA DISTRICT HEALTH UNIT
Conservation Authority:	
MNR Office:	
Category:	Small Municipal Residential
Site Number:	220007141
Inspection Type:	Announced
Inspection Number:	1-O72UT
Date of Inspection:	Nov 17, 2020
Date of Previous Inspection:	Nov 21, 2019

COMPONENTS DESCRIPTION

Site (Name):	MOE DWS Mapping	Sub Type:	
Type:	DWS Mapping Point		
Site (Name):	WELL 1 RAW	Sub Type:	Ground
Type:	Source		

Comments:
 Davy Drive production Well #1 (Well ID No. 4604569) is located within the pumphouse and is equipped with a Goulds ¾ HP submersible pump at a depth of 61 m with a rated capacity of 31.5 L/min (45 m3/d). The pumphouse and well are located within an estate subdivision approximately 200 metres from the Black River. The contour of the immediately adjacent properties is such that surface water would be directed away from the pumphouse. According to the Hydrogeological report prepared by Dixon Hydrogeology in April, 2001 and appended within the First Engineer's Report, Well #1 was constructed in 1970 by Snider Drilling of Craighurst (License No. 4816). The well was constructed in granitic bedrock using an air percussion drilling rig to a depth of 74.7 metres below ground level, with 3.4 metres of casing in the rock and the remainder of the well bore constructed without casing. In October 2000 the well was sleeved with a 127 millimetre diameter casing by Baldwin Well Drilling to 6.7 metres and the annulus was grouted with bentonite. The sleeving procedure was used to stop the trickling of shallow groundwater into the well, which was thought to have been responsible for periodic total coliform bacteria being detected in the raw water. Following rehabilitation of the well, testing indicated a maximum well yield of 23 L/min. The 50 mm diameter discharge line connected to the well pump header within the pumphouse is equipped with a manually operated valve

used to restrict the flow to 23 L/min.

The above grade connection is made by a pitless adaptor, making the well more accessible for inspection. The well cap is aluminum, bolted and locked to the casing, screened, sealed and vermin proof. The casing extends approximately 40 cm above the floor of the pumphouse.

The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 1 had a low risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): WELL 2 RAW
Type: Source **Sub Type:** Ground
Comments:

Davy Drive production Well #2 (Well ID No. 5731001) is located approximately 30 metres west of the pumphouse and is equipped with a 1.5 HP Berkeley submersible pump at a depth of 61 m with a rated capacity of 23 L/min (33 m3/d). The well is situated within an estate subdivision approximately 200 metres from the Black River. The contour of the immediately adjacent properties is such that surface water would be directed away from the well head.

According to the Hydrogeological report prepared by Dixon Hydrogeology in April, 2001 and appended within the First Engineer's Report, Well #2 was constructed in 1995 by Baldwin Well Drilling of Kirkfield (License No. 1312). The well was constructed in granitic bedrock using an air percussion drilling rig to a depth of 76.2 metres below ground level, with 6.7 metres of 152 millimetre diameter casing grouted into the bedrock.

The below grade connection is made with a pitless adaptor with a 50 millimetre diameter discharge line connected to the well pump header in the pumphouse. The well cap is aluminum, bolted and locked to the casing, screened, sealed and vermin proof with the casing extending approximately 60 centimetres above grade.

The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 2 had a low risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): WELL 3 RAW
Type: Source **Sub Type:** GUDI w/o Effective Insitu
Comments:

Davy Drive production Well #3 (Well ID No. 5737806) is located approximately 60 metres north of the pumphouse and is equipped with a 1.0 HP Goulds submersible pump at a depth of 60 m with a rated capacity of 65 L/min (93.6 m3/d). The well is situated within an estate subdivision approximately 200 metres from the Black River. The contour of the immediately adjacent properties is such that surface water would be directed away from the well head.

According to the "Construction and Testing of Well 3" report prepared by Dixon Hydrogeology in April, 2003, Well #3 was constructed in 2002 by Baldwin Well Drilling of Kirkfield (License No. 1312). The well was constructed in granitic bedrock using an air rotary drilling rig to a depth of 60 metres below ground level, with 9.1 metres of 152 millimetre diameter casing grouted into the bedrock.

The below grade connection is made with a pitless adaptor with a 50 millimetre diameter discharge line connected to the well pump header in the pumphouse. The well cap is aluminum, bolted and locked to the casing, screened, sealed and vermin proof with the casing extending approximately 40 centimetres above grade.

