Engineers Evaluation Report

Calabogie Peaks Resort

30 Barrett Chute Road, Calabogie, ON

Prepared for:
Calabogie Peaks Inc.

Prepared by:
Azimuth Environmental
Consulting, Inc.

June 2020

AEC 17-328

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Environmental Assessments & Approvals

June 2, 2020 AEC 17-328

Calabogie Peaks Resort
30 Barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Paul Murphy, President

Re: First Engineers Evaluation Report
Calabogie Peaks Resort Water Treatment Plant

Dear Sir:

Azimuth Environmental Consulting, Inc (Azimuth) is pleased to present our report on the operations and status of the potable water supply for a residential development and resort facility at the Calabogie Peaks Resort (CPR). The system provides a potable supply that meets provincial standards for water quality. The treatment system design and operation complies with the requirements outlined in O.Reg. 170/03.

Although the communal water treatment system is in its operational infancy, it is believed that both the equipment and operational standards that are presently in place will yield high quality water for the years to come, given that the operational standards are maintained

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Jackie Coughlin, P.Eng.
Senior Environmental Engineer

642 Welham Road, Barrie, Ontario L4N 9A1
telephone: (705) 721-8451 • fax: (705) 721-8926 • info@azimuthenvironmental.com • www.azimuthenvironmental.com

Table of Contents

List of In-Text Tables

List of Figures

List of Appendices

1.0 INTRODUCTION

The Safe Drinking Water Act (Drinking Water Systems - O.Reg. 170/03) requires drinking water protection / treatment for regulated potable water systems. Calabogie Peaks Resort (CPR) water treatment system is classified as a year-round non-municipal residential water works facility (Section 1 - O.Reg. 170/03).

According to the provisions of the Drinking Water Systems regulation (O.Reg. 170/03), a qualified professional must author a report termed the "Engineering Evaluation Report" on the water treatment system [Schedule 21-2(1)] within 30 days of the date of plant commissioning. The report contents must address the compliance of the system to the required treatment equipment and operational requirements stipulated in the regulation (Schedule 21-5). This document provides the First Engineering Evaluation Report to address the requirements of this regulation.

Under Schedule 2 of the regulation, a series of minimum treatment / operational requirements are mandated for the water works, which must be adhered to at all times that potable water is being provided.

The purpose of the Engineering Evaluation is to assess the potential for microbiological contamination of the water works and to identify operational and physical improvements necessary to mitigate this potential utilizing multiple barrier concepts. The second purpose is to identify a sufficient monitoring regime for the entire water works to ensure compliance with the Ontario Drinking Water Standards, Objectives and Guidelines (O.Reg. 169/03 [as amended]) along with all other applicable regulations.

For the purpose of this report, the water works at CPR means a system for the collection, production, treatment, storage, and supply of water (STSW), but not a water distribution system solely for the purposes of water demand management.

The site has been inspected by Azimuth Environmental Consulting, Inc. (Azimuth) staff, on December 16, 2020 by Jacqueline Coughlin, P.Eng. for the purposes of fully documenting the elements of the system for this report [Schedule 21-5(b)].

2.0 BACKGROUND

CPR is situated at the municipal address of 30 Barrett Chute Road and is located approximately 6 km west of the community of Calabogie, ON (Figure 1). The Site has existing frontage on to both Calabogie Road (Provincial Highway 508) and Barrett Chute Road and is accessed via three (3) existing entranceways; one (1) off of Calabogie Road and two (2) from Barrett Chute Road.

The total Site area is approximately 222.6 ha (550 acres), however, the area of the main development is approximately 4.1 ha (10 acres). CPR includes a main hotel, a ski lodge, two residential buildings (Cedars and Pines) and two housing accommodation units, otherwise known as Base Mountain (Figure 2). The new residential development, otherwise known as Juniper Ridge, includes 2 existing townhouse complexes (the Oaks) as well as proposed new residential units to be developed in phases.

A summary of the Base Mountain facilities is provided below:

1. the Calabogie Peaks Hotel;
2. the ski lodge;
3. the Cedars eight (8) unit accommodation building;
4. the Pines ten (10) unit accommodation building;
5. the O'Brien's Bunkhouse accommodation unit;
6. the First Tracks accommodation unit;

A summary of the Juniper Ridge facilities is provided below:

1. the Oaks 2 Townhouse complexes (4 units/ complex); and
2. "new" residential units.

The general location of the property is shown on Figure 1 and the site layout is shown on Figures 2 and 3. The new water treatment plant draws water from one of two drilled water wells (described later in the report), located to the west of the main hotel and southwest of the Cedars building.

3.0 REGULATORY COMPLIANCE

A Permit To Take Water (No.: 00-P-3018) exists for the former communal water treatment system (CWTS) servicing CPR. The PTTW was issued in August of 2011 and expires on August 1, 2021 for two drilled wells located on the property. The water takings authorized by the permit are to a maximum of 360 m^3/day (250 Lpm).

The former CWTS operated under the existing C of A No. 5336-5KRJR8 however non-municipal systems no longer require an Ontario Water Resources Act (OWRA) Certificate of Approval (i.e., Section 52 CofA).

Finally, the new water treatment system is operated by Whitteker Environmental Services Inc.), a licensed water works operator (O.Reg. 128/04), under contract and in accordance with Schedule 2-2(9)(i) (O.Reg. 170/03). The Operator certificates are provided in Appendix C.

4.0 WATER WORKS DESIGNATION

The MECP granted CPR (residential development) a Drinking Water System Number (No.: 260097058) in August 2020 for a communal "Non Municipal Year Round Residential System".

5.0 WATER DEMAND

Water demand estimates have been calculated as part of the system design for the first phase and at full development. The system was designed to supply up to a maximum day flow of 110,000L/day for Base Mountain and 962,400L/ day for Juniper Ridge. Average daily demand is expected to approximately 36,773°L/day for Base Mountain and 320,800 L/day for Juniper Ridge.

6.0 WELL CONTRUCTION

Water is supplied from two bedrock wells, each rated at 250 Lpm (360,000Lpd). Well No. 1 is located ~50m west of the main hotel and Well No. 2 is located just southwest of the Cedars building (Figure 3).

Water well information for Well No. 1 was taken from an existing hydrogeological letter prepared by Oliver, Mangione, McCalla & Associates Ltd. (1986), which indicates that the water wells No.: 1 and 2 are 150 mm (6.0") nominal diameter drilled well that intersected water bearing fractures below a depth of 42.7 m in depth. Well No. 1 was completed in December 1985 and the reported static water level is 2.1 m below ground surface (bgs). The stratigraphy is described in the drillers log as consisting of an appreciably thick sequence of brown sand and gravel to ~15m, followed by grey limestone, in which the well is finished.

7.0 WATER QUALITY

CPR has maintained a historical sampling program for Escherichia coli (*E.coli*) and total coliform (TC) since 2004 as a requirement under the former CofA (No. 5336-5KRJR8). To ensure compliance with O.Reg. 170/03 for a "Non Municipal Year Round Residential System", the required bacteriological testing (i.e., total coliform, HPC, and *E. coli*) and the required testing under O.Reg. 170/03 (i.e., Schedules 23 and 24) was completed in September 2020. A summary of the 2020 results is presented below and the laboratory analytical reports are provided Appendix D.

7.1 Bacteriological testing

One microbial raw water sample and two microbial treated water samples were collected in September 2020. No detections of *E.coli* or TC were reported for either the raw or treated samples. Results from the 2020 samples and past historical data indicate that the wells are providing a suitable potable supply of raw water.

One detection of Heterotrophic Plate Count (HPC) was noted for a single treated sample in September 2020. HPCs provide an indication of the aerobic bacterial population beyond a measure of the coliform bacteria present. The bacteria are cultivated in very favourable conditions to promote growth. The goal of the analysis is essentially to assess whether there exist bacteria within the water and more importantly to what extent. Ideally, a level of <10 CFU/mL is desired and steps could be taken to occasionally disinfect water distribution lines should HPC level trend upward with time.

7.2 Chemical Testing

Beyond the microbial evaluation, a wide range of organic and inorganic parameters were tested of the treated water and within the distribution system in September 2020 (i.e., First Tests). This includes the required testing under O.Reg. 170/03 for inorganic and organic compounds (i.e., Schedules 23 and 24). To date, the required yearly testing under O.Reg. 170/03 for lead has been completed. Similarly, the required 60-day testing conducted for sodium and fluoride and the required quarterly testing for nitrogen species, trihalomethanes (THMs), haloacetic acids (HAAs) have also been completed. A summary of the 2020 results is provided below and the laboratory reports are provided in Appendix D.

Results from the organic and inorganic samples indicated that there was no exceedances in any health related or aesthetic parameter as outlined in the Drinking Water Quality Standards (ODWQS), although it was noted that sodium levels did exceed 72 mg/L, which should be considered for people with sodium-restricted diets.

All pesticides and volatile organic compounds (VOCs) were below detection limits. A few metals (e.g., boron, uranium, lead) and HAAs as well as nitrate were detected to varying levels but below the associated Ontario Drinking Water Quality Objectives (ODWQO) limit where one exists.

All the above noted samples were submitted to Eurofins Environmental Testing, whom is fully accredited to perform the required testing under O.Reg. 170/03.

8.0 GROUND WATER UNDER DIRECT INFLUENCE

An evaluation was completed to ascertain the status of the site water works with respect to potential connection to surface water sources. As such, this assessment addresses the GUDI ("Ground water Under the Direct Influence" of surface water) status of the well supply. GUDI wells are of concern because insufficient infiltration of the surface water percolating through the ground could allow bacteria impacts to occur within the system. According to Section 2 (2) - O.Reg. 170/03, the production well (W-1) could be classified as GUDI, as the raw water supply:

"*... is capable of supplying water at a rate greater than 0.58 litres per second and that obtains water from a bedrock well, any part of which is within 500 m of surface water*". (Section 2 (2) - O.Reg. 170/03).

Notwithstanding, a GUDI assessment was undertaken to confirm this assertion. The assessment is based on the physical setting of the resort, well siting and construction, and the water chemistry.

8.1 Physical Setting

One of the key factors in considering surface water influence is the physical setting of the well within the regional surface water setting. The resort is located within an area dominated by *Precambrian* bedrock terrain on the Canadian Shield. Published geologic mapping notes that a small glaciofluvial deposit of coarse grained material occur beneath the main development area which extends to the eastern shore of Calabogie Lake. This is consistent with the borehole record for CPR primary production well (W-1) which encountered coarse sand to a depth of ~15 m (50 ft). Test pit data provided by Simmering & Associates Ltd (2002), describe the soil as consisting of calcareous coarse sands and gravel (SP Type) which are part of the White Lake soil group.

The bedrock geology in the area is quite variable and consists of a mixture of igneous/plutonic rock types and carbonate based metasedimentary rocks. Areas of topographic high are generally associated with bedrock ridges and/or knobs that consist of a mixture of igneous / plutonic rock types (*i.e.,* granodiorite, tonalites, *etc.*). In these areas, the overburden is typically very thin (< 1.2 m) and outcroppings are common. In lower lying areas (such as the main development area) the metasedimentary bedrock is overlain with thicker coarse textured sequences of overburden (as described above). This metasedimentary formation is known to be associated with mapped fault features in the area. Faults, geological contacts and other structural features are often targeted for potable water purposes as they tend to accumulate large amounts of ground water within fractures associated with these features.

From a hydrogeological perspective, precipitation either infiltrates to the ground water regime or runs off as overland flow to first-order tributaries. Infiltration is expected to be moderately rapid due to the permeable nature of the sandy overburden, and is slower through the organic wetland soils. It is also limited by the steepness of the bedrock ridges and outcrops. Ground water flow in the overburden follows the general topography to the east, with discharge into the lowlands, associated creeks/wetlands and Calabogie Lake. Shallow ground water flow will also be influenced by the central stream.

The overburden is highly permeable compared to the underlying bedrock, with an estimated hydraulic conductivity between 10^{-3} and 10^{-5} m/sec (Simmering & Associates Ltd., 2002). The overburden aquifer is currently used by the resort (in permanent ponds shown on Figure 2) for snow making / irrigation purposes. The metasedimentary bedrock formation occurs beneath the Site and is often the target for many water supplies in the area (including the main production well at CPR). This aquifer consists of large fracture networks throughout the formation which are encountered at ~43 m (118 masl) beneath the Site as per the well record for the main supply well. Lastly, a third low-yielding aquifer unit is more sparsely noted at the Precambrian bedrock contact. However, the water quality is noted to be more mineralized with elevated concentrations of iron (WESA, 1986).

The topography across the entire Site area is rather steep which is to be expected based on the Site's existing use as a Ski Resort. Relief trends northward from the pinnacle of the ski slope (~370 masl) towards the main Ski Lodge (~160 masl). In contrast, the main development area is generally flat with a slight eastward trend downwards towards Calabogie Lake which is situated approximately 250 m from the eastern Site boundary. Runoff in the main development area occurs in a similar direction either overland or through a series of onsite ditches / swales that convey flows to an onsite watercourse that ultimately discharges to Calabogie Lake. A small watercourse flows through the center of the main development area in a west to east orientation. The watercourse intersects two (2) dugout ponds that are utilized by resort staff for snow making and irrigation purposes. The watercourse is fed from a series of small "pocket" wetlands that originate immediately northwest of the Site. These wetlands capture runoff and convey flows through this natural drainage network.

8.2 Analytical Results

The GUDI protocol also relies on historical water chemistry results to demonstrate the lack of seasonal variation in water chemistry (which would indicate recent influx of surface water). A complete historical database is not yet available, but will be monitored as data becomes available. However, water chemistry samples have been collected periodically from the production well (W-1) (1986 & 2017) and Calabogie Lake (2017). Water chemistry results are presented below and the laboratory analytical report is provided in Appendix D.

Table 1 – Summary of Water Quality Data

Parameter	Units	ODWQS	Production Well (W-1)		Calabogie Lake
			10-Apr-86	19-Jul-17	19-Jul-17
Hardness	mg/L	80-100	-	227	42
pH @ 25C	pH Units	6.5-8.5	-	7.92	7.67
TDS	mg/L	-	305	231	45
Color	TCU	5	2.5	4	24
Chloride	mg/L	250	9	14	4.7
Fluoride	mg/L	1.5	0.04	< 0.1	< 0.01
Nitrite	mg/L	1	< 0.03	< 0.1	< 0.01
Nitrate	mg/L	10	0.4	0.4	< 0.01
Total Ammonia	mg/L	-	-	-	-
Total Phosphorus	mg/L	-	-	-	-
Sulphate	mg/L	500	17	11	-
Arsenic	mg/L	0.025-0.010	< 0.01	< 0.0001	< 0.0001
Boron	mg/L	5	0.02	0.01	< 0.005
Cadmium	mg/L	-	<0.005	-	< 0.000014
Calcium	mg/L	-	-	72.8	13.2
Iron	mg/L	0.3	< 0.05	0.127	0.083
Magnesium	mg/L	-	-	-	-
Manganese	mg/L	0.05	< 0.05	< 0.001	0.015
Sodium	mg/L	200, 20	-	13.1	3.3
Uranium	mg/L	0.02	< 0.02	-	-
Total Coliform	cfu/100mL	0	0	0	18
E coli	cfu/100mL	0	0	0	4
Turbidity	NTU	5	< 1	19.3	-
Sulphide	mg/L	-	-	< 0.01	< 0.01

Based on the dataset presented above, there are some clear quality differences between the two (2) sampling locations. Ground water within the production well (W-1) is more mineralized (*i.e.,* "hard") than that of the Calabogie Lake. Hardness, total dissolved solids (TDS), chloride, calcium and sodium are all elevated by an order of magnitude or more when compared to the lake data. Iron, is also slightly elevated in the production well in 2017 (0.127 mg/L), however, not significantly when compared lake samples (0.083 mg/L). Iron was not historically detected in the production well in 1986, however, this sample was collected after 146.4 minutes into a long-term pumping test. As such, it is suspected that iron concentration was remedied through well development.