The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 3 had a moderate risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

Site (Name): WELL 4 RAW
Type: Source **Sub Type:** GUDI w/o Effective Insitu
Comments:

Davy Drive production Well #4 (Well ID No. 7046944 Well Tag No. A039445) is located approximately 80 metres north of the pumphouse. It was constructed in December 2006 by Carl Baldwin Well Drilling. The well was

constructed in granite using the air percussion drilling method. The depth of the well is 30.48 metres below ground level. The 152 mm diameter steel casing is grouted using neat cement slurry to a depth of 6.09 metres. The well is equipped with a 1.5 HP Goulds submersible pump at a depth of 30 m and a rated capacity of 75 L/min (108 m³/d), with a 50 millimetre diameter discharge line connected to the well pump header. The Golder Associates report prepared June 9, 2011 to investigate the potential of the Davy Drive supply wells being groundwater under the direct influence of surface water (GUDI) concluded that Well 4 had a low risk of being under the direct influence of surface water and that it should be considered as potentially GUDI.

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

Comments:

Raw water from Wells #2, #3, and #4 enter the pumphouse through separate 50 millimetre raw water headers. Well #1 is situated within the pumphouse so raw water is conveyed directly from the casing through an above grade pitless adaptor into a 50 millimetre pipe and into the treatment train.

Each raw water header is equipped with an ABB magnetic flow meter used for measuring raw water flows and a smooth-bore raw water sample tap and pressure gage. After passing through the flow meters, the raw water then combines into a single header where it passes through another flow meter that controls the flow paced sodium hypochlorite injection system. One 450 litre pressure tank maintains pressure when the well pumps are not running. In order to improve treatability of the raw water, an iron and manganese removal system has been installed. The raw water passes two sodium hypochlorite injection points, supplied by two chemical metering pumps (manual duty and standby). At this stage, the sodium hypochlorite is pre-treatment used to oxidize iron in the raw water. The system also consists of a 60 litre solution tank in a secondary containment basin, two potassium permanganate metering pumps (one duty, one stand-by) complete with 4-20 mA control, automatic switchover and contact outputs for alarm notification of duty pump failure, and two feed lines discharging into the combined raw water header upstream of an in-line mixer.

After being dosed with sodium hypochlorite and potassium permanganate, the water enters two automatic green sand filters, each capable of treating the entire design flow, each complete with diaphragm control/isolation valves, check valves and inspection portals.

The filter system is also equipped with one backwash pump and a 13,500 litre concrete backwash waste holding tank that discharges supernatant to a ditch east of the pumphouse. Backwash cycles are initiated manually, typically once per week for each filter, or more if required. From the green sand filters, water passes through one of two parallel trains of cartridge filters and UV inactivation units. Each train consists of a Pentek Big Blue cartridge filter housing equipped with a Pentek Big Blue 25-1 micron nominal cartridge filter, a Harmsco WaterBetter cartridge filter housing equipped with a Harmsco Ploy-Pleat 1 micron absolute cartridge filter, continuous turbidity analyser, and a UV Pure Hallett 30-1.5 ultraviolet disinfection unit. Both UV units are equipped with a flow control valve and a powered-open solenoid valve that will automatically close in the event of UV system failure, or general power failure. Should both UV systems fail, the well pumps in operation will also shut-down and remain locked out until the alarm condition has been rectified and manually reset. Treated water from the standpipe is recirculated through the UV units when the wells are not producing water to prevent overheating.

From the UV units, the treated water flows past two sodium hypochlorite injection points. The sodium hypochlorite disinfection system consists of one 60 litre chemical storage tank with secondary containment and two chemical metering pumps (one duty, one stand-by) complete with 4-20 mA control, automatic switchover and contact outputs for alarm notification of duty pump failure, and two feed lines discharging into the treated water line. After being dosed, the water goes to a 43 m³ glass-fused-to-steel storage standpipe with a level sensor. Before discharging to the distribution system, the treated water passes through an ABB magnetic flow meter. In addition, the pumphouse is equipped with continuous chlorine residual and turbidity analysers powered by an uninterruptible power supply, as well as a smooth bore treated water sampling tap which are fed water from a point after the contact time and prior to leaving the pumphouse. The pumphouse is also wired with a 24 hour alarm system which continuously monitors illegal entry, power interruptions, low temperature and low pressure as well as treated water quality for turbidity, free available chlorine residuals and UV intensity and transmittance. Two highlift pumps, each rated to deliver 0.88 Litres per second of water at 49 m Total Dynamic Head discharge water into the Davy Drive distribution system.

A 20 kW propane powered emergency generator set is installed and capable of operating the entire facility in the

event of a power outage.

Site (Name): DISTRIBUTION (WATER INSPECTION)

Type: Other

Sub Type: Other

Comments:

The Davy Drive water supply system is designed to service 42 residential lots when fully developed. There were approximately 34 lots developed at the time of inspection and the system is categorized as a Small Municipal Residential system as defined by Ontario Regulation 170/03.