Conversely, some parameters, such as colour and manganese are noted to be elevated in the lake rather than the production well. Colour is commonly elevated in surface waters, and is typically from decaying organic matter (*i.e.,* dissolved organic carbon [DOC], tannins and lignins, *etc.*) or elevated inorganic parameters (*i.e.,* iron, manganese, *etc.*). As such, elevated colour in ground waters may signify surface water influence. Colour was detected in the 1986 and 2017 production well samples (2.5 TCU and 4 TCU, respectively); however, both are found at much lower concentrations compared to the lake sample (24 TCU) and are below the ODWQS limit of 5 TCU. In this instance, the colour detections in the ground water is likely a result of dissolved iron concentrations, while the elevated concentrations of colour in the lake is from a combination of dissolved

iron/manganese, and other organic constituents; though the organics were not assessed in the lab report. Notwithstanding, based on these concentrations it is unlikely that the ground water is mixed directly with surface water.

Total coliform and *E.coli* detections are noted in the lake sample, however, there is no detection in the production well samples. This also asserts that there is no direct hydraulic connection between surface water sources and exploited bedrock aquifer. Notwithstanding, it is possible that is a minor connection ("leaky") exists between the surface to the bedrock aquifer. However, there appears to be an ample amount of retention time through the overburden to the bedrock aquifer occurring, based on the greater mineralization seen in the water chemistry and nonappearance of microbiological indicator parameters.

Based on the evaluation of the additional data, we conclude that the wells are not GUDI wells. However, the treatment system does provide appropriate treatment to meet or exceed GUDI requirements.

9.0 WATER TREATMENT

The current treatment system complies with the treatment requirements of Schedule 2 of O.Reg 170/03 for a year round, non-municipal, residential system. There is currently a logbook in place, which includes all associated documentation regarding the system. Also included are operating instructions and forms for keeping track of maintenance, flows and sampling. The WTP design basis and PIDs are provided in Appendix B.

The system has four (4) components: (1) the supply well, (2) the treatment system, (3) the storage reservoirs, and (4) the re-pressurization pumps and the distribution system. Figure 3 indicates the process flow of the STSW.

The existing water treatment system is located in a dedicated building in the water treatment room. The room is electrically serviced and heated. The well pump control panels are present within this room along with the treatment system, supplies and replacement parts as stipulated in Schedule 2-2.

The treatment system consists of disinfection, sand filtration and a blended softener system to reduce iron, manganese and hardness and subsequent primary and secondary disinfection using sodium hypochlorite. The sand filtration and softener system is rated to treat 500Lpm, which is the combined full flow of each well, however the softener systems will have a modulating bypass valve that will allow for a blending of the soften system to control the reduction percentage of iron, manganese and hardness.

The water comes into the building from the wells via a 50mm diameter feed line, and is dosed with sodium hypochlorite before moving through three (3) NexaSand filter tanks installed in parallel for manganese, iron and hardness removal. The water is then directed into two (2) underground storage tanks, each with a capacity of 40,000 L.

The primary disinfection system consists of two prominent diaphragm metering pumps (Grundfos DDA) drawing from a 200 L polyethylene tote complete with containment dike, injection quill and an online chlorine residual analyzer (Signet 4630 model). The sodium hypochlorite will dose prior to the sand filters to prevent biofilm and maintain a free chorine residual prior to entry into the clearwells.

Particulate matter and suspended solids will be removed by direct filtration utilizing a NextSand filter furnished in 3 fiberglass pressure tanks, installed in parallel. These tanks include automatic backwash devices that use raw water for the purpose of backwashing any precipitate to the drain line and pump station.

Iron and manganese are present in the well water at a level where an ion exchange softener can effectively remove these contaminants and additionally remove hardness from the water. Iron and manganese specific resin will be furnished in 2 fiberglass tanks installed in parallel. These tanks include automatic backwash devices that use raw water for the purpose of backwashing and regeneration.

A second chlorine analyser has been intergraded into the high lift distribution pumps effluent line to monitor free chlorine levels (minimum free chlorine residuals in the distribution system of 0.5 mg/L targeted). A provision has been made in the tank discharge to facilitate post chlorination if required.

Water is pumped out into the distribution system via two separate pump systems and two separate forcemains to service Base Mountain and Juniper Ridge respectively. The Juniper Ridge consists of two high lift pumps (Grundfos 15hp CR15-8) rated at 7.9Lps @90m head and two cushion tanks (WX-350). One of the pumps operates as a jockey pump to provide pressure to the system, with each of the subsequent pumps actuating as required, to provide for peak flows. A third pump will be added when required to satisfy demand based for future expansion.

The Base Mountain distribution system consists of two high lift pumps (Grundfos 15hp CR15-8) rated at 7.9Lps @90m head and two cushion tanks (WX-350). One of the pumps operates as a jockey pump to provide pressure to the system, with each of the subsequent pumps actuating as required, to provide for peak flows. A third pump will be added when required to satisfy demand based on future expansion. The discharge

manifold will consist of a free chorine analyzer, contacting head flow meter, pH meter and provide for post chlorination.

The potable drinking water treatment system is fully instrumented to allow full-automated control of the system, with alarm call-out features and remote monitoring features. The entire system can be monitored through the internet so that all control functions can be monitored and executed remotely. The computer system controlling the system will restart the operation automatically if the electrical system is tripped.

For the treatment system, three sampling ports have been installed. A sampling port has been installed on the inlet feed line from the well (i.e., raw water) and just prior to storage to allow measurement of infeed chlorine concentrations. Chlorination is to be temperature-compensated and locally calibrated. Calibration of instruments must allow for span and offset adjustment.

A third sampling port is available following storage to allow measurement of chlorine concentration from the tanks and to allow measurement of infeed chlorine concentrations to the distribution system. One sampling port has been installed on the return line to the WTP (as needed).

9.1 Chlorine Analysers

As indicated, the design includes automatic chlorine analysers that can record the chlorine residual in the treated water. It should be noted that the chorine analyzers have not been appropriately calibrated and therefore are not programmed to provide representative readings and therefore cannot be relied upon. In the systems infancy of operation, the above situation has resulted in some analyser readings that erroneously show an adverse condition however the results are not accurate and are not to be used in assessing an adverse condition.

Given the above situation, it is recommended that the operator rely on the manual daily reading only for the chlorine residual until such time that the automated analysers are appropriately calibrated and programmed to provide representative readings. Until such time, the operator is permitted to either ignore or disconnect the analyser readout to avoid confusing readings.

In order for operations staff or inspectors to understand the limitations of the analysers, a note should be posted nearby each analyser or where the readout may still be active with a statement indicating the following:

"*the chorline analysers have not been calibrated and programmed therefore the readings are not to be relied upon and should be confirmed through manual measurement only*"

Once the analysers are calibrated and programmed appropriately, they can be reliably utilized to provide this service and the notes can be removed.

10.0 DISINFECTION ASSESSMENT

A Grundfos DDA metering pump is utilized for injecting chlorine into the potable waste system. The specifications for the model used have been inserted in the on-site equipment specifications binder. According to the specifications of the pump, it is capable of adequately treating the peak design flow at CPR.

As indicated, the chorine analyzers have not been appropriately calibrated and therefore are not programmed to provide representative readings and cannot be relied upon. The operator is to rely on the manual daily reading only for the chlorine residual until such time that the automated analysers are appropriately calibrated and programmed to provide representative readings.

Storage will be accomplished using 2- 40,000 L tanks for a total volume of 80,000 L and in intended to be sufficient for chlorine residual, peak daily flow and buffer for peak hour demand. The Minimum chlorine contact time (CT) is sufficient to meet the required standards for Phase I (Base Mountain and Oaks Townhomes) and assumes 85% of the tank volume (i.e., 75,000L).

10.1 Chlorine Contact Time

The required chlorine contact time is defined by the formula as per Reg. 170/03 which references the Ministry's Procedure for Disinfection of Drinking Water in Ontario (MOE 2003):

$$\mathbf{CT = [CL_2] \ x \ F_{sc} \ x \ V_t \ x \ Q_{PHF}}$$

The CT calculation is based on the following assumptions:

- Minimum chlorine residual (CL_2) = 0.2mg/L (O.Reg. 170/03 Schedule 2-5)
- Total storage volume (V_t) = 75m^3 (85% of tank volume)
- Baffle factor (F_{sc}) = 0.5
- Average day flow (Q_{ADF}) = 45,753Lpd (31.65min)
- Peak hour factor = 8
- Peak hour flow (Q_{PHF}) = 8 x 45,753Lpd = 364,584Lpd (253Lpm/ 0.253m^3/min)

For secondary disinfection, using Table 7 (Inactivation of Viruses by Free Chlorine) from the Ministry's Procedure for Disinfection of Drinking Water in Ontario (MOE 2003), a CT value of 3 would be required to achieve a 2-Log (99%) removal (at 10°C and pH = 6-9), and 4 to achieve a 2-Log (99%) removal (at 5°C and pH = 6-9). See Table 2 below for a range of temperature and pH values.

Table 2 – CT Value (5°C to 15°C and pH = 6-9)

CT Values for Inactivation of Viruses by Free Chlorine	
Temperature (pH)	**Min CT Value For 2 log Removal**
15 (6-9)	2
10 (6-9)	3
5 (6-9)	4

Ministry's Procedure for Disinfection of Drinking Water in Ontario (MOE 2003) - Table 7 - CT Values for Inactivation of Viruses by Free Chlorine

At peak hour flow (Q_{PHF}), the minimum chlorine theoretical contact time (T_{min}) is 148 minutes, assuming a plug flow factor of 0.5 for the two storage tanks ($T_{min}=V_t/Q_{PDF}$ * 0.5 = 75,000L / 253Lpm * 0.5). However, peak flow is not maintained for long durations so that the average theoretical contact time is 421 minutes (T_{min} = 75,000L/ 31.65Lpm *0.5) based on the average day flow.

The minimum tank volume to achieve a CT of 4 at a chlorine residual of 0.2mg/L, which is the suggested minimum residual as per O.Reg. 170/03 at peak hour flow is 10,127L

$$\mathbf{V_t = CT \times Q_{PHF} / [CL_2] / F_{sc} = 4 \times 253Lpm / 0.2mg/L / 0.5 = 10,127L}$$

In this case, the minimum tank volume is 75,000L since the production of water is equal to the maximum hour flow (0.253m^3/min), therefore the tank volume will always be 75,000L.

11.0 MICROBIOLOGIAL CONTAMINATION

11.1 STSW

Visual inspection of the water treatment facility was conducted during construction of the treatment system. The wellheads are situated approximately 50m and 100m west of the hotel, with adequate stickup (approximately 1.5 m above ground surface) in order to prevent any possible surface contaminants from getting to the water source through the well casing.

As discussed in the water quality section of this report, water quality with respect to microbiology in the production wells is considered satisfactory thus far. No detection of

E. coli has been reported in the period of record. Continued development of the sampling data base is required in order to derive any meaningful statistical assessment.

11.2 Distribution System

CPR's water works delivers treated water through the distribution system. The distribution system routes the treated water to Base Mountain and Juniper Ridge present on the site. To date, only limited microbiological sampling has been done on the condominium distribution system at CPR because it was commissioned in December 2019. Occupancy during the spring was limited to less than five residences but by fall 2020 is expected to increase to more than five dwellings. Chlorine residual is manually monitored on a daily basis by the operator at the system extremities.

As prescribed in Schedule 11-2 (O.Reg. 170/03), sampling for microbial parameters must be conducted bi-weekly.

11.3 Adjacent Land Uses

Adjacent land use consists of residential to the north and southeast and a golf course (also owned by CPR) immediately east. Lands to the west and south are vegetated and in a relatively natural state.

These land uses do not pose unusual risk to the safety of the water supply and are remote to this centrally located facility. Since the well draws water from a confined aquifer, there is little opportunity for hydraulic connection to the surface soils, which may receive septic leachate or chemicals associated with the ski hill operations. Previous testing done on the well indicates that the aquifer is isolated from these source(s).

12.0 WATER QUALITY MONITORING PROGRAM

A monitoring program has recently been established at CPR. The proposed water sampling program is in accordance with the current regulations (i.e., O.Reg. 170/03). Operational checks, sampling and testing programmes for non-municipal year-round residential systems are required to meet Schedules 6, 8, 12, 15 and 15.1 of the regulation. As the regulatory testing requirements change occasionally as the regulation is revised, the regulatory requirements take precedence over the summary provided here. The current compliance monitoring requirements are as follows:

- sampling for microbiological parameters (*E. coli*, total coliform and heterotrophic plate count) on a bi-weekly basis from the plumbing that serves the development [Schedule 11-2(1)(a)] and monthly from each supply well [Schedule 11-3(1)].
- sampling for microbiological parameters (*E. coli* and total coliform) at least once every month of the raw water before any treatment [Schedule 11-3(1)].

- sampling should be undertaken once per calendar quarter from an appropriate point in the distribution system for trihalomethanes [Schedule 13-4(1)] haloacetic acids [Schedule 13-6(1)].
- sampling should be undertaken every 3 months from an appropriate point for nitrite and nitrate [Schedule 13-5].
- sampling should be undertaken twice per year from appropriate points in the distribution system for lead [Schedule 15-1(4)]. Sampling is completed in accordance with subsection 15.1-4 and the associated table, and the number of samples will vary as the served population increases. Initially, one sample per building with private units is required, based on fewer than 5 buildings and fewer than 100 persons served.
- sampling should be undertaken every 60 months for the parameters listed in Schedule 23 and 24 of O.Reg. 170/03 (e.g. inorganic and organic parameters) [Schedule 13-2(3) and 13-4(3)].
- sampling should be undertaken every 60 months from an appropriate point for sodium [Schedule 13-8] and fluoride [Schedule 13-9].
- all monitoring must be undertaken by a certified person (i.e., a licensed operator as per O.Reg. 435/93).

As the monitoring programs continue, the program should include protocols to maintain an accurate database. This database can be used to rapidly assess data as it is becomes available to address adverse results, and to ensure that rapid notification and remedial action occur if an adverse result is obtained in accordance with O.Reg. 170/03 [Schedule 16].

13.0 FACILITY OPERATIONS

The facility operations have been formalized to specifically address the operational requirements present in O.Reg. 170/03 [Schedules 6, 8, 11, and 13]. The operational records for this facility are compiled and stored in a central location (i.e., water treatment building office). This is a requirement of the Safe Drinking Water Act and calls for the retention of specific documents for at least five years (Section 13 O.Reg. 170/03). Prudence suggests that a duplicate copy should reside elsewhere (i.e., Office). There are several minor operational requirements that need to be added to the existing procedures.

A review of the log books and equipment manuals for the facility shows the operational requirements presented in O.Reg. 170/03 are being satisfied. The complete set of operations manuals consists of a large binder with as built drawings and in some cases Manufacturer/ Suppliers Maintenance Manuals and Catalogues. These manuals were scrutinized in a general sense but not thoroughly reviewed. They are sizable documents and therefore have not been reproduced for this report.