The distribution system is comprised of 50 millimetre poly-vinyl chloride water main, isolation valves, two blow-offs and two designated sampling stations.

INSPECTION SUMMARY:

Introduction

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

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

This report is based on a "focused" inspection of the system. Although the inspection involved fewer activities than those normally undertaken in a detailed inspection, it contained critical elements required to assess key compliance issues. This system was chosen for a focused inspection because the system's performance met the ministry's criteria, most importantly that there were no deficiencies as identified in O.Reg. 172/03 over the past 3 years. The undertaking of a focused inspection at this drinking water system does not ensure that a similar type of inspection will be conducted at any point in the future.

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

The Davy Drive Drinking Water System is owned by the Corporation of the Township of Ramara and serves an estimated population of 90 people in the residential subdivision of Davy Drive. Since September 1, 2020, the Ontario Clean Water Agency (OCWA) has been the operating authority for the facility, with the Township having had responsibility for the time previous to this date.

The Davy Drive Drinking Water System is categorized as a small municipal residential drinking water system, as defined by Ontario Regulation 170/03 and operates under DWS number 220007141.

The Davy Drive Subdivision Drinking Water System consists of 4 wells, treatment equipment, two distribution sample points and two blow offs, one at each end of the distribution system. The supply wells are considered to have the potential to be ground water under the direct influence of surface water (GUDI). Treatment is provided by UV inactivation and chlorination for primary disinfection, after filtration. Chlorination is provided for secondary disinfection. There is a standpipe that can provide contact time if chlorination is needed as the only source of primary disinfection, if the UV units are not functioning. Raw water from the four wells is injected with sodium hypochlorite and potassium permanganate prior to passing through two greensand filters to remove the oxidized iron and manganese. Water then flows through cartridge filters, including a one micron absolute filter before being dosed by UV light. Both of the UV units are equipped with a solenoid valve which will stop the flow of water in the event of a power failure, malfunction or the required dosage not being delivered by the UV units. Water is then injected with sodium hypochlorite prior to the 43 cubic metre storage standpipe. Two high lift pumps discharge water to the distribution system. There are no storage structures within the distribution system. The distribution system consists of 50 mm diameter polyethylene watermain.

This inspection was conducted pursuant to section 81 of the Safe Drinking Water Act in order to assess compliance with the requirements of Ontario Regulation 170/03 and Ministry control documents. The drinking water inspection included: physical inspections of the treatment equipment and facility; interview with OCWA staff; and a review of relevant documents and data from the period of November 21, 2019 to November 17, 2020 (hereafter referred to as the "inspection review period").

Source

Source

- **The owner was maintaining the production well(s) in a manner sufficient to prevent entry into the well of surface water and other foreign materials.**

Subsection 1-2. (1) 1. of Schedule 1 of Ontario Regulation 170/03 requires that the owner of a drinking water system shall ensure that any well that serves as an entry point of raw water supply is constructed and maintained to prevent surface water and other foreign materials from entering the well.

There are four supply wells for the Davy Drive Subdivision Drinking Water System. Each of the wells has a secure cap and screened vent. The wells are locked and notices posted that the area is a well head protection zone. The Operating Authority performs regular maintenance and inspection of the wells. The supply wells have been identified as being potentially groundwater under the direct influence of surface water (GUDI).

- **Measures were in place to protect the groundwater and/or GUDI source in accordance with any the Municipal Drinking Water Licence and Drinking Water Works Permit issued under Part V of the SDWA.**

Conditions 16.2.8 to 16.2.10 of Schedule B of Municipal Drinking Water Licence 147-106 prescribe that the Davy Drive Operations Manual must include a well inspection and maintenance program that includes the following:

- an inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
- well inspection and maintenance procedures for the entire well structure of each well, including all above and below grade well components; and
- remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.

To satisfy these conditions, the Operating Authority has developed a Well Inspection, Maintenance and Monitoring Plan. The Plan outlines the activities to be performed on a weekly, monthly, yearly and 5-year inspection schedule for the four production wells supplying water for the Davy Drive Subdivision drinking water system. The inspection schedule includes both above and below grade well components, as well as comparison of well level monitoring data and calibration of the flow meters. The Plan includes a list of conditions that may indicate a problem with the well casing or structure.

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.**

Condition 2.1 of Schedule C of Municipal Drinking Water Licence 147-106 prescribes that for each treatment subsystem, continuous flow measurement and recording shall be undertaken for the flow rate and daily volume of treated water that flows from the treatment subsystem to the distribution system, and the flow rate and daily volume of water that flows into the treatment subsystem.

There are magnetic flow meters installed on each of the four raw water lines, on the combined raw water header, and on the distribution header. Each of the flow meters provides a 4-20 mA signal that are continuously recorded on the SCADA system as flow rate. Daily log print outs include the 24 hour totalized flows from each of the raw water wells and the totalized volume entering the distribution system. The minimum, maximum and average flows are also recorded.

Flow monitoring data is captured by the SCADA system and is capable of being monitored remotely by the operators via laptop.

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

Condition 1.1 of Schedule C of Municipal Drinking Water Licence 147-106 prescribes that flows from the treatment subsystem to the distribution system shall not exceed 75.69 cubic metres/day. Based on a review of flow data for the inspection review period, there were no exceedances of the prescribed flow capacity.

Treatment Processes

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.**

Drinking Water Works Permit 147-206 and Municipal Drinking Water Licence 147-106, issued on July 20, 2016, were in effect during the inspection review period. At the time of the physical inspection, the equipment at the treatment facility appeared to be installed in accordance with these authorizing documents.

- **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.**

Condition 4.6 of Schedule B of Drinking Water Works Permit 147-206 prescribes that the owner must record all minor modifications to the works on a "Form 2 – Record of Minor Modifications or Replacements to the Drinking Water System". During the inspection review period, several minor modifications were made to the works and were documented on the appropriate forms.

- **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.**

Section 1-4 of Schedule 1 Ontario Regulation 170/03 prescribes that the Owner of a drinking water system that obtains water from a raw water supply that is surface water (GUDI) shall ensure provision of water treatment equipment that is designed to be capable of chemically assisted filtration or better, and is designed to be capable of achieving, at all times, primary disinfection in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario. Primary disinfection for a surface water source includes at least 99 per cent removal or inactivation of Cryptosporidium oocysts, at least 99.9 per cent removal or inactivation of Giardia cysts and at least 99.99 per cent removal or inactivation of viruses by the time water enters the distribution system. Section 1-5 of Schedule 1 of Ontario Regulation 170/03 prescribes that the Operator of a drinking water system shall ensure provision of water treatment equipment that is designed to be capable of secondary disinfection (where necessary): using chlorination or chloramination in accordance with the Ministry's Procedure for Disinfection of Drinking Water in Ontario; or, provide other water treatment equipment that, in the opinion of a licensed engineering practitioner, is designed to be capable of providing secondary disinfection that is equivalent to or better than the secondary disinfection provided by the chlorination or chloramination equipment.

Condition 1 of Schedule E of Municipal Drinking Water Licence 147-106 states that the Davy Drive Water Works achieves 2 log removal of cryptosporidium oocysts and 2 log removal of giardia cysts by cartridge filtration, 2 log removal of cryptosporidium oocysts, 3 log removal of giardia cysts and 2 log removal of viruses by UV disinfection as well as 2+ log removal of viruses by chlorination, if the applicable log removal/inactivation credit assignment criteria is met.

Based on continuously recorded and manually sampled data provided by the Owner and reviewed during the course of this inspection, it appears that the required level of treatment was provided at all times during the inspection review period. Sufficient contact time is afforded to all users of the system by the above-ground contact chamber, and treatment integrity is supported by auxiliary and duty chemical feed pumps with automatic switch over if one pump fails and automatic shutdown upon UV failure.

- **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.**

Subsection 1-2 (2), paragraph 4 of Schedule 1 of Ontario Regulation 170/03 states that if chlorination is provided for secondary disinfection, the owner shall ensure that the equipment is operated so that, at all times and at all locations within the distribution system, the free chlorine residual is never less than 0.05 milligrams/Litre. Records provided indicated that there were no free chlorine residuals less than 0.05 milligrams/Litre within the distribution system at any time during the inspection review period.

Treatment Processes

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

Condition 2.3 of Schedule B of Drinking Water Works Permit 147-206 states that all parts of the drinking water system in contact with drinking water which are:

2.3.1 Added, modified, replaced, extended; or

2.3.2 Taken out of service for inspection, repair or other activities that may lead to contamination, shall be disinfected before being put into service in accordance with a procedure approved by the Director or in accordance with the applicable provisions of the following documents:

a) The ministry's Watermain Disinfection Procedure, effective January 29, 2017;

c) AWWA C653 – Standard for Disinfection of Water Treatment Plants; and

d) AWWA C654 - Standard for Disinfection of Wells.