Schedule 2-2(6) requires that written operating instructions for the water treatment equipment are kept near the equipment (Appendix G). These instructions need to conform with the manufacturer's recommended instructions for operation and maintenance of each component in the water treatment system. It would be appropriate to append such instruction in the operations manual for reference purposes.

Similarly, a sufficient supply of sodium hypochlorite needs to be kept on site. The location of this supply needs to be clearly marked and separate from all other supplies [Schedule 2-2(7) and (8)].

Section 11 requires that an annual report be prepared as per O.Reg 170/03. Section 12 requires that that all documentation associated with water quality test results, annual reports, Engineer's Report, and a copy of O. Reg. 170/03 must be made available to the public in accordance with subsection (4) of Section 12. The facility has established adequate record-keeping of consumer related documentation (i.e., O.Reg. 170/03 regulation, annual reports, and water quality reports) which are available to the public during normal business hours at the office.

14.0 FACILILTY MAINTENANCE

As required in Schedule 21-5(d) a maintenance schedule is to set out minimum requirements relating to the frequency with which equipment must be inspected, tested, and replaced. In general, a visual inspection of the water works should be conducted each time the site is attended (and properly documented in the operation's logbook) to ensure all components are in sound working order. This maintenance inspection schedule should be properly documented in on-site records / log books. All maintenance records should be stored at the onsite office.

On-site access to all of the water treatment equipment component "service and operations" manuals is required. Equipment manuals should be listed within a binder containing all of this material. Lost manuals need to be replaced as soon as it is noticed that it is missing. It is recommended that each operator read and understand each component and initial each manual as having been read and understood. Within each manual, reference flags (i.e., "post it" markers) should be affixed to identify critical operational information sections or highlight minimum maintenance requirements. The overview provided in this document is not intended to replace the complete information contained in these reference manuals nor replace the need to become fully familiar with the workings of each equipment component.

It is our opinion that the manufacturer's recommended maintenance schedule be followed for all equipment used at this facility including, but not limited to, the monitoring

equipment used or brought to the site (e.g., residual chlorine meters). The CPR system uses sodium hypochlorite and sand filtration and a blended softener system.

It is also noted that the several manufacturers may require "certified" personnel for the repair of certain components associated with the equipment (e.g., high lift pumps, metering systems). These requirements need to be followed, where applicable. At a minimum, the required maintenance schedules outlined in the various equipment manuals should be complied with as suggested in Schedule 8-2(2). This would include; but not be limited to, all treatment equipment, monitoring equipment, and testing equipment (both automatic and manual).

Chemical feed pumps and associated components (o rings, check valves, diaphragm) should be inspected bi-weekly for leaks. The overhaul should include cleaning the feeder head, cleaning and checking all valves and O rings for wear. Cleaning and checking the condition of check valves and pump control valves should occur quarterly. If valves are fouled or blocked open with particulates, the valve should be dissembled, cleaned and then returned to service. Any worn out parts should be replaced. The chemical feed line and solution tanks should be inspected bi-weekly or as required to ensure that the chemical feed system functions properly and that the lines are not clogged or kinked and that the solution tanks are clean. The chemical feed pump should be calibrated quarterly to ensure the appropriate amounts of chemicals are being delivered to the system.

The operator should be cognizant of the maintenance requirements (i.e., leaks) of all larger equipment items including; but not limited to, pressure, water storage and media/ softener tanks. Maintenance schedules for the pressure and vessel tanks were not provided however prudence would suggest semi-annual inspections of these tanks would be required. Salt usage should be monitored bi-weekly or as required to confirm expected function of the softener. The bedding material for the sand filters may need to be replaced once every 5-8 years. If applicable, grease motor bearings on high lift pumps. Confirm pressures to the distribution system on bi-weekly basis or as needed. All water storage tanks should be inspected annually or as needed to ensure that they are protected from contamination. Vents and screens should be checked for blockages and/ or entry of small insects, animals or debris. Tanks should be checked for overflows and for any deterioration in the tank walls and/ or foundation. Water level measuring devises should also be checked to ensure accuracy. Tank hatches should be checked to ensure the lids are property sealed and locked.

General maintenance for other equipment such as high lift and wells pumps and associated pump components should also be conducted as needed to ensure proper working order. Pumps and associated components should be cleaned and overhauled on a yearly basis or as needed. The overhaul should include cleaning the feeder head,

cleaning and checking all valves and O rings for wear, and cleaning and checking the condition of check valves and pump control valves. Any worn out parts should be replaced. If applicable, grease motor bearings on high lift pumps. Confirm pressures to the distribution system on a daily basis or as needed.

As recommended in Schedule 8-2(3), system operations should be inspected and exercised bi-weekly. This evaluation would confirm the satisfactory operational status of all equipment including; but not limited to, manual valves, automatic valves, automated shut-down equipment / controller valves, pass-by equipment, and "fail-safe" equipment. Each of these inspections needs to be properly documented.

The frequency of valve inspection depends on the type of valve, but the operator should inspect the valves at least once a year or as deemed necessary. The inspection should include completely closing, reopening, and reclosing the valve until it seats properly. If valves are damaged or are showing signs of leaking, valves should be scheduled for repair by the operator.

The control panels in the treatment plant room should be inspected at least once a year for corrosion and other problems that could cause shorts or failures. All wiring should be visually inspected annually for signs of visible wear and other damage

15.0 DEVIATIONS FROM 10 STATE STANDARDS

As stated in the Terms of Reference for Engineers Reports of Water Works, any deviations of the existing STSW from the "10 State Standards" must be discussed with the focus being on disinfection of water supply. The policy statement in The Recommended Standards for Water Works (2003) states that certain guidelines should be met. A summary of these guidelines and the existing STSW's compliance is as follows.

15.1 Disinfection:

There were no deviations for the 10 Standard State noted for the operation of the chlorination disinfection system.

Chlorinator capacity shall be such that a free chlorine residual of at least 2 mg/L can be maintained in the water once all demands are met after contact time of at least 30 minutes when maximum flow rate coincides with anticipated maximum chlorine demand. This assumes that free chlorine is being used as a primary disinfection source. The required residual chlorine level (i.e., 0.2 mg/L) stipulated in O.Reg. 170/03 is maintained by the system.

The minimum residual chlorine level (i.e., 0.5mg/L) is to be maintained by the system at all times and is higher than the minimum residual chlorine stipulated in O.Reg. 170/03. Current records show stable chlorine residuals above the required chlorine level.

16.0 CONCLUSIONS

The following conclusions are reached regarding the quality of the water source for CPR:

- the existing well provides a raw water quality in compliance with the Ontario Drinking Water Quality Standards.
- the well source is not a GUDI supply. The physical setting suggests that there is no direct hydraulic connection to a surface water feature and that there is a substantial thickness of overburden (~ 10 to 15 m) in the immediate Site area that provides an ample amount of retention from infiltrating surface water to the deeper bedrock aquifer.
- the existing treatment (chlorine disinfection) provides adequate disinfection to meet the minimum standards for inactivation of bacteria, viruses, and parasites.
- it is recommended that the operator rely on the manual daily readings only for the chlorine residual until such time that the automated analysers are appropriately calibrated and programmed to provide representative readings. In the interim, the operator is permitted to either ignore or disconnect the analyser readout to avoid confusing readings.
- a remedial action plan needs to be developed in the event of a system failure and the appropriate staff trained to execute this procedure.
- a copy of O.Reg.170/03 should be posted in the operational manual.
- an itemized operational procedure / protocol needs to be added to the operational manual.

17.0 DECLARATION

I, the undersigned, hereby declare that to the best of my knowledge, the information contained herein and the information in support of this submission is complete and accurate in accordance with my obligations under the Professional Engineers Act (RSO 1990) and its regulations.

I further declare that this submission has been prepared in reasonable accordance with the published terms of reference for this submission, despite any qualifications in the agreement retaining me, and I acknowledge that the Director and the Owner will be relying on the accuracy of this Report.

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Jackie Coughlin, P.Eng.
Senior Environmental Engineer

18.0 REFERENCES

Simmering & Associates, 2002
Sewage System Application, Calabogie Peaks Inc.

Water and Earth Science Associates Ltd., 1986
Hydrogeological and Environmental Assessment Calabogie Peaks Proposed Resort Development

Ministry of the Environment. 2001. Terms of Reference for Hydrogeological Study to Examine Groundwater Sources Potentially Under Direct Influence of Surface Water, October, PIBS 4167e, p.6

Ministry of the Environment. 2003. Terms of Reference for Engineers Reports for Water Works, Revised December 2003, PIBS 4057e, p.9

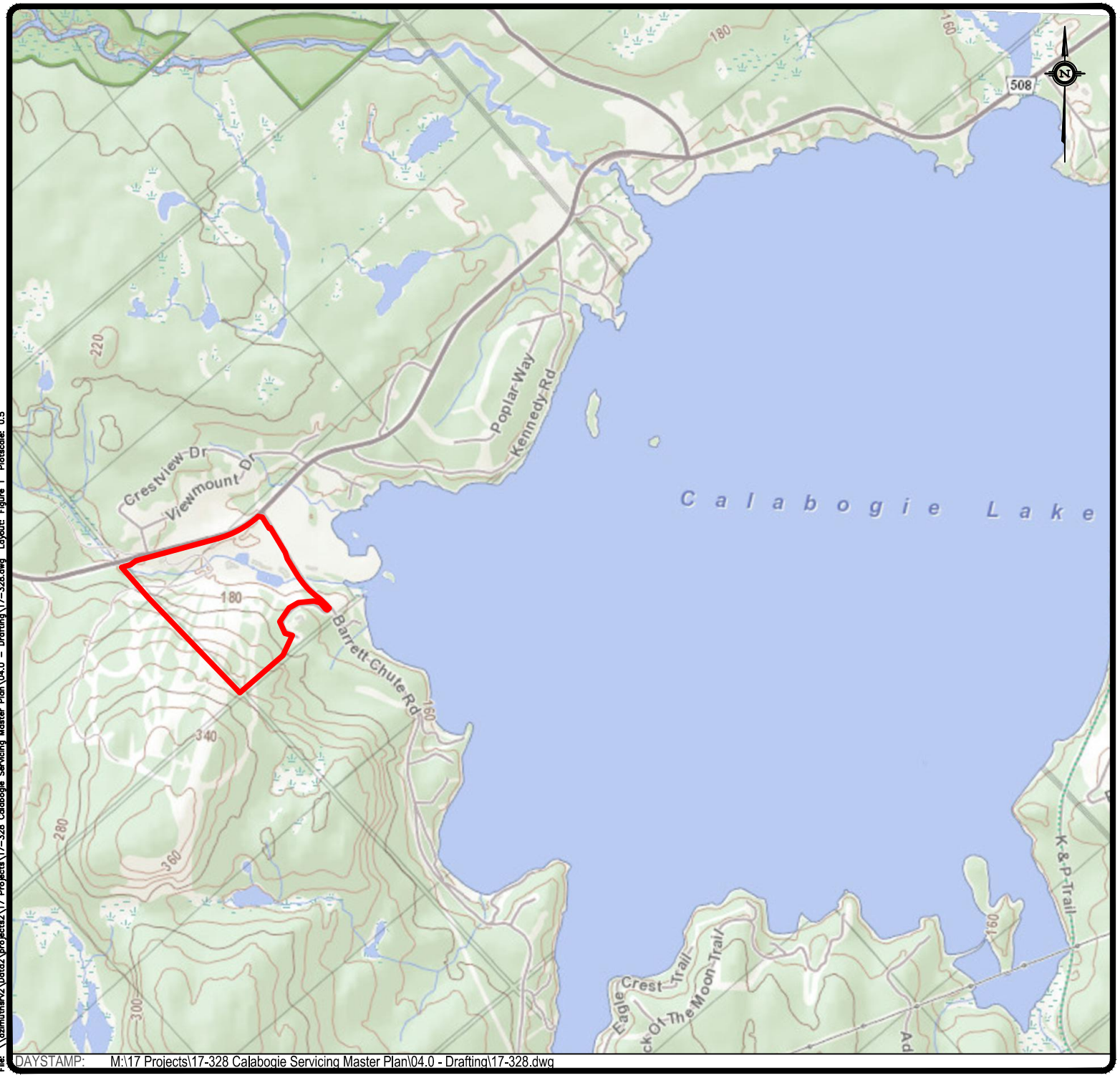
Ministry of the Environment. 2003. Procedure for the Disinfection of Drinking Water in Ontario (As adopted by reference by Ontario Regulation 170/03 under the Safe Drinking Water Act), Revised June 2003, PIBS 4448e, p.31

APPENDICES

Appendix A: **Figures**
Appendix B: **Design Brief**
Appendix C: **Operator Certificates**
Appendix D: **Laboratory Reports**
Appendix E: **O.Reg. 170/03**
Appendix F: **Engineers Declaration**
Appendix G: **Equipment Maintenance Manual**

APPENDIX A

Figures



LEGEND:

Approx. Property Boundary

REG MAP

250m 0 750m

HORIZONTAL SCALE 1:25,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Study Area Location

Calabogie Peaks Resort,
Calabogie, ON

DATE ISSUED: December 2018	Figure No.
CREATED BY: JLM	1
PROJECT NO.: 17-328	
REFERENCE: MNRF	

DAYSTAMP: M:\17 Projects\17-328 Calabogie Servicing Master Plan\04.0 - Drafting\17-328.dwg

Plotted by: JMCCARTNEY on December 21, 2018 at 2:11pm
File: \\azimuthsrv2\Data2\projects2\17 Projects\17-328 Calabogie Servicing Master Plan\04.0 - Drafting\17-328.dwg Layout: Figure 1 Plotscale: 0.5

LEGEND:

- *Approx. Property Boundary*
- *5m Contour*
- *1m Contour*
- *Wetland (LIO)*
- *Watercourse (LIO)*
- *Culvert (LIO)*

60m 0 120m

HORIZONTAL SCALE 1: 4,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Topography and Drainage

Calabogie Peaks Resort, Calabogie, ON

DATE ISSUED:	*December 2018*	Figure No.
CREATED BY:	*JLM*	2
PROJECT NO.:	*17-328*	
REFERENCE:	*MNRF*	

DAYSTAMP: M:\17 Projects\17-328 Calabogie Servicing Master Plan\04.0 - Drafting\17-328.dwg

Plotted by: JMCCARTNEY on January 3, 2019 at 11:43am
File: M:\17 Projects\17-328 Calabogie Servicing Master Plan\04.0 - Drafting\17-328.dwg Layout: HYD2 Plotscale: 2

LEGEND:

- Approx. Property Boundary
- Watercourse (LIO)
- Existing Septic Systems
- Monitoring Well Locations
- Production Well Locations (W-1)
- Approx. Location of Water Treatment Plant

30m 0 60m

HORIZONTAL SCALE 1:2,000

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Site Plan

Calabogie Peaks Resort, Calabogie, ON

DATE ISSUED:	December 2018	Figure No. 3
CREATED BY:	JLM	
PROJECT NO.:	17-328	
REFERENCE:	MNRF	

DAYSTAMP: M:\17 Projects\17-328 Calabogie Servicing Master Plan\04.0 - Drafting\17-328.dwg

APPENDIX B

Design Basis

Design Brief
Potable Water Supply System

Calabogie
Rev. 1

2019-04-23

Prepared By:
John Donders

Facilities To Be Serviced

Future development of Calabogie Peaks land is expected to include the development of Base Mountain and Juniper Ridge. Base Mountain will include the expansion of existing resort facilities and amenities and the addition of residential units, while Juniper Ridge will be developed into residential units.

The proposed potable water supply system will be a communal system that will service the existing facilities and all proposed resort facilities and residential development at Calabogie.