The Davy Drive Water Works Contingency and Emergency Plan, which was updated in January 2019, references the watermain disinfection procedure and the most recent version of ANSI/AWWA C651 Standard for Disinfecting Water Mains where required. The ministry's Watermain Disinfection Procedure is appended in the Contingency Plan. Since September of 2020, the new Operating Authority (OCWA) has implemented their standardized watermain SOP which meets all of the requirements of this condition.

- **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.**

Subsection 1-6 (1) of Schedule 1 of Ontario Regulation 170/03 requires that if primary disinfection equipment that does not use chlorination or chloramination is provided by a drinking water system, the owner of the system and the operating authority for the system shall ensure that the disinfection equipment is designed and operated in accordance with the standards described in subsection (2), or that,

(a) the disinfection equipment has a feature that ensures that no water is directed to users of water treated by the equipment in the event that the equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection; and

(b) if the disinfection equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection, a certified operator takes appropriate action at the location where the equipment is installed before water is again directed to users of water treated by the equipment.

The two Hallet 30-1.5 units installed at the Davy Drive Subdivision Drinking Water System are each equipped with a solenoid valve that will shut down the supply of water in the event that the UV intensity or transmittance drops below that required for primary disinfection. An alarm is also sent to the on-call Operator who is able to check the system remotely with their phone. Operators attend the site in the event of an alarm or acknowledge the alarm remotely. The standpipe provides approximately 1.5 days of storage.

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.**

Schedule E of Municipal Drinking Water Licence 147-106 indicates that 2+ log removal/inactivation credits are achieved by chlorination in the standpipe. A continuous chlorine analyser is fed sample water after the standpipe, prior to entering the distribution system, the point where the intended contact time has been completed. The chlorine analyser is equipped with alarm capabilities for high and low levels, as indicated in the Instrument and Control section of Schedule A of Drinking Water Works Permit 147-206.

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

Section 7-2(5) of Schedule 7, O.Reg. 170/03 requires the Owner and the operating authority to ensure that at least two distribution samples are taken each week and tested immediately for, (a) free chlorine residual, if the system provides chlorination and does not provide chloramination. Section 7-2(6) of Schedule 7, O.Reg. 170/03 requires

Treatment Process Monitoring

that at least one of the distribution samples referred to in subsection (5) must be taken at least 48 hours after, and during the same week as, one of the other distribution samples referred to in subsection (5).
The operating authority is testing secondary disinfection residuals twice weekly in the distribution system.

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

Subsection 6-5 (1) 3 of Schedule 6 of Ontario Regulation 170/03 requires that test results recorded under paragraph 1 or 2 must be examined, within 72 hours after the tests are conducted by a certified operator. During the inspection review period, continuous monitoring test results were reviewed by certified operators within 72 hours. Operators are capable of monitoring the results remotely and comments are entered onto the daily logsheets or into the on-site logbook.

- **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.**

Subsection 6-5 (1) paragraph 5i and subsection 6-5 (1.1) paragraph 1 of Schedule 6 of Ontario Regulation 170/03 set out standards for continuous monitoring equipment that is used to conduct sampling and testing required by the regulation.

All continuous analysers are equipped with alarms or shut-off mechanisms and are linked to the SCADA system to alert on-call operators in the event of an alarm.

- **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.**

Subsection 6-5(1) of Schedule 6 of Ontario Regulation 170/03 sets out standards to be adhered to where continuous monitoring equipment is used for sampling and testing required under Ontario Regulation 170/03, for a parameter set out in the Table included in Schedule 6. For the Davy Drive Drinking Water System, this subsection applies to the continuous chlorine analyser used to monitor primary disinfection residuals at or near the intended contact time. In the case of primary disinfection chlorine residual monitoring, paragraph 1, subparagraph i of subsection 6-5(1) of Schedule 6 and the associated Table requires that the continuous analyser test for free chlorine residual once every five minutes, at a minimum.

Data generated during the inspection review period from the continuous analysers used to monitor primary and operational parameters associated with the Davy Drive Drinking Water System was reviewed in conjunction with this inspection. The data indicated that these continuous analysers measured and recorded parameters more frequently than the required frequency set out in the Table included in Schedule 6. The on-line analysers capture the parameter test results every second and upload the minimum, maximum and average results to SCADA every 5 minutes.

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

Subsection 6-5 (1) 8 of Schedule 6 of Ontario Regulation 170/03 prescribes that the continuous monitoring equipment must be checked and calibrated in accordance with the manufacturer's instructions. Subsection 6-5(1)10 states that if the manufacturer's instructions do not indicate how often to check and calibrate the continuous monitoring equipment and paragraph 9 does not apply, the equipment must be checked and calibrated as often as necessary to ensure that test results are within the following margins of error:

- i. In the case of free chlorine residual, 0.05 milligrams per litre, if the concentrations usually measured by the equipment are less than or equal to 1.0 milligrams per litre, and proportionally higher if the concentrations usually measured are greater than 1.0 milligrams per litre,
- ii. In the case of free chlorine residual and total chlorine residual measured for the purpose of determining combined chlorine residual, 0.05 milligrams per litre, if the concentrations usually measured by the equipment are less than or equal to 1.0 milligrams per litre, and proportionally higher if the concentrations usually measured are

Treatment Process Monitoring

greater than 1.0 milligrams per litre.

Operational staff perform verifications of the continuous chlorine residual analysers using a portable handheld device multiple times weekly. If a comparative assessment indicates significant differences, the operator will calibrate the continuous analysers as per the manufacturer's instructions. Records of these maintenance activities are made on the daily pumphouse log sheets. In addition, the continuous analysers are calibrated by a qualified company on an annual basis and during the inspection review period, this calibration was performed on January 16, 2020.

- **All UV sensors were checked and calibrated as required.**

The manufacturer of the Hallett 30 Ultraviolet Disinfection unit (UV Pure) recommends to calibrate the UV sensors once per year to see if the sensor has drifted from the factory calibration. The operating authority had the UV units calibrated by the manufacturer on January 22, 2020.

Operations Manuals

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

In January 2019 the Operating Authority undertook a review and performed revisions of the Operations and Maintenance Manuals for the Lagoon City Water Works. The revisions were performed to ensure that the procedures and information contained in the Manuals accurately reflected the activities performed by operators and the installed equipment. In addition, the new Operating Authority (OCWA) reviewed and updated the manuals in September of 2020.

The Manual indicates that all adjustments or works undertaken on the system are to be incorporated into the Manual prior to work being completed and that the Operating Authority and all Operators are to review the documents annually to ensure accuracy and familiarity with the content.

- **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.**

Condition 16.2 of Schedule B of Municipal Drinking Water Licence 147-106 prescribes that the following must be contained within the Operations Manual:

- 16.2.1 The requirements of this licence and associated procedures;
- 16.2.2 The requirements of the drinking water works permit for the drinking water system;
- 16.2.3 A description of the processes used to achieve primary and secondary disinfection within the drinking water system, including where applicable:
 - a) A copy of the CT calculations that were used as the basis for primary disinfection under worst case operating conditions; and
 - b) The validated operating conditions for UV disinfection equipment, including a copy of the validation certificate;
- 16.2.4 Procedures for monitoring and recording the in-process parameters necessary for the control of any treatment subsystem and for assessing the performance of the drinking water system;
- 16.2.5 Procedures for the operation and maintenance of monitoring equipment;
- 16.2.6 Contingency plans and procedures for the provision of adequate equipment and material to deal with emergencies, upset conditions and equipment breakdown;
- 16.2.7 Procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint;
- 16.2.8 An inspection schedule for all wells associated with the drinking water system, including all production wells, standby wells, test wells and monitoring wells;
- 16.2.9 Well inspection and maintenance procedures for the entire well structure of each well including all above and below grade well components; and
- 16.2. 10 Remedial action plans for situations where an inspection indicates non-compliance with respect to regulatory requirements and/or risk to raw well water quality.
- 16.3 Procedures necessary for the operation and maintenance of any alterations to the drinking water system shall

Operations Manuals

be incorporated into the operations and maintenance manual or manuals prior to those alterations coming into operation.

The Operations Manual for the Davy Drive Drinking Water System appears to include the prescribed requirements. In addition, all manufacturer's manuals for equipment in use at the treatment facilities are retained for operator's reference and use.

Logbooks

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

Subsection 7-5 (1) of Schedule 7 of Ontario Regulation 170/03 prescribes that chlorine residual and turbidity tests not performed by continuous monitoring equipment must be conducted by a certified operator or water quality analyst. A review of records indicated that manual chlorine residual and turbidity tests undertaken during the inspection review period were conducted by certified operators.

Security

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

The pumphouse for the Davy Drive Drinking Water System, constructed of brick with a locking door containing restriction signs, is outfitted with dusk to dawn exterior lighting and is equipped with intrusion alarms. In addition, all sample stations within the distribution system are locked.

Certification and Training

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

Subsection 23 (1) of Ontario Regulation 128/04 prescribes that a municipal residential drinking water system must have a designated overall responsible operator (ORO). The ORO shall be an operator who holds a certificate for that type of subsystem and that is of the same class or higher than the class of that subsystem. The Davy Drive Well Supply system is classified as a Water Distribution Class 1 subsystem and Water Treatment Class II subsystem. At the time of the inspection the Overall Responsible Operator was designated for both subsystems.