The existing facilities to be served are;

- The Hotel
- The Cedars
- The Pines
- The Ski Lodge
- The Oaks

The new residential development to be served on Juniper Ridge and will consist of 260 residential condominiums which will be constructed in a phased approach over several years to suit market conditions.
The first phase of development of Juniper Ridge is expected to include 3 townhome complexes consisting of 4 units within each complex. Additional Juniper Ridge phases are expected to be in blocks of 12-20 townhomes or individual homes per phase.

The communal water treatment system will be initially constructed to treat the total capacity of the existing Base Mountain wells and space accommodations will be included for expansion of the treatment system.

Submitted by:
Aslan Technologies 5044 South Service Rd., Burlington, Ontario, L7L 5Y7 (905) 632-4968

Water Supply Design Criteria

	No	Est. Flow per Unit	Avg Daily Flow	Max Daily Flow	Peak Hour Flow
	(sq. ft. or rooms)	L/d	m3	m3	L/s
Hotel Main Floor					
Restaurant	45	125	5,625	16,875	0.52
Conference room	70	20	1,400	4,200	0.13
Office Space sq. m	56	8	448	1,344	0.04
Pool/Hot Tub users	40	20	800	2,400	0.07
Retail sq. m					
Hotel Rooms	25	180	4,500	13,500	0.42
Cedars Condos					
Studios	8	180	1,440	4,320	0.13
Standard 1 bed w kitchen	8	750	6,000	18,000	0.56
Pines Condos					
Standard w kitchen					
1 bed	4	750	3,000	9,000	0.28
2 bed	4	1,100	4,400	13,200	0.41
3 bed	2	1,350	2,700	8,100	0.25
Ski Lodge					
Kitchens & Washrooms			5,000	15,000	0.46
Bedrooms			1,460	4,380	0.14
Mountain Base			**36,773**	**110,319**	**3.40**

	No	Est. Flow per Unit	Avg Daily Flow	Max Daily Flow	Peak Hour Flow
	(sq. ft. or rooms)	L/d	m3	m3	L/s
Oaks Townhomes					
Standard 2 bed w kitchen	8	1,100	8,800	26,400	0.81
Juniper Ridge Townhomes	260	1,200	312,000	936,000	28.89
Juniper Ridge			**320,800**	**962,400**	**29.70**

Water Quality and Treatment Requirements

The raw well water contains low amounts of iron and manganese and moderately high levels of hardness.

Although iron, manganese and calcium carbonate concentrations are not harmful for humans, such waters are unacceptable aesthetically. The water becomes turbid when exposed to oxygen, stains plumbing fixtures, causes calcium build-up and affects taste.

To address these water quality issues, the water treatment process will consist of sand filtration and a blended softener system that will blend softened and unsoftened water to reduce the iron, manganese and hardness. The level of reduction will be controlled by the operator from 0-100% but it is anticipated that a reduction of 40-60% will be the target.
Primary and secondary disinfection will be via sodium hypochlorite (chlorine).

The lake water is suitable for treatment with ultrafiltration but regulatory requirements and initial infrastructure capital costs make this option financially unfeasible until the well capacity has been surpassed by development. A provision will be made in the building design to accommodate the space required if a future option of treating surface water is necessary.

Raw Water Supply

Well Pump and Transmission Line

There are currently 2 wells, each rated for 250 LPM (360,000 L/D) that serve the Hotel, Ski Lodge, Pines and Cedars. These wells will be the source of water for the new communal water treatment plant that will serve current facilities and future development. The 2 existing wells that serve the Oaks will no longer be used.

In order to accommodate future phases of development of Juniper Ridge and potential development of Base Mountain, the transmission forcemains from each of the wells to the treatment plant will be capable of delivering the full capacity of the wells.

The new plant is approximately 200 meters from the wells and a new subterranean forcemain will be required for each well. The new forcemains will each be sized and supplied under a separate scope based on the exact routing and length but as preliminary examples;

Based on flow rate of 4.17 L/s (250 LPM) per well;

- 2” line (sch40 equivalent) will have a pressure drop of 31-36 psi.
- 2-1/2” line (sch40 equivalent) will have a pressure drop of 13-18 psi.

The well pumps operate intermittently and alternate to feed the water treatment plant, based on clearwell water level. The well control system will also allow for the wells to operate concurrently in order to treat the full capacity of the combined flow. The resulting potable water from the WTP will be collected in a storage clearwell located adjacent to the WTP.

A flow meter will be installed on the raw water inlet to the WTP to monitor and log water production.

Potable Water Treatment System Design

Based on the raw water characteristics of the wells, the water treatment system will consist of sand filtration, iron, manganese and hardness reduction, and subsequent disinfection.
The sand filtration and softener system (for iron, manganese and hardness) will be rated to treat 500 L/min, which is the combined full flow of each individual well, however the softener system will have a modulating bypass valve that will allow for a blending of the softener system to control the reduction percentage of iron, manganese and hardness.

The treatment process is illustrated schematically (see attached Calabogie Water Treatment P&ID).

Direct Filtration Sand Filters

Particulate matter and suspended solids will be removed by direct filtration utilizing a high performance sand filter. NextSand will be furnished in 3 fibreglass pressure tanks (FRP) rated for nominal flows in excess of 2.8 L/s each, installed in parallel. As the suspended solids are filtered it will accumulate in the tank. The units include automatic backwash devices and will use raw water for the purpose of backwashing the suspended solids to the drain line and subsequent sanitary pump station. Backwashing of the filters will be based on the volume of treated water processed by the filters via the inlet water meter and/or differential pressure across the filters. When the volume of water or differential pressure reaches a prescribed number, the filter controller will initiate the backwashing of each filter. This prescribed number can be altered by the operator to achieve maximum efficiency of filtration, while minimizing the volume of backwash water required. This method will allow for variations in suspended solid levels without direct input from the operator.

- FRP filter vessels rated for 2.8 l/sec per vessel.
- Inlet and outlet isolation valves.
- NextSand filtration media.
- Mechanically actuated, electrically controlled filter head.
- Automatic backflush (based on flow/DP controlled by filter control panel).
- Reduced backflush flow requirements.
- All required isolation, sampling and throttling devices.
- All required electrical and electronic devices for the intended operation of these filters

Iron, Manganese and Water Softening

Iron and manganese are present in the well water but are at a level where an ion exchange softener can effectively remove and additionally remove the hardness from the water. Iron and

manganese specific resin will be furnished in 3 fibreglass pressure tanks (FRP) rated for nominal flows in excess of 2.8 L/s each, installed in parallel. As the iron and manganese are oxidized and the calcium ions are exchanged with the sodium ions, the resin bed will become depleted. The units include automatic backwash and regeneratino devices and will use raw water for the purpose of backwashing and regeneration. Backwashing and regeneration of the filters will be based on the volume of treated water processed by the filters via the inlet water meter. When the volume of water reaches a prescribed number, the filter controller will initiate the backwashing and regeneration of each filter. This prescribed number can be altered by the operator to achieve maximum efficiency of filtration, while minimizing the volume of backwash water required. The softener system will have a modulating bypass valve that will control the percentage of the product water that is softened. This strategy is employed to mitigate the operating cost (salt consumption) and limit the sodium levels in the treated water.

- FRP filter vessels rated for 2.8 l/sec per vessel.
- Inlet and outlet isolation valves.
- Modulating by-pass valve.
- Resin filtration media.
- Mechanically actuated, electrically controlled filter head.
- Automatic backflush and regenertion (controlled by filter control panel).
- Reduced backflush flow requirements.
- All required isolation, sampling and throttling devices.
- All required electrical and electronic devices for the intended operation of these filters

Disinfection

The water will be disinfected with chlorine in the form of sodium hypochlorite. This dosing system will comprise of two prominent diaphragm metering pumps drawing from a 200L polyethylene tote complete with containment dike. The sodium hypochlorite will be dosed prior to NextSand filters to prevent bio-film and maintain a free chlorine residual prior to entry into the clearwell via an injection quill, complete with an on-line chlorine residual analyzer. Both pumps will operate to dose proportional to the inlet water meter, while maintaining the required free chlorine. This dosing strategy is done so that if a single pump fails, the second pumps will provide sufficient chlorine to meet the minimum requirement of free chlorine. A second chlorine analyser will be integrated into the high lift distribution pump(s) effluent line to monitor free chlorine levels (minimum free chlorine levels in the distribution system of 0.5 mg/L is targeted). A provision will be made in the tank discharge to facilitate post chlorination if required. These chlorine analyser's are locally calibrated and temperature/pH compensated and will be connected to the local and remote alarm system.
The new force main to Juniper ridge will be sized to service the full build-out of 260 units, but because this will be phased over several years, the retention time of treated water in the force main will be very long for the initial phases and may cause the chlorine residual to fall below acceptable limits. To remedy this, UV units will be located in the common mechanical room of

each townhouse complex, where incoming water will pass through the UV units before entering the plumbing system of the complex.

- Sodium hypochlorite chlorination system.
- Dual chlorination pumps for 100% redundancy.
- Each pump will include positive displacement diaphragm pumps for duty/duty operation.
- System will include 200 litre polyethylene tote complete with polyethylene containment dike.
- System will include low chlorine level alarm (local and call-out)
- Dosing will be proportional to inlet water meter.

Storage Clearwell

To accommodate phased development and expansion of the treatment system, storage tank modules will be employed such that total storage volume matches the requirements of each development phase.
The required amount of water storage will be provided in a subterranean concrete tank located adjacent to the water treatment plant. The tank will serve to store water for the purpose of chlorine residual time, peak daily flows and buffering for peak hour demands. MOE guidelines recommend water storage volume for systems **not** requiring fire protection be calculated as follows:

Storage Volume = A + B

Where:
A – 25% of design year max day
B – 40% of design year average day

Therefore, storage requirements for current Base Mountain facilities are:

- Design year max day = 0.25 * 110.32 = 27.6 m^3
- Design year average day = 0.40 * 36.77 = 14.7 m^3

Total storage volume required for current Base Mountain = 42.3 m^3
A 40 m3 pre-cast concrete storage module is standard.

To evaluate the development potential with each additional storage module we can calculate;

Total volume = 0.25 * 3x + 0.4 * x (where x = average day flow)
40m3 = 0.75x + 0.4x
x = 34.78 m3

Based on standard 2 bedroom with kitchen unit consuming 1100 L/day, each additional 40 m3 module can support 31.6 residential units and therefore the initial construction will include 2 x 40 m3 modules. As further development phases are implemented, additional modules will be added based the number of units being constructed. Each 40 m3 concrete module is approximately 6m x 3.5m x 3.5m high and should be separated by 1.0 m. The initial constructed tank system will have inlet and outlet headers that will extend beyond (stubs) the tank system to allow for easier installation of additional modules. It is anticipated that beyond three of the 40 m3 modules it may be an advantage to switch to larger, deeper modules as they may become more economical and will have a smaller footprint.

- 2 x 40 m3 concrete closed top storage tank.
- All civil works relating to the excavation and finished rough grading of this structure. This value assumes a balance of cut and fill.
- All pipe penetrations required for the electrical, piping and signal/control.
- All required termination boxes for electrical, control, signal, and fluid process.
- Screened gooseneck vent on tank
- Aluminum access cover for each clearwell

High Lift Pumping

Juniper Ridge and the Base Mountain are separated by approximately 35 vertical meters plus additional dynamic losses and as such will require different distribution pressures from the water treatment plant. Two separate high lift pump systems will independently draw water from the storage clearwell and distribute through two separate forcemains.

Juniper Ridge: The distribution pump system design will allow for the installation of three pumps. The high lift pumps will direct treated water from the clearwell to the distribution system. Pump operation will be based on a pressure transducer located in the distribution header. When the pressure falls below a user defined point, the first pump will start. If the pressure continues to fall, the second pump will be initiated. This sequence continues until all three distribution pumps are running. The initially installed system will include 2 pumps, each capable of 7.9 L/s @90 meters head. The third pump will be added when required to satisfy demands based on future expansion or development. When development requires additional flows, a third pump can be added or a pump can be replaced with a larger model (the pump being replaced can be added to the Base Mountain pump system).

Base Mountain: The distribution pump system design will allow for the installation of three pumps. The high lift pumps will direct treated water from the clearwell to the distribution system. Pump operation will be based on a pressure transducer located in the distribution header. When the pressure falls below a user defined point, the first pump will start. If the pressure continues to fall, the second pump will be initiated. This sequence continues until all three distribution pumps

are running. The initially installed system will include 2 pumps, each capable of 7.9 L/s @90 meters head. The third pump will be added when required to satisfy demands based on future expansion or development.

The high lift pumps will each be Grundfos 15 hp CR15-8 multi-stage centrifugal pumps with wetted stainless steel internals. All of the pumps will be outfitted with VFD's and act as alternating lead pumps. This pump model is selected because it can initially serve both Juniper Ridge and Base Mountain pump systems. As expansion occurs and Juniper Ridge needs larger pumps, the pumps will serve as the third pump for Base Mountain and/or spare for the Base Mountain pump system. The discharge manifold will also consist of a free chlorine analyzer, contacting head flow meter, pH meter, and provision for post chlorination.
Each pump system will comprise of:

- Pumps mounted on stainless steel skid.
- All required inlet and outlet piping and valving.
- 2 – pulsation dampening/cushion tanks
- Automatic cycling of individual pumps based on demand and automatic daily switchover to maintain equal duty cycles.
- VFD control of all pumps.
- Individual pressure transducers for each pump/VFD
- Local operator panel for manual operation.
- Failsafe panel – back-up.

Operating and Maintenance Requirements

The water treatment system is designed for unattended automatic operation. The main operational requirements to control the water treatment plant will be as follows:

- Administration and record keeping
- Verification of chlorine dosages, and supply
- Routine testing and calibrating of instruments in accordance with manufacturers recommendations.

Regular preventative maintenance will be practiced to keep the equipment in optimal condition. Plant equipment that will require maintenance include:

- High lift pumps
- Chlorine and ph probes
- Annual testing of accumulator pre-charge

Monitoring of the Proposed Water Treatment and Distribution System

Equipment and data recording will be in place to ensure that the plant can operate in full compliance of the water resources act. The system will include several on-line devices to ensure that comprehensive water quality and measuring parameters are being met, including, chlorine analyzers, pH analyzer and inlet and outlet flow meters. All devices will log and store data in the main control system computer for retrieval by the operator. The data logging criteria will be initially set to meet current logging legislation, but can be changed to meet with future demands.

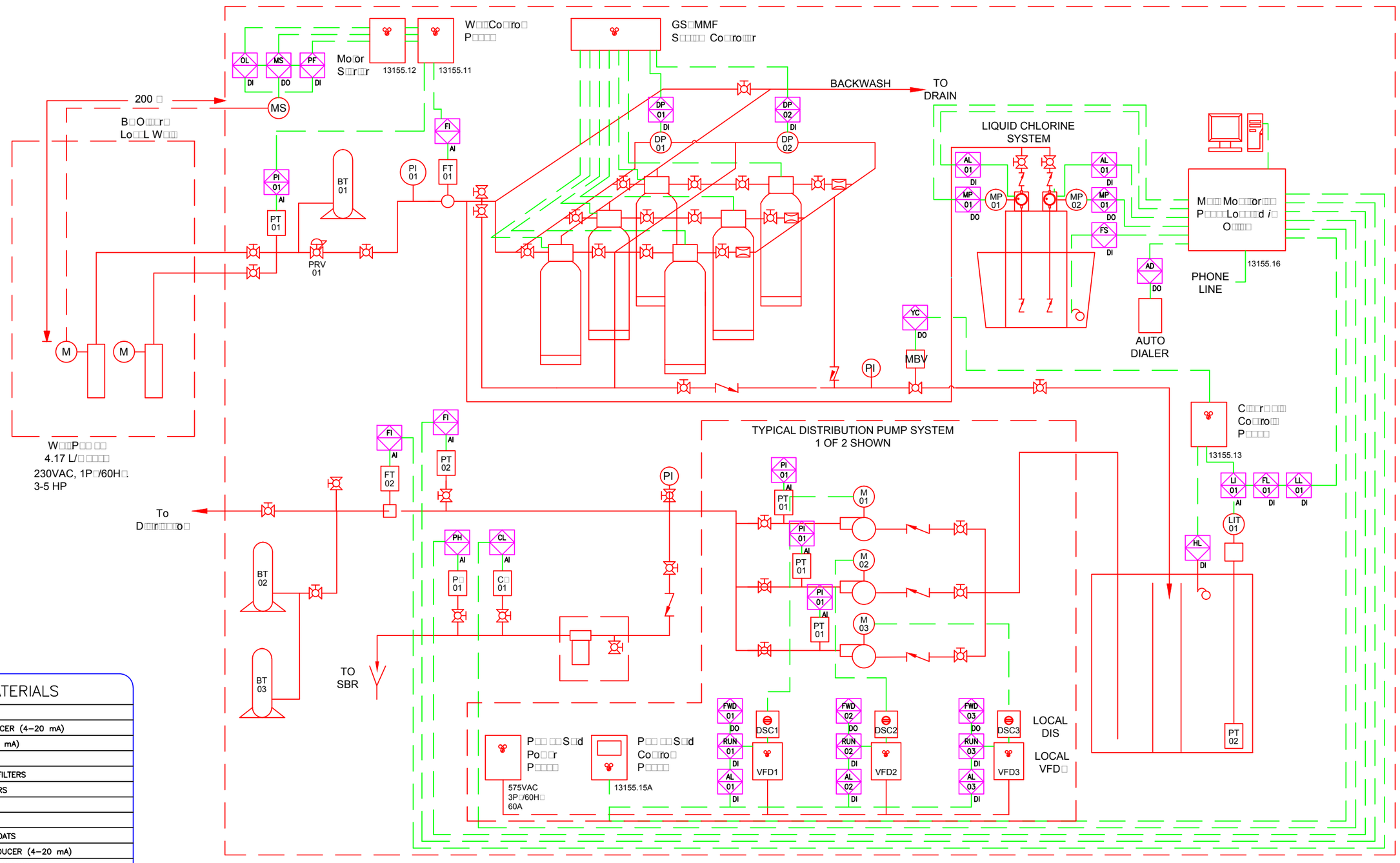
- Nema 4 rated control panel.
- PLC based computer control with Desktop MMI.
- Custom Software specifically written for this application.
- Analog and digital I/O for monitoring and controlling system. System is fully expandable to accommodate future requirements.
- Fully programmable electronic data logging to ensure compliance with current and future requirements of regulations.
- Modem for system monitoring, remote control and remote data logging (assumed direct telephone line is available).
- Parallel configured voice auto-dialer for remote annunciation of individual alarms and acknowledgement. Alarm system will be configured to differentiate between critical and low level alarms, ensuring that only critical alarms are annunciated after “regular” hours.
- Chlorine analyzer with pH compensation and probe with 4-20 mA output.
- Water treatment plant inlet magnetic water meter with 4-20 mA and pulse output

- Distribution system outlet magnetic water meter system with 4-20 mA and pulse output.
- Ultrasonic level transmitter with 4-20 mA output for control of storage tank volumes. Back-up mechanical floats will be installed in conjunction with all ultrasonic transducers to ensure safety and alarm status.

Impact of Operation of Water Treatment and Supply System

There will be no significant impacts on the environment such as noise, traffic, and odour due to the operation of the proposed water treatment facility and distribution system.

The only effluent to drain from the facility will be the backwash water from the greensand units. This effluent will be discharged to the adjacent pump station, and subsequently pumped to the waste water treatment facility.



BILL OF MATERIALS

1	MOTORIZED BALL VALVE
2	INLET PRESSURE TRANSDUCER (4–20 mA)
3	INLET FLOW METER (4–20 mA)
4	MOTORIZED BALL VALVES
5	3 CLACK ION EXCHANGE FILTERS
6	3 CLACK NEXTSAND FILTERS
7	3 FLOW REGULATORS
8	CLEAR WELL
9	MECHANICAL BACK–UP FLOATS
10	ULTRASONIC LEVEL TRANSDUCER (4–20 mA)
11	COMPUTER SUPERVISORY CONTROL
12	1 DISTRIBUTION PUMP PRIMING TANKS
13	LOCAL DISTRIBUTION PUMP PANEL
14	3 GRUNDFOS CR 15–8 HIGH LIFT PUMPS (TYP)
15	VARIABLE FREQUENCY DRIVES FOR PUMP CONTROL
16	CUSHION TANK
17	2 LOW–VOLUME FLOW METERS (4–20 mA)
18	DISTRIBUTION PRESSURE TRANSDUCER (4–20mA)
19	DISTRIBUTION FLOW METER (4–20 mA)
20	FREE CHLORINE PROBE (LOCAL DISPLAY 4–20 mA)

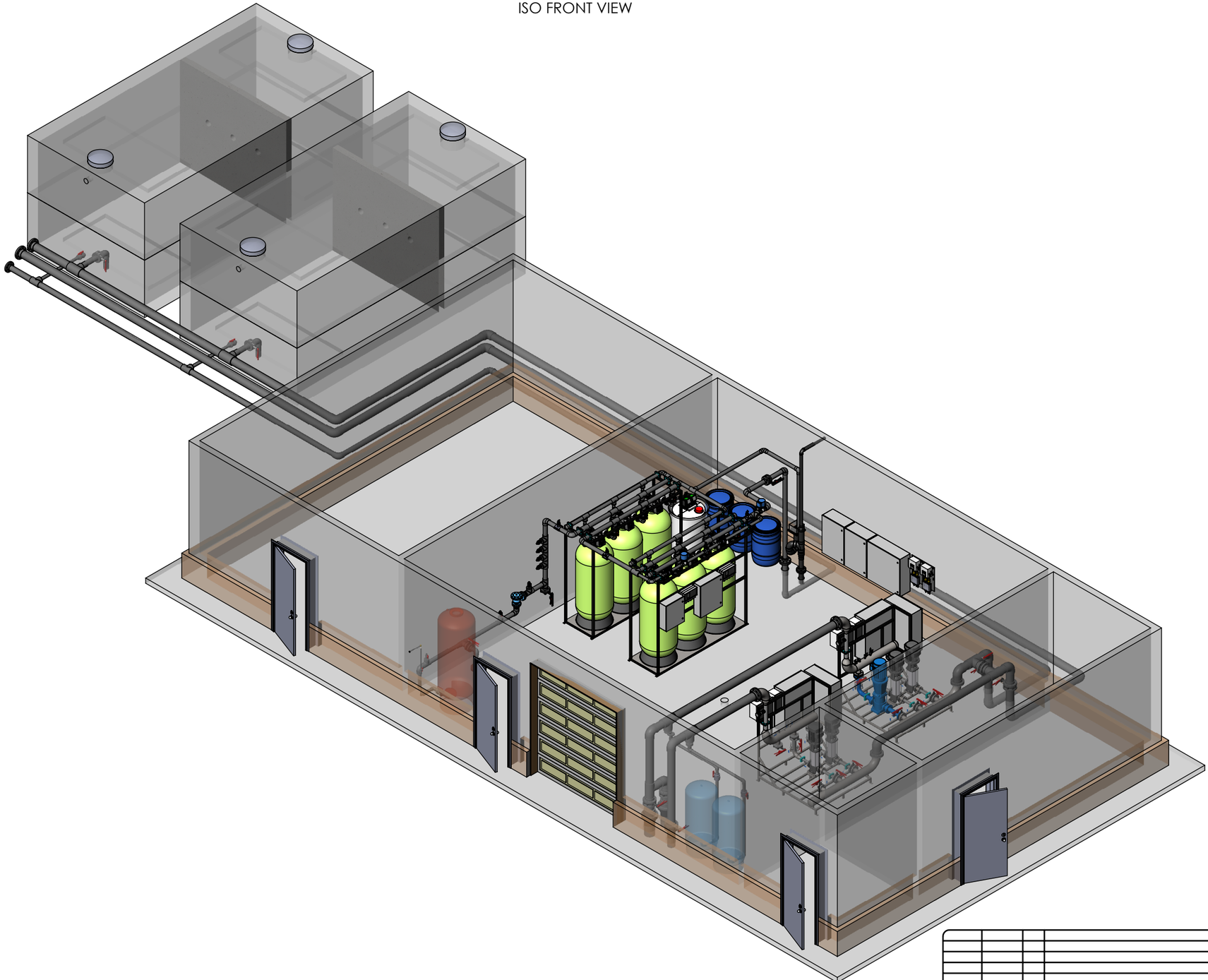
REV. NO.	DATE	INT.	REVISIONS

aslan TECHNOLOGIES
5044 South Service Rd
Burlington, Ontario L7L 5Y7
Tel: (905) 632–4968
Fax: (905) 632–6730

CALABOGIE WATER TREATMENT

SCALE NTS	DISC v12	DRAWN BY JD	
DATE 2019.10.22	APPROVED	DWG NO. 17057–PFD	REV.# 0
PROJECT 17057			

ISO FRONT VIEW



aslan TECHNOLOGIES
5044 South Service Road
Burlington, Ontario L7L5Y7
Tel: (905) 632-4968
Fax:(905) 632-6730

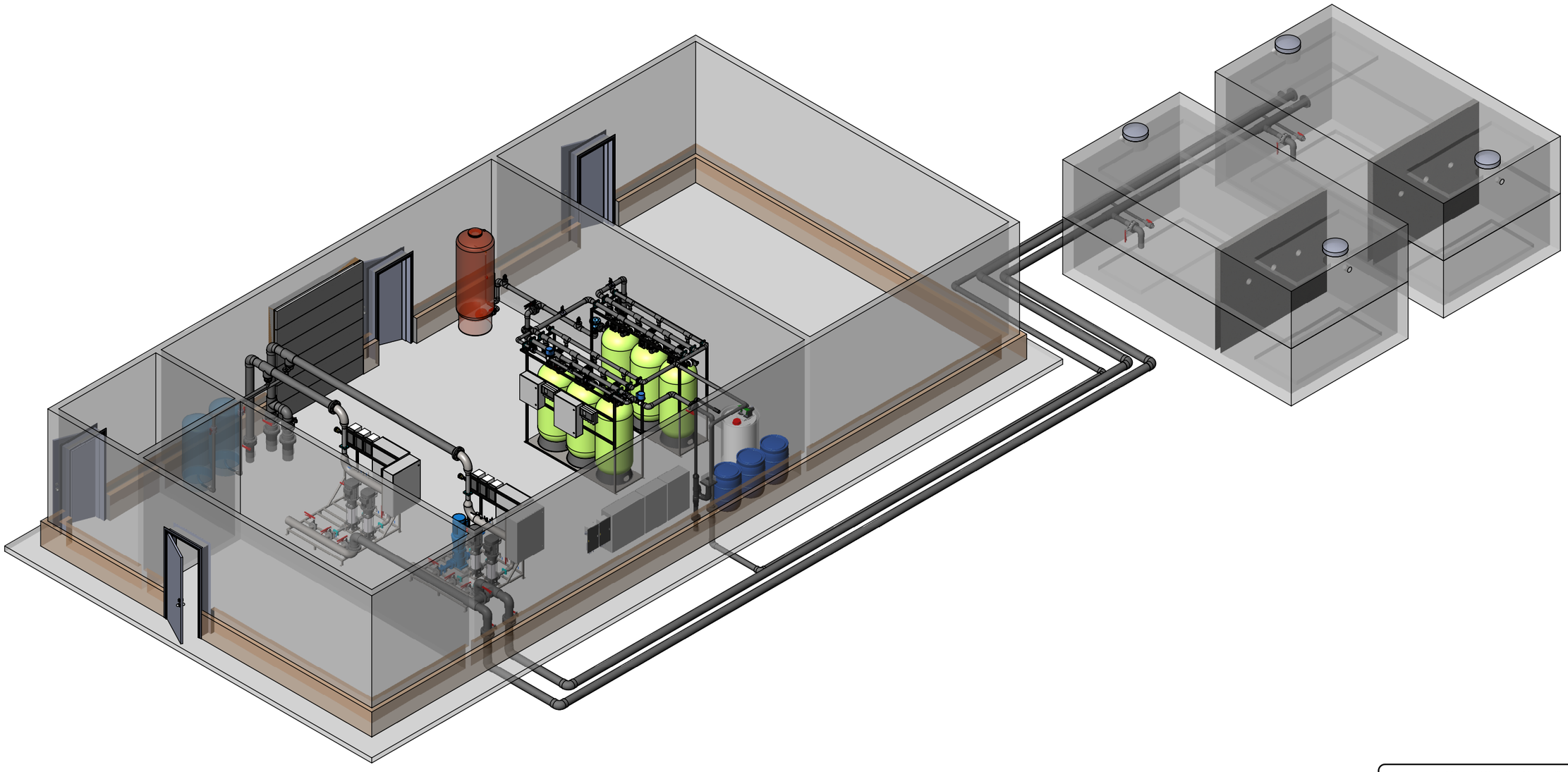
CALABOGIE WATER TREATMENT PLANT

REV. NO.	DATE	INT.	DESCRIPTION
00	05/22/2019	AM	FOR REVIEW & COMMENT

REVISIONS

SCALE x:x	APPROVED BY JD	DRAWN BY AM	
DATE 05/22/2019	DWG NO. 17057-GA	SHEET 1 OF 5	REV.# 0
PROJECT # 17057			

ISO REAR VIEW



REV. NO.	DATE	INT.	DESCRIPTION
00	05/22/2019	AM	FOR REVIEW & COMMENT

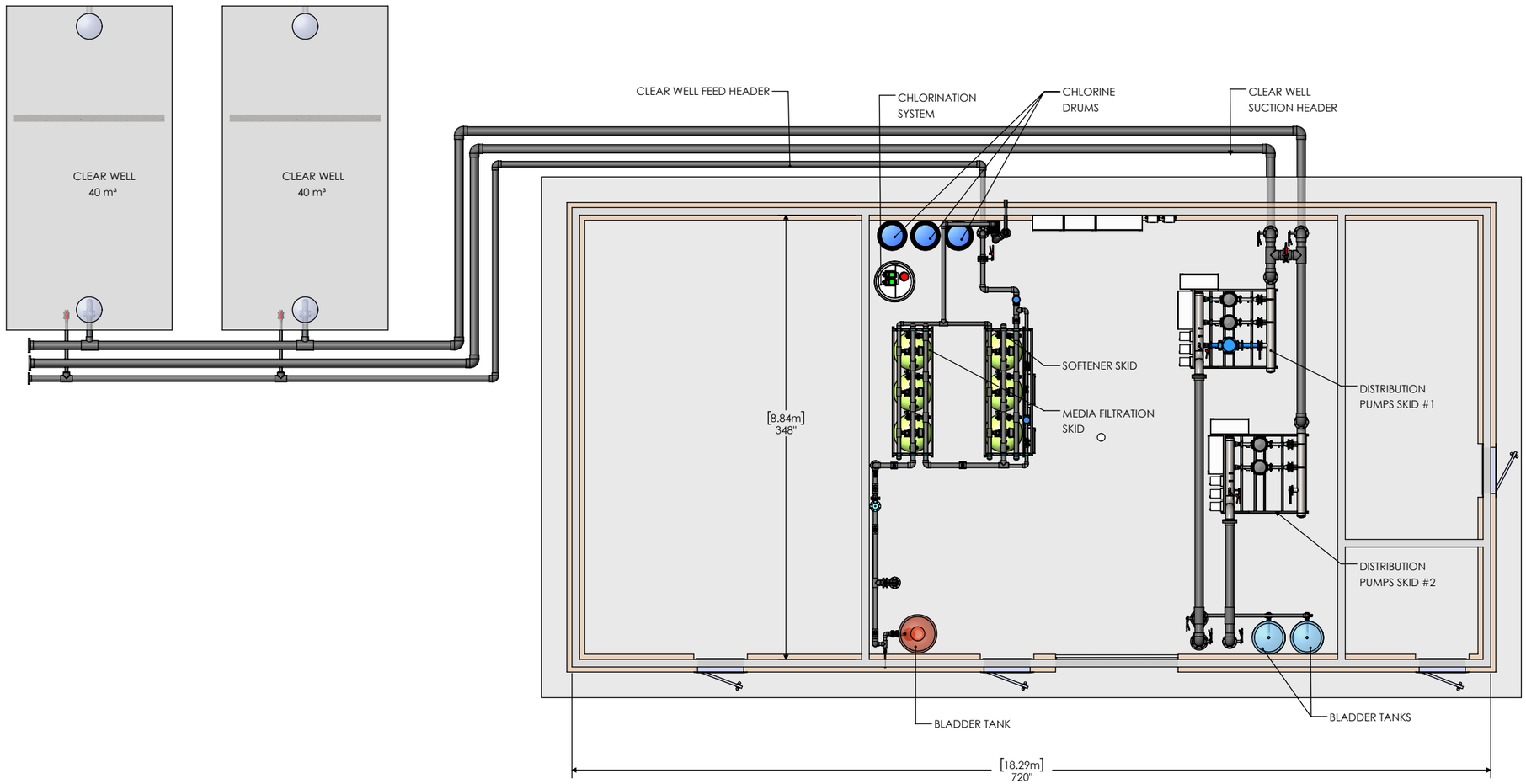
REVISIONS

aslan TECHNOLOGIES
5044 South Service Road
Burlington, Ontario L7L5Y7
Tel: (905) 632-4968
Fax:(905) 632-6730

CALABOGIE WATER
TREATMENT PLANT

SCALE x:x	APPROVED BY JD	DRAWN BY AM	
DATE 05/22/2019	DWG NO. 17057-GA	SHEET 2 OF 5	REV.# 0
PROJECT # 17057			

TOP VIEW



REV. NO.	DATE	INT.	DESCRIPTION
00	05/22/2019	AM	FOR REVIEW & COMMENT

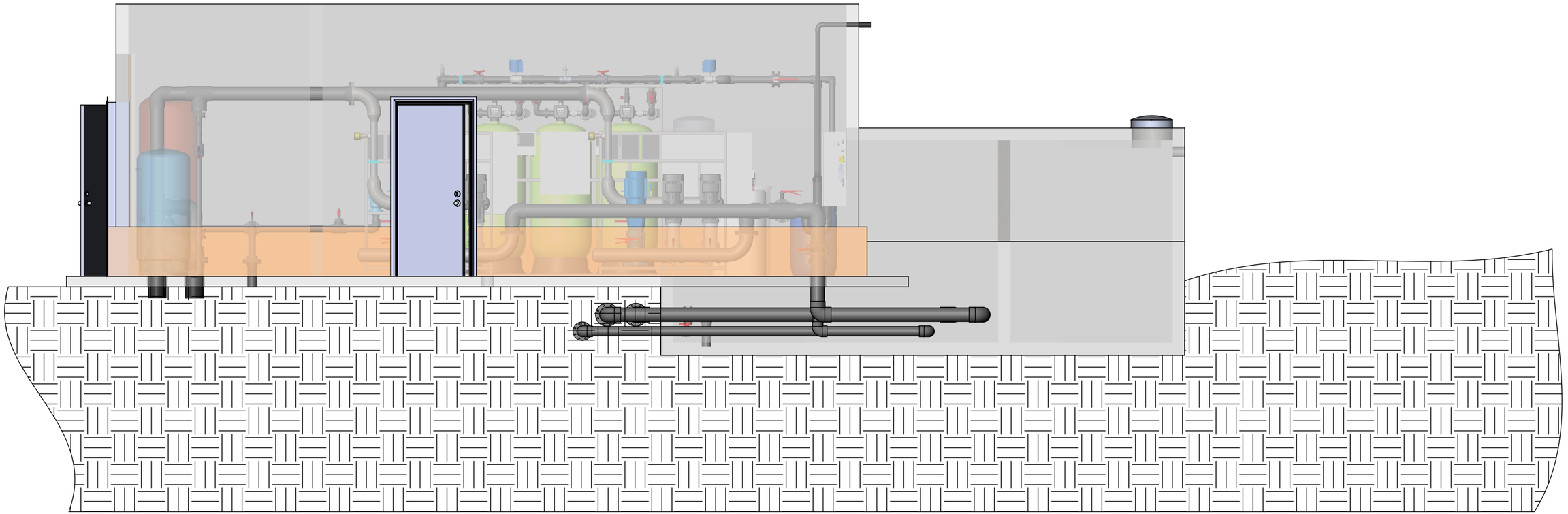
REVISIONS

aslan TECHNOLOGIES
5044 South Service Road
Burlington, Ontario L7L5Y7
Tel: (905) 632-4968
Fax:(905) 632-6730

CALABOGIE WATER
TREATMENT PLANT

SCALE X:x	APPROVED BY JD	DRAWN BY AM	
DATE 05/22/2019	DWG NO. 17057-GA	SHEET 3 OF 5	REV.# 0
PROJECT # 17057			

SIDE VIEW



aslan TECHNOLOGIES
5044 South Service Road
Burlington, Ontario L7L5Y7
Tel: (905) 632-4968
Fax:(905) 632-6730

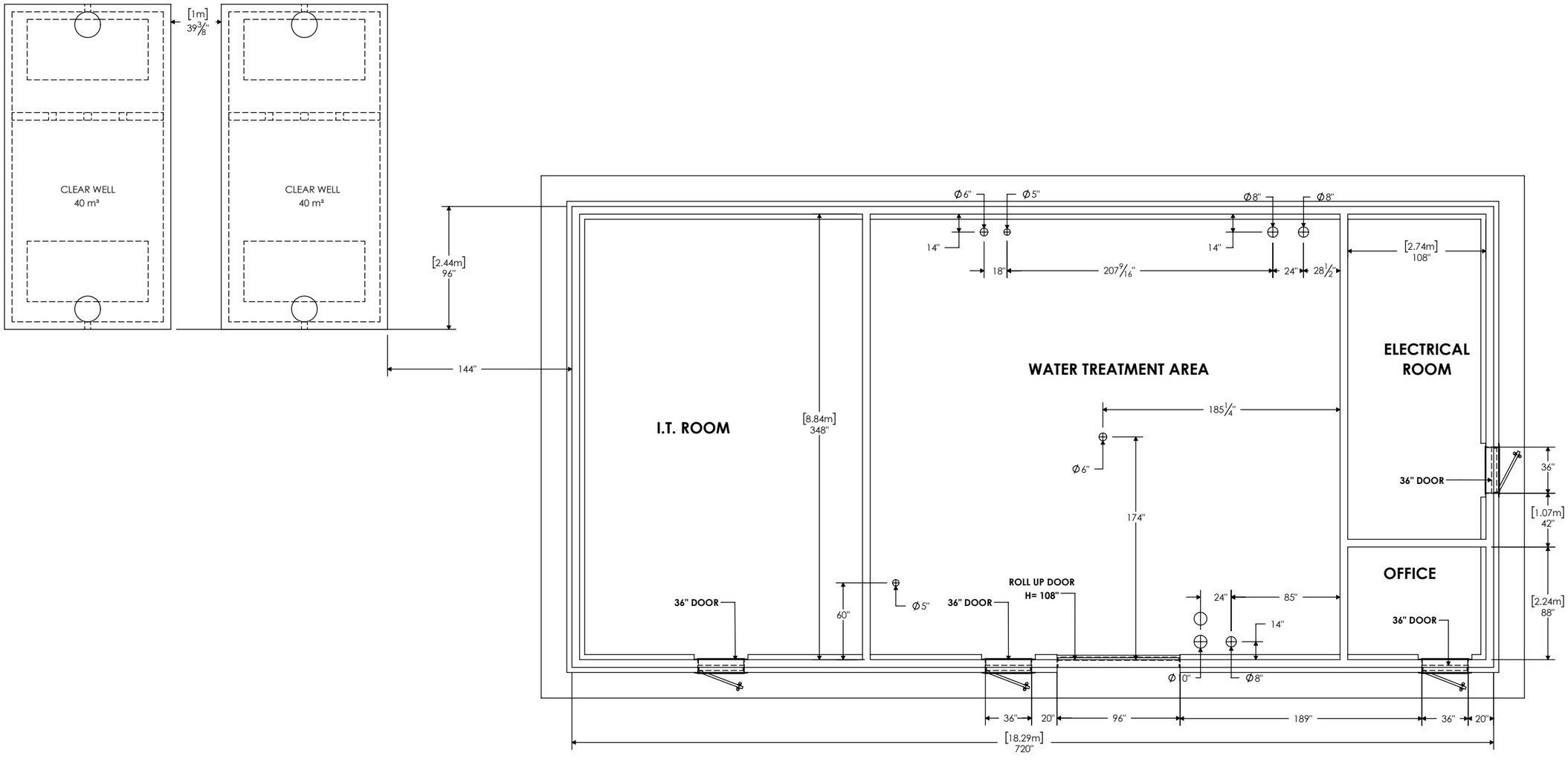
CALABOGIE WATER
TREATMENT PLANT

REV. NO.	DATE	INT.	DESCRIPTION
00	05/22/2019	AM	FOR REVIEW & COMMENT

REVISIONS

SCALE x:x	APPROVED BY JD	DRAWN BY AM	
DATE 05/22/2019	DWG NO. 17057-GA	SHEET 4 OF 5	REV # 0
PROJECT # 17057			

BUILDING TOP VIEW



REV. NO.	DATE	INT.	DESCRIPTION
00	05/22/2019	AM	FOR REVIEW & COMMENT

REVISIONS

aslan TECHNOLOGIES
5044 South Service Road
Burlington, Ontario L7L5Y7
Tel: (905) 632-4968
Fax:(905) 632-6730

CALABOGIE WATER
TREATMENT PLANT

SCALE	x:x	APPROVED BY	JD	DRAWN BY	AM	
DATE	05/22/2019	DWG NO.	17057-BUILDING LAYOUT	SHEET	5 OF 5	REV.# 0
PROJECT #	17057					

APPENDIX C

Operator Certificates

DRINKING-WATER OPERATOR CERTIFICATE / CERTIFICAT D'EXPLOITANT DE RESEAU D'EAU POTABLE

CURTIS G. WHITTEKER

has met the requirements under Ontario Regulation 128/04 made under the Safe Drinking Water Act, 2002 for the Drinking-Water Operator Certification Program. / a satisfait aux exigences en vertu du Reglement de l'Ontario 128/04 pris en application de la Loi de 2002 sur la salubrite de l'eau potable du Programme d'accreditation des exploitants de reseau d'eau potable

WATER TREATMENT SUBSYSTEM
TRAITEMENT DE L'EAU

CLASS/CATEGORIE 2

Expiry Date:
Date d'expiration: **February 28, 2022**

Licence No.
Permis nº **65358**

C 37886

Director
Directeur(trice)

Ontario

DRINKING-WATER OPERATOR CERTIFICATE / CERTIFICAT D'EXPLOITANT DE RESEAU D'EAU POTABLE

JEFFREY R. BERTHELETTE

has met the requirements under Ontario Regulation 128/04 made under the Safe Drinking Water Act, 2002 for the Drinking-Water Operator Certification Program. / a satisfait aux exigences en vertu du Reglement de l'Ontario 128/04 pris en application de la Loi de 2002 sur la salubrite de l'eau potable du Programme d'accreditation des exploitants de reseau d'eau potable

WATER TREATMENT SUBSYSTEM
TRAITEMENT DE L'EAU

OPERATOR-IN-TRAINING/APPRENTI(E)-OPÉRATEUR(TRICE)

Expiry Date:
Date d'expiration: **March 31, 2022**

Licence No.
Permis nº **OT104615**

C 35655

Director
Directeur(trice)

Ontario

DRINKING-WATER OPERATOR CERTIFICATE / CERTIFICAT D'EXPLOITANT DE RESEAU D'EAU POTABLE

GERALD R. WHITTEKER

has met the requirements under Ontario Regulation 128/04 made under the Safe Drinking Water Act, 2002 for the Drinking-Water Operator Certification Program. / a satisfait aux exigences en vertu du Reglement de l'Ontario 128/04 pris en application de la Loi de 2002 sur la salubrite de l'eau potable du Programme d'accreditation des exploitants de reseau d'eau potable

LIMITED SURFACE WATER SUBSYSTEM
CERTIFICAT D'EXPLOITANT DE SOUS-RÉSEAU LIMITÉ D'EAU

Expiry Date: *Date d'expiration:*		Licence No. *Permis n°*
	October 31, 2022	**95112**

C 45335

Director
Directeur(trice)

Ontario

APPENDIX D

Laboratory Reports

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1938908
Date Submitted: 2020-09-16
Date Reported: 2020-09-18
Project:
COC #: 863092
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Steven Tosh, Operations Manager

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

eurofins | Environment Testing

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1938908
Date Submitted: 2020-09-16
Date Reported: 2020-09-18
Project:
COC #: 863092
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1516958 Supply Water DISTRIBUTION 2020-09-15 Men's Lobby Washroom
Microbiology	Escherichia Coli	0	ct/100mL	MAC 0	0
	Heterotrophic Plate Count	0	ct/1mL		0
	Total Coliforms	0	ct/100mL	MAC 0	0

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Analytical Method: AMBCOLM1
additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937924
Date Submitted: 2020-09-01
Date Reported: 2020-09-04
Project:
COC #: 862328
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Amy Walpole-James, QA Coordinator

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

eurofins | Environment Testing

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937924
Date Submitted: 2020-09-01
Date Reported: 2020-09-04
Project:
COC #: 862328
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1514389 Supply Water DISTRIBUTION 2020-09-01 Mens Lobby Bathroom	1514390 Supply Water RAW WATER 2020-09-01 Raw
Microbiology	Escherichia Coli	0	ct/100mL	MAC 0		0	0
	Heterotrophic Plate Count	0	ct/1mL			7	
	Total Coliforms	0	ct/100mL	MAC 0		0	0

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Analytical Method: AMBCOLM1
additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937962
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Sarah Horner, Inorganics Technician

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937962
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

				Lab I.D.	1514471
				Sample Matrix	Supply Water
				Sample Type	TREATEDWATER
				Sampling Date	2020-09-01
				Sample I.D.	Treated Tap
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
Anions	N-NO2	0.10	mg/L	MAC 1.0	<0.10
	N-NO3	0.10	mg/L	MAC 10.0	0.54
	NO2 + NO3 as N	0.10	mg/L		0.54
Mercury	Hg	0.001	mg/L	MAC 0.001	<0.001
Metals	As	0.001	mg/L	MAC 0.01	<0.001
	B	0.01	mg/L	MAC 5.0	0.01
	Ba	0.01	mg/L	MAC 1.0	<0.01
	Cd	0.0001	mg/L	MAC 0.005	<0.0001
	Cr	0.001	mg/L	MAC 0.05	<0.001
	Sb	0.0005	mg/L	MAC 0.006	<0.0005
	Se	0.001	mg/L	MAC 0.05	<0.001
	U	0.001	mg/L	MAC 0.02	0.004
VOCs Surrogates	1,2-dichloroethane-d4	0	%		113
	4-bromofluorobenzene	0	%		83
	Toluene-d8	0	%		94
Volatiles	1,1-dichloroethylene	0.5	ug/L	MAC 14	<0.5
	1,2-dichlorobenzene	0.4	ug/L	MAC 200	<0.4
	1,2-dichloroethane	0.2	ug/L	MAC 5	<0.2
	1,4-dichlorobenzene	0.4	ug/L	MAC 5	<0.4
	Benzene	0.5	ug/L	MAC 1	<0.5
	Carbon Tetrachloride	0.2	ug/L	MAC 2	<0.2
	Dichloromethane	4.0	ug/L	MAC 50	<4.0
	Monochlorobenzene	0.5	ug/L	MAC 80	<0.5
	Tetrachloroethylene	0.3	ug/L	MAC 10	<0.3
	Trichloroethylene	0.3	ug/L	MAC 5	<0.3

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937962
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. 1514471 Supply Water TREATEDWATER 2020-09-01 Treated Tap
Volatiles	Vinyl Chloride	0.2	ug/L	MAC 1	<0.2

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937962
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 388807 **Analysis/Extraction Date** 2020-09-03 **Analyst** H D **Method** EPA 200.8			
Arsenic	<0.001 mg/L	93	80-120
Boron (total)	<0.01 mg/L	97	80-120
Barium	<0.01 mg/L	93	80-120
Cadmium	<0.0001 mg/L	98	80-120
Chromium Total	<0.001 mg/L	98	80-120
Antimony	<0.0005 mg/L	89	80-120
Selenium	<0.001 mg/L	98	80-120
Uranium	<0.001 mg/L	95	80-120
Run No 388833 **Analysis/Extraction Date** 2020-09-03 **Analyst** SKH **Method** SM 4110			
N-NO2	<0.10 mg/L	107	90-110
N-NO3	<0.10 mg/L	106	90-110
NO2 + NO3 as N			
Run No 388929 **Analysis/Extraction Date** 2020-09-08 **Analyst** SKH **Method** M SM3112B-3500B			
Mercury	<0.001 mg/L	88	76-123

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937962
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 389145 **Analysis/Extraction Date** 2020-09-10 **Analyst** TJB **Method** EPA 8260			
Dichloroethylene, 1,1-	<0.5 ug/L	114	60-130
Dichlorobenzene, 1,2-	<0.4 ug/L	101	60-130
Dichloroethane, 1,2-	<0.2 ug/L	108	60-130
Dichlorobenzene, 1,4-	<0.4 ug/L	112	60-130
Benzene	<0.5 ug/L	116	60-130
Carbon Tetrachloride	<0.2 ug/L	116	60-130
Methylene Chloride	<4.0 ug/L	105	60-130
Chlorobenzene	<0.5 ug/L	113	60-130
Tetrachloroethylene	<0.3 ug/L	120	60-130
Trichloroethylene	<0.3 ug/L	112	60-130
Vinyl Chloride	<0.2 ug/L	113	60-130

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1939701
Date Submitted: 2020-09-29
Date Reported: 2020-10-05
Project:
COC #: 863632
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Amy Walpole-James, QA Coordinator

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1939701
Date Submitted: 2020-09-29
Date Reported: 2020-10-05
Project:
COC #: 863632
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.
					1519237 Supply Water TREATEDWATER 2020-09-25 Treated Tap
Anions	F	0.10	mg/L	MAC 1.5	<0.10
AWQI Report No	AWQI Report				152416
Metals	Na	2	mg/L	MAC 20	72*

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1939701
Date Submitted: 2020-09-29
Date Reported: 2020-10-05
Project:
COC #: 863632
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 390263 **Analysis/Extraction Date** 2020-10-01 **Analyst** QT **Method** SM2320,2510,4500H/F			
F	<0.10 mg/L	100	90-110
Run No 390330 **Analysis/Extraction Date** 2020-10-05 **Analyst** Z S **Method** M SM3120B-3500C			
Sodium	<2 mg/L	101	82-118
Run No 390332 **Analysis/Extraction Date** 2020-10-05 **Analyst** AWJ **Method** AWQI Report			
AWQI Report			

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1938928
Date Submitted: 2020-09-16
Date Reported: 2020-09-22
Project:
COC #: 102426
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Addrine Thomas, Inorganics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1938928
Date Submitted: 2020-09-16
Date Reported: 2020-09-22
Project:
COC #: 102426
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1516998 Supply Water PLUMBING 2020-09-15 Hotel Washroom 1	1516999 Supply Water PLUMBING 2020-09-15 Hotel Washroom 2	1517000 Supply Water PLUMBING 2020-09-15 Hotel Kitchen 1	1517001 Supply Water PLUMBING 2020-09-15 Hotel Kitchen 2
Metals	Pb	0.001	mg/L	MAC 0.010		<0.001	<0.001	<0.001	<0.001

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1517002 Supply Water PLUMBING 2020-09-15 Cedars 306A 1 Washroom	1517003 Supply Water PLUMBING 2020-09-15 Cedars 306A 2 Washroom	1517004 Supply Water PLUMBING 2020-09-15 Pines 110 Washroom 1	1517005 Supply Water PLUMBING 2020-09-15 Pines 110 Washroom 2
Metals	Pb	0.001	mg/L	MAC 0.010		<0.001	<0.001	0.002	0.001

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1938928
Date Submitted: 2020-09-16
Date Reported: 2020-09-22
Project:
COC #: 102426
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1517006 Supply Water PLUMBING 2020-09-15 Ski Lodge Kitchen 1	1517007 Supply Water PLUMBING 2020-09-15 Ski Lodge Kitchen 2	1517008 Supply Water PLUMBING 2020-09-15 Hosebib at 203 1	1517009 Supply Water PLUMBING 2020-09-15 Hosebib at 203 2
Metals	Pb	0.001	mg/L	MAC 0.010		0.002	0.002	0.003	0.001

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D.	1517010 Supply Water PLUMBING 2020-09-15 Oaks Housekeeping Shed 1	1517011 Supply Water PLUMBING 2020-09-15 Oaks Housekeeping Shed 2
Metals	Pb	0.001	mg/L	MAC 0.010		0.002	0.001

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1938928
Date Submitted: 2020-09-16
Date Reported: 2020-09-22
Project:
COC #: 102426
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 389477 **Analysis/Extraction Date** 2020-09-17 **Analyst** H D **Method** EPA 200.8			
Lead	<0.001 mg/L	102	80-120

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937964
Date Submitted: 2020-09-01
Date Reported: 2020-09-10
Project:
COC #: 862328
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL:

Amy Walpole-James, QA Coordinator

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937964
Date Submitted: 2020-09-01
Date Reported: 2020-09-10
Project:
COC #: 862328
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	Lab I.D. Sample Matrix Sample Type Sampling Date Sample I.D. 1514473 Supply Water DISTRIBUTION 2020-09-01 Mens Lobby Bathroom
HAA	(Mono) Bromoacetic Acid	2.0	ug/L		<2.0
	(Mono) Chloroacetic Acid	2.0	ug/L		<2.0
	Dibromoacetic Acid	2.0	ug/L		<2.0
	Dichloroacetic Acid	2.0	ug/L		6.1
	Total Haloacetic Acids	2.0	ug/L		11.3
	Trichloroacetic Acid	2.0	ug/L		5.2

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937964
Date Submitted: 2020-09-01
Date Reported: 2020-09-10
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 389011 **Analysis/Extraction Date** 2020-09-09 **Analyst** C M **Method** O EPA552			
(Mono) Bromoacetic Acid	<2.0 ug/L	82	40-140
(Mono) Chloroacetic Acid	<2.0 ug/L	83	40-140
Dibromoacetic Acid	<2.0 ug/L	93	40-140
Dichloroacetic Acid	<2.0 ug/L	83	40-140
Trichloroacetic Acid	<2.0 ug/L	83	40-140
Run No 389013 **Analysis/Extraction Date** 2020-09-10 **Analyst** C M **Method** O EPA552			
Total Haloacetic Acids			

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937963
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Amy Walpole-James, QA Coordinator

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937963
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	1514472 Supply Water DISTRIBUTION 2020-09-01 Mens Lobby Bathroom
	Lab I.D.				1514472
	Sample Matrix				Supply Water
	Sample Type				DISTRIBUTION
	Sampling Date				2020-09-01
	Sample I.D.				Mens Lobby Bathroom
VOCs Surrogates	Toluene-d8	0	%		95
Volatiles	Bromodichloromethane	0.3	ug/L		3.0
	Bromoform	0.4	ug/L		<0.4
	Chloroform	0.5	ug/L		11.8
	Dibromochloromethane	0.3	ug/L		0.8
	Trihalomethanes (total)	1.5	ug/L	MAC 100	15.6

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937963
Date Submitted: 2020-09-01
Date Reported: 2020-09-11
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 389145 **Analysis/Extraction Date** 2020-09-10 **Analyst** TJB **Method** EPA 8260			
Bromodichloromethane	<0.3 ug/L	104	60-130
Bromoform	<0.4 ug/L	101	60-130
Chloroform	<0.5 ug/L	110	60-130
Dibromochloromethane	<0.3 ug/L	103	60-130
Run No 389146 **Analysis/Extraction Date** 2020-09-11 **Analyst** TJB **Method** EPA 8260			
Trihalomethanes (total)			80-120

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

Dear Curtis Whitteker:

Please find attached the analytical results for your samples. If you have any questions regarding this report, please do not hesitate to call (613-727-5692).

Report Comments:

APPROVAL: _____
Long Qu, Organics Supervisor

All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise indicated.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at: http://www.cala.ca/scopes/2602.pdf.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is licensed by the Ontario Ministry of the Environment, Conservation, and Parks (MECP) for specific tests in drinking water (license #2318). A copy of the license is available upon request.

Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) is accredited by the Ontario Ministry of Agriculture, Food, and Rural Affairs for specific tests in agricultural soils.

Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline values listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official provincial or federal guideline as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

				Lab I.D.	1514470
				Sample Matrix	Supply Water
				Sample Type	TREATEDWATER
				Sampling Date	2020-09-01
				Sample I.D.	Treated Tap
Group	**Analyte**	**MRL**	**Units**	**Guideline**	
HPLC Herb/Pest	Diuron	10	ug/L	MAC 150	NDLA
NP Pestcides	Alachlor	0.5	ug/L	MAC 5	<0.5
	Atrazine + N-dealkylated metabolites	1.0	ug/L	MAC 5	<1.0
	Azinphos-methyl	2.0	ug/L	MAC 20	<2.0
	Carbaryl	5.0	ug/L	MAC 90	<5.0
	Carbofuran	5.0	ug/L	MAC 90	<5.0
	Chlorpyrifos	1.0	ug/L	MAC 90	<1.0
	Diazinon	1.0	ug/L	MAC 20	<1.0
	Dimethoate	2.5	ug/L	MAC 20	<2.5
	Malathion	0.5	ug/L	MAC 190	<0.5
	Metolachlor	1.0	ug/L	IMAC 50	<1.0
	Metribuzin	5.0	ug/L	MAC 80	<5.0
	Phorate	0.5	ug/L	MAC 2	<0.5
	Prometryne	0.25	ug/L	MAC 1	<0.25
	Simazine	1.0	ug/L	MAC 10	<1.0
	Terbufos	0.4	ug/L	MAC 1	<0.4
	Triallate	1.0	ug/L	MAC 230	<1.0
	Trifluralin	1.0	ug/L	MAC 45	<1.0
PAH	Benzo(a)pyrene	0.01	ug/L	MAC 0.01	<0.01
PCBs	Polychlorinated Biphenyls (PCBs)	0.1	ug/L	MAC 3	<0.1
Phenoxyacid Herb	2,4-dichlorophenoxyacetic acid (2,4-D)	1.0	ug/L	MAC 100	<1.0
	Bromoxynil	0.5	ug/L	MAC 5	<0.5
	Dicamba	1.0	ug/L	MAC 120	<1.0
	Diclofop-methyl	0.9	ug/L	MAC 9	<0.9
	MCPA	10	ug/L	MAC 100	<10

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

Group	Analyte	MRL	Units	Guideline	1514470
				Lab I.D.	1514470
				Sample Matrix	Supply Water
				Sample Type	TREATEDWATER
				Sampling Date	2020-09-01
				Sample I.D.	Treated Tap
Phenoxyacid Herb	Picloram	5.0	ug/L	MAC 190	<5.0
Semi-Volatiles	2,3,4,6-tetrachlorophenol	1.0	ug/L	MAC 100	<1.0
	2,4,6-trichlorophenol	1.0	ug/L	MAC 5	<1.0
	2,4-dichlorophenol	0.2	ug/L	MAC 900	<0.2
	Pentachlorophenol	1.0	ug/L	MAC 60	<1.0
Subcontract	Diquat	5	ug/L	MAC 70	<5
	Glyphosate	25	ug/L	MAC 280	<25
	Paraquat	1	ug/L	MAC 10	<1

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Run No 389087 **Analysis/Extraction Date** 2020-09-10 **Analyst** AWJ **Method** EPA 532/547/549			
Diuron			60-120
Run No 389113 **Analysis/Extraction Date** 2020-09-09 **Analyst** YH **Method** EPA 8081B			
Polychlorinated Biphenyls	<0.1 ug/L	110	60-140
Run No 389189 **Analysis/Extraction Date** 2020-09-04 **Analyst** C M **Method** B 625 P 8270/3510C			
2,3,4,6-tetrachlorophenol	<1.0 ug/L	104	20-140
Trichlorophenol, 2,4,6-	<1.0 ug/L	103	20-140
Dichlorophenol, 2,4-	<0.2 ug/L	108	20-140
Pentachlorophenol	<1.0 ug/L	110	20-140
Run No 389190 **Analysis/Extraction Date** 2020-09-04 **Analyst** C M **Method** EPA 8141/8270			
Alachlor	<0.5 ug/L	92	20-140
Atrazine + N-dealkylated metabolites	<1.0 ug/L		20-140
Azinphos-methyl	<2.0 ug/L	34	20-140
Carbaryl	<5.0 ug/L		20-140
Carbofuran	<5.0 ug/L		20-140

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Chlorpyrifos	<1.0 ug/L	92	20-140
Diazinon	<1.0 ug/L	84	20-140
Dimethoate	<2.5 ug/L	76	20-140
Malathion	<0.5 ug/L	82	20-140
Metolachlor	<1.0 ug/L	92	20-140
Metribuzin	<5.0 ug/L		20-140
Phorate	<0.5 ug/L	200	20-140
Prometryne	<0.25 ug/L	91	20-140
Simazine	<1.0 ug/L	92	20-140
Terbufos	<0.4 ug/L	80	20-140
Triallate	<1.0 ug/L	84	20-140
Trifluralin	<1.0 ug/L	84	20-140
Run No 389191 **Analysis/Extraction Date** 2020-09-04 **Analyst** C M **Method** P 8270			
Benzo[a]pyrene	<0.01 ug/L		20-140
Run No 389197 **Analysis/Extraction Date** 2020-09-08 **Analyst** C_M **Method** SW 846 8151A/3151A			
2,4-dichlorophenoxyacetic acid (2,4-D)	<1.0 ug/L	80	10-120

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

QC Summary

Analyte	Blank	QC % Rec	QC Limits
Bromoxynil	<0.5 ug/L	71	10-120
Dicamba	<1.0 ug/L	65	10-120
Diclofop-methyl	<0.9 ug/L	84	10-120
MCPA	<10 ug/L		10-120
Picloram	<5.0 ug/L	85	10-120
Run No 389532 **Analysis/Extraction Date** 2020-09-15 **Analyst** JM **Method** SUBCONTRACT-CA			
Diquat			
Run No 389533 **Analysis/Extraction Date** 2020-09-15 **Analyst** JM **Method** SUBCONTRACT-CA			
Paraquat			
Run No 389535 **Analysis/Extraction Date** 2020-09-15 **Analyst** JM **Method** SUBCONTRACT-CA			
Glyphosate			

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

Certificate of Analysis

eurofins | Environment Testing

Client: CALABOGIE PEAKS RESORT
30 barrett Chute Road
Calabogie, ON
K0J 1H0
Attention: Mr. Curtis Whitteker
PO#:
Invoice to: Whitteker Environmental Services

Report Number: 1937961
Date Submitted: 2020-09-01
Date Reported: 2020-09-18
Project:
COC #: 862328
Waterworks/Facility: 260097058

Sample Comment Summary

Sample ID: 1514470 Treated Tap Paraquat, Glyphosate, and Diquat subcontracted to Caduceon Laboratories. NDLA: No data, sample spoiled.

Guideline = MOE REG. 170/03 *** = Guideline Exceedence**

Results relate only to the parameters tested on the samples submitted.
Methods references and/or additional QA/QC information available on request.

MRL = Method Reporting Limit, AO = Aesthetic Objective, OG = Operational Guideline, MAC = Maximum Acceptable Concentration, IMAC = Interim Maximum Acceptable Concentration, STD = Standard, PWQO = Provincial Water Quality Guideline, IPWQO = Interim Provincial Water Quality Objective, TDR = Typical Desired Range

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: DW 20531 **REPORT No. B17-20531**

Report To:

Calabogie Peaks Resort ULC
P.O Box 90, 30 Barrett Chute Rd
Calabogie ON K0J 1H0 Canada
Attention: Paul Murphy

Caduceon Environmental Laboratories
2378 Holly Lane
Ottawa Ontario K1V 7P1
Tel: 613-526-0123
Fax: 613-526-1244

DATE RECEIVED: 20-Jul-17
DATE REPORTED: 25-Jul-17
SAMPLE MATRIX: Drinking Water

JOB/PROJECT NO.:
P.O. NUMBER:
WATERWORKS NO.

			Client I.D.		Calabogie Hotel Raw Water- Before Treatment			
			Sample I.D.		B17-20531-1			
			Date Collected		19-Jul-17			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Hardness (as CaCO3)	mg/L	1	SM 3120	21-Jul-17/O	227			
TDS (Calc. from Cond.)	mg/L		Calc.	21-Jul-17	231			
pH @25°C	pH Units		SM 4500H	20-Jul-17/O	7.92			
Colour	TCU	2	SM 2120C	21-Jul-17/O	4			
Turbidity	NTU	0.1	SM 2130	24-Jul-17/O	19.3			
Chloride	mg/L	0.5	SM4110C	20-Jul-17/O	14.0			
Fluoride	mg/L	0.1	SM4110C	20-Jul-17/O	< 0.1			
Nitrite (N)	mg/L	0.1	SM4110C	20-Jul-17/O	< 0.1			
Nitrate (N)	mg/L	0.1	SM4110C	20-Jul-17/O	0.4			
Sulphate	mg/L	1	SM4110C	20-Jul-17/O	11			
Sulphide	mg/L	0.01	SM4500-S2	24-Jul-17/K	< 0.01			
Arsenic	mg/L	0.0001	EPA 200.8	24-Jul-17/O	0.0001			
Calcium	mg/L	0.02	SM 3120	21-Jul-17/O	72.8			
Boron	mg/L	0.005	SM 3120	21-Jul-17/O	0.010			
Iron	mg/L	0.005	SM 3120	21-Jul-17/O	0.127			
Manganese	mg/L	0.001	SM 3120	21-Jul-17/O	< 0.001			
Sodium	mg/L	0.2	SM 3120	21-Jul-17/O	13.1			
Total Coliform	cfu/100mL	1	MOE E3407	20-Jul-17/O	0			
E coli	cfu/100mL	1	MOE E3407	20-Jul-17/O	0			

K. Pipin

Krystyna Pipin , M. Sc.
Lab Supervisor

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill

Appendix D: Raw Water Chemistry Summary

Parameter	Units	ODWQS	CWTS Well Raw Water	
			10-Apr-86	19-Jul-17
Hardness	mg/L	80-100	-	227
pH @ 25C	pH Units	6.5-8.5	-	7.92
TDS	mg/L	-	305	231
Color	TCU	5	2.5	4
Chloride	mg/L	250	9	14
Fluoride	mg/L	1.5	0.04	< 0.1
Nitrite	mg/L	1	< 0.03	< 0.1
Nitrate	mg/L	10	0.4	0.4
Sulphate	mg/L	500	17	11
Arsenic	mg/L	0.025-0.010	< 0.01	< 0.0001
Boron	mg/L	5	0.02	0.01
Cadmium	mg/L	-	<0.005	-
Calcium	mg/L	-	-	72.8
Iron	mg/L	0.3	< 0.05	0.127
Magnesium	mg/L	-	-	-
Manganese	mg/L	0.05	< 0.05	< 0.001
Sodium	mg/L	200, 20	-	13.1
Uranium	mg/L	0.02	< 0.02	-
Total Coliform	cfu/100mL	0	0	0
E coli	cfu/100mL	0	0	0
Turbidity	NTU	5	< 1	19.3
Sulphide	mg/L	-	-	<0.01

APPENDIX E

O.Reg. 170/03

Ontario

Français

Safe Drinking Water Act, 2002

ONTARIO REGULATION 170/03

DRINKING WATER SYSTEMS

Consolidation Period: From April 1, 2020 to the e-Laws currency date.

Last amendment: 65/20.

Legislative History: [+]

This is the English version of a bilingual regulation.

CONTENTS [−]

Interpretation: general

1. (1) In this Regulation,

"appurtenance" includes a valve, valve chamber, hydrant, hydrant lead, flow meter, curb stop, maintenance access point, personnel access opening or other minor accessory part of a watermain; ("accessoire")

"calendar quarter" means, in relation to a year, the three-month period that begins on January 1, April 1, July 1 or October 1; ("trimestre civil")

"certified operator" means, with respect to a subsystem, an individual who holds or is deemed to hold a certificate under Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts) that is applicable under that regulation to that subsystem or that type of subsystem, but does not include an individual who holds or is deemed to hold only a water quality analyst's certificate or conditional water quality analyst's certificate under that regulation; ("exploitant agréé")

"child care centre" means a child care centre as defined in the *Child Care and Early Years Act, 2014*; ("centre de garde")

"children and youth care facility" means,

(a) a child care centre,

(b) a facility where any service described in clauses (a) to (h) of the definition of service in subsection 2 (1) of the *Child, Youth and Family Services Act, 2017* is provided to children under 18 years of age, unless the facility is located in a private residence,

(c) REVOKED: O. Reg. 185/18, s. 1 (1).

(d) an Ontario Early Years Centre,

(e) a location where a satellite program of an Ontario Early Years Centre that receives funding under the *Ministry of Community and Social Services Act* is operated, if the satellite program provides programs and services on a regular basis, or

(f) a residence licensed as a children's residence under the *Child, Youth and Family Services Act, 2017*;

"children's camp" means a camp that is intended primarily for 10 or more campers under 18 years of age for temporary occupancy for five or more consecutive 24 hour periods, and which is a recreational camp within the meaning of Ontario Regulation 503/17 (Recreational Camps) made under the *Health Protection and Promotion Act*; ("camp de vacances pour enfants")

"chloramination" means combined chlorine residual disinfection where the combined chlorine residual is predominately in the form of monochloramine; ("chloramination")

"chlorination" means free chlorine residual disinfection; ("chloration")

"delivery agent care facility" means,

(a) a place that receives funding to provide emergency shelter or long-term housing under the Community Homelessness Prevention Initiative of the Ministry of Municipal Affairs and Housing, unless,

(i) the place is located in a private residence, or

(ii) the place is used only for services other than emergency shelter or long-term housing, or is used only for office and administrative purposes,

(b) REVOKED: O. Reg. 420/12, s. 1 (1).

(c) a place where a resource centre program that receives funding under the *Child Care and Early Years Act, 2014* is provided, or

(d) a place where a recreational program that receives funding under the *Child Care and Early Years Act, 2014* is provided; ("établissement de prestation de services")

"designated facility" means,

(a) a children and youth care facility,

(a.1) a children's camp,

(b) a delivery agent care facility,

(c) a health care facility,

(d) a school or private school,

(e) a social care facility, or

(f) a university, a college of applied arts and technology, or an institution with authority to grant degrees; ("établissement désigné")

"distribution sample" means, with respect to a drinking water system, a water sample that is taken, in the drinking water system's distribution system or in plumbing that is connected to the drinking water system, from a point significantly beyond the point at which drinking water enters the distribution system or plumbing; ("échantillon de distribution")

"food service establishment" means a food service premise, as defined in Ontario Regulation 493/17 (Food Premises) made under the *Health Protection and Promotion Act*, to which the general public is admitted, but does not include any temporary food service premise operated solely in conjunction with an exhibition, fair, carnival, sports meeting or other special or temporary event; ("établissement de restauration")

"health care facility" means a facility that provides overnight accommodation and that is,

(a) a hospital within the meaning of the *Public Hospitals Act* or the *Community Psychiatric Hospitals Act*,

(b) a private hospital within the meaning of the *Private Hospitals Act*,

(c) a psychiatric facility within the meaning of the *Mental Health Act*,

(d) a long term-care home within the meaning of the *Long-Term Care Homes Act, 2007*,

(e), (f) REVOKED: O. Reg. 106/10, s. 1.

(g) REVOKED: O. Reg. 65/20, s. 1.

(h) a home for special care within the meaning of the *Homes for Special Care Act*,

(i) an approved home within the meaning of the *Mental Hospitals Act*,

(j) a residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy,

(k) a nursing station, health centre, clinic or other facility that receives funding through the Ministry of Health and Long-Term Care's Underserviced Area Program, or

(l) a facility owned or leased by a person who receives funding from the Ministry of Health and Long-Term Care for one or more of the following health care support services that are provided to or are available to residents of the facility:

(i) a residential treatment services program,

(ii) a withdrawal management services program,

(iii) a dedicated supportive housing project; ("établissement de soins de santé")

"infiltration gallery" means a subsurface ground water collection system constructed with open-jointed or perforated pipes that discharge collected water into a watertight chamber; ("galerie d'infiltration")

"interested authority" means,

(a) with respect to a children and youth care facility other than a child care centre or an Ontario Early Years Centre, the Ministry of Children and Youth Services, or any successor of that ministry,

(a.1) with respect to a delivery agent care facility, the service manager designated under the *Housing Services Act, 2011* or the service system manager designated under the *Child Care and Early Years Act, 2014* for the geographic area in which the facility is located, or any successor of that service manager or service system manager,

(b) with respect to a health care facility, the Ministry of Health and Long-Term Care, or any successor of that ministry,

(c) with respect to a child care centre, Ontario Early Years Centre or a school, the Ministry of Education, or any successor of that ministry,

(d) with respect to a social care facility, the Ministry of Community and Social Services, or any successor of that ministry, or

(e) with respect to a university, a college of applied arts and technology, or an institution with authority to grant degrees, the Ministry of Training, Colleges and Universities, or any successor of that ministry; ("autorité compétente")

"large municipal non-residential system" means a municipal drinking water system that does not serve a major residential development and is capable of supplying drinking water at a rate of more than 2.9 litres per second; ("gros réseau non résidentiel municipal")

"large municipal residential system" means a municipal drinking water system that serves a major residential development and serves more than 100 private residences; ("gros réseau résidentiel municipal")

"large non-municipal non-residential system" means a non-municipal drinking water system that is capable of supplying drinking water at a rate of more than 2.9 litres per second and does not serve,

(a) a major residential development, or

(b) a trailer park or campground that has more than five service connections; ("gros réseau non résidentiel et non municipal")

"licensed engineering practitioner" means a person who holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; ("praticien de l'ingénierie titulaire d'un permis")

"month" means a calendar month; ("mois")

"non-municipal seasonal residential system" means a non-municipal drinking water system that,

(a) serves,

(i) a major residential development, or

(ii) a trailer park or campground that has more than five service connections, and

(b) does not operate to supply water to a development, trailer park or campground referred to in clause (a) for at least 60 consecutive days in,

(i) every calendar year, or

(ii) every period that begins on April 1 in one year and ends on March 31 in the following year; ("réseau résidentiel saisonnier non municipal")

"non-municipal year-round residential system" means a non-municipal drinking water system, other than a non-municipal seasonal residential system, that serves,

(a) a major residential development, or

(b) a trailer park or campground that has more than five service connections; ("réseau résidentiel toutes saisons non municipal")

"Ontario Drinking Water Quality Standards" means Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards)"; ("normes de qualité de l'eau potable de l'Ontario")

"Ontario Early Years Centre" means an Ontario Early Years Centre that receives funding under the *Ministry of Community and Social Services Act* or the *Child Care and Early Years Act, 2014*; ("centre de développement de la petite enfance de l'Ontario")

"OWRA approval" means an approval granted before this Regulation came into force under section 52 of the *Ontario Water Resources Act*; ("approbation visée par la LREO")

"OWRA order" means an order, direction or report in respect of a water works that was issued before this Regulation came into force under the *Ontario Water Resources Act*; ("texte visé par la LREO")

"point of entry treatment unit" means equipment that,

(a) is designed to provide primary disinfection,

(b) is installed in a drinking water system at or near where water from the system enters a building or other structure, and

(c) is connected to the plumbing associated with the building or other structure; ("unité de traitement au point d'entrée")

"primary disinfection" means a process or series of processes intended to remove or inactivate human pathogens such as viruses, bacteria and protozoa in water; ("désinfection primaire")

"private residence" has the meaning prescribed in Ontario Regulation 171/03 (Definitions of Words and Expressions Used in the Act) for the purpose of the definition of "private residence" in subsection 2 (1) of the Act; ("résidence privée")

"private school" means a private school as defined in the *Education Act*; ("école privée")

"*Procedure for Corrective Action for Systems Not Currently Using Chlorine*" means the document of that name, originally dated April 16, 2003, published by and available from the Ministry, as amended from time to time; ("*Mesures correctives à prendre pour les réseaux n'utilisant pas de chlore*")

"*Procedure for Disinfection of Drinking Water in Ontario*" means the document of that name, originally dated April 16, 2003, published by and available from the Ministry, as amended from time to time; ("*Marche à suivre pour désinfecter l'eau potable en Ontario*")

"professional hydrogeologist" means a hydrogeologist who is a member of the Association of Professional Geoscientists of Ontario; ("hydrogéologue")

"public facility" means,

(a) a food service establishment,

(b) a place that operates primarily for the purpose of providing overnight accommodation to the travelling public,

(b.1) a trailer park or campground,

(c) a marina,

(d) a church, mosque