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

Subsection 25 (1) of Ontario Regulation 128/04 prescribes that one or more operators shall be designated as operators-in-charge (OIC) of the drinking water system. Subsection 25 (5) states that a person who holds an operator-in-training certificate shall not be designated as an OIC. Duties of an OIC are laid out in section 26 of Ontario Regulation 128/04.

Operators in charge have been designated for both the Water Distribution Class I and the Water Treatment Class II subsystems.

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

Section 22 of Ontario Regulation 128/04 prescribes that the owner or operating authority of a subsystem shall ensure that every operator employed in the subsystem holds,

- (a) a certificate applicable to that type of subsystem; or
- (b) a certificate applicable to that subsystem, in the case of an operator who holds a conditional certificate issued or renewed under section 10.

It appears that all operators employed in the subsystems hold an appropriate certificate.

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

Subsection 1-2 (2) paragraph 5 of Schedule 1 of Ontario Regulation 170/03 prescribes that adjustments to water

Certification and Training

treatment equipment must be made only by certified operators. Based on a review of pumphouse logbook entries, it appears that only certified operators made adjustments to treatment equipment during the inspection review period.

Water Quality Monitoring

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

Section 11-2 of Schedule 11 of Ontario Regulation 170/03 prescribes that at least one sample is collected every two weeks from the distribution system and is tested for Escherichia coli, total coliforms and general bacteria populations expressed as colony counts on a heterotrophic plate count. During the inspection review period, it appears that the number of samples collected from the distribution system and analysed for the appropriate parameters exceeded the requisite number.

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

Section 13-2 of Schedule 13 of Ontario Regulation 170/03 prescribes that the Owner and Operating Authority of a small municipal residential drinking-water system ensure that a treated water sample is taken every 60 months and is tested for every parameter set out in Schedule 23 of Ontario Regulation 170/03. Records provided by the Owner and reviewed during the course of this inspection indicate that the last complete set of samples was taken on August 21, 2019.

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

Section 13-4 of Schedule 13 of Ontario Regulation 170/03 prescribes that the Owner and Operating Authority of a small municipal residential drinking-water system ensure that a treated water sample is taken every 60 months and is tested for every parameter set out in Schedule 24 of Ontario Regulation 170/03. Records provided by the Owner and reviewed during the course of this inspection indicate that the last complete set of samples was taken on August 21, 2019.

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

Section 13-6.1 of Schedule 13 of Ontario Regulation 170/03 requires that the owner of a drinking water system that provides chlorination or chloramination and the operating authority for the system shall ensure that at least one distribution sample is taken in each calendar quarter, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of haloacetic acids (HAA), and have the samples tested for haloacetic acids. The requirement to sample for HAA came into effect on January 1, 2017. The standard for HAA as a reportable limit came into effect on January 1, 2020.

During the inspection review period, samples were collected from the Davy Drive Drinking Water System distribution system on the following dates and submitted to an accredited laboratory for analysis of HAAs: February 26, 2020; May 5, 2020; and, August 12, 2020.

The requisite number of samples were collected throughout the inspection review period with at least one sample being taken in each calendar quarter.

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

Subsections 13-6 (1) and (2) of Schedule 13 of Ontario Regulation 170/03 prescribes that the owner/operating authority of a drinking water system that provides chlorination shall ensure at least one distribution system sample is taken in each calendar quarter, from a point in the drinking water system's distribution system, or plumbing that is connected to the drinking water system, that is likely to have an elevated potential for the formation of

Water Quality Monitoring

trihalomethanes and have that sample tested for trihalomethanes (THMs).

During the inspection review period, samples were collected from the Davy Drive Drinking Water System distribution system on the following dates and submitted to an accredited laboratory for analysis of THMs: February 26, 2020; May 5, 2020; and, August 12, 2020. The requisite number of samples were collected throughout the inspection review period with at least one sample being taken in each calendar quarter.

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

Section 13-7 of Schedule 13 of Ontario Regulation 170/03 prescribes that at least one water sample is collected every three months and tested for nitrate and nitrite. Treated water samples were collected from the Davy Drive Drinking Water System on the following dates and submitted to an accredited laboratory for analysis of nitrate and nitrite: February 26, 2020; May 5, 2020; and, August 12, 2020. The requisite number of samples were collected throughout the inspection review period in the appropriate time frames.

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

Section 13-8 of Schedule 13 of Ontario Regulation 170/03 requires that the owner of a drinking water system and the operating authority for the system shall ensure that at least one water sample is taken every 60 months and tested for sodium.

Section 6-1.1 (7) of Schedule 6 of Ontario Regulation 170/03 states that if this Regulation requires at least one water sample to be taken every 60 months and tested for a parameter, the owner of the drinking water system and the operating authority for the system shall ensure that at least one sample that is taken during a 60-month period for the purpose of being tested for that parameter is taken not more than 90 days before or after the fifth anniversary of the day a sample was taken for that purpose in the previous 60-month period.

The most recent treated water sample tested for sodium was collected on August 12, 2020 from the Davy Drive Drinking Water System. A resample was collected and tested for sodium on August 24, 2020.

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

Section 13-9 of Schedule 13 of Ontario Regulation 170/03 requires that if a drinking water system does not provide fluoridation, the owner of the system and the operating authority for the system shall ensure that a water sample is taken at least once every 60 months and tested for fluoride.

Section 6-1.1 (7) of Schedule 6 of Ontario Regulation 170/03 states that if this Regulation requires at least one water sample to be taken every 60 months and tested for a parameter, the owner of the drinking water system and the operating authority for the system shall ensure that at least one sample that is taken during a 60-month period for the purpose of being tested for that parameter is taken not more than 90 days before or after the fifth anniversary of the day a sample was taken for that purpose in the previous 60-month period.

The most recent treated water sample was collected and tested for fluoride on August 15, 2017.

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

During the inspection review period, free chlorine residual tests were conducted at the same time and location that treated and distribution system samples were collected for microbiological analysis, as required by subsection 6-3(1) of Schedule 6 of Ontario Regulation 170/03.

Water Quality Assessment

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

A sample taken on August 15, 2020 of treated water showed a result of 25.2 milligrams/Litre for sodium (although it

Water Quality Assessment

is only an aesthetic objective, a reportable limit is 20 milligrams/Litre). A resample of the treated water taken on August 24, 2020 confirmed the exceedance with a result of 23.4 milligrams/Litre.

Reporting & Corrective Actions

- **Corrective actions (as per Schedule 18) had been taken to address adverse conditions, including any other steps that were directed by the Medical Officer of Health.**

One adverse water quality incident occurred during the inspection review period.

A sample taken on August 15, 2020 of treated water showed a result of 25.2 milligrams/Litre for sodium (reportable limit is 20 milligrams/Litre). A resample of the treated water taken on August 24, 2020 confirmed the exceedance with a result of 23.4 milligrams/Litre. No further actions were required.

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

Upon review of logbook entries and SCADA data, it appears that a qualified person responded in a timely manner and took appropriate actions in each instance that continuous monitoring equipment triggered an alarm.

- **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.**

Upon review of logbook entries and SCADA data, it appears that a qualified person responded in a timely manner and took appropriate actions in each instance that the UV disinfection system triggered an alarm.

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.

Not Applicable

SIGNATURES

Inspected By:

Aaron Mattson

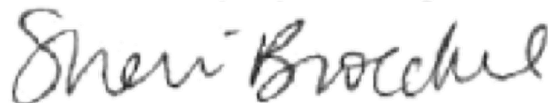
Signature: (Provincial Officer)



Reviewed & Approved By:

Sheri Broeckel

Signature: (Supervisor)



Review & Approval Date:

March 17, 2021

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.

Inspection Rating Record

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

DWS Name: DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
DWS Number: 220007141
DWS Owner: Ramara, The Corporation Of The Township Of
Municipal Location: Ramara

Regulation: O.REG 170/03
Category: Small Municipal Residential System
Type Of Inspection: Focused
Inspection Date: November 17, 2020
Ministry Office: Barrie District

Maximum Question Rating: 534

Inspection Module	Non-Compliance Rating
Source	0 / 14
Capacity Assessment	0 / 30
Treatment Processes	0 / 102
Operations Manuals	0 / 28
Logbooks	0 / 14
Certification and Training	0 / 42
Water Quality Monitoring	0 / 91
Reporting & Corrective Actions	0 / 87
Treatment Process Monitoring	0 / 126
TOTAL	0 / 534

Inspection Risk Rating	0.00%
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FINAL INSPECTION RATING:	100.00%
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Ministry of the Environment - Detailed Inspection Rating Record (Reporting Year - 2020-2021)

DWS Name: DAVY DRIVE SUBDIVISION DRINKING WATER SYSTEM
DWS Number: 220007141
DWS Owner: Ramara, The Corporation Of The Township Of
Municipal Location: Ramara

Regulation: O.REG 170/03
Category: Small Municipal Residential System
Type Of Inspection: Focused
Inspection Date: November 17, 2020
Ministry Office: Barrie District

Maximum Question Rating: 534

Inspection Risk Rating | 0.00%

FINAL INSPECTION RATING: | 100.00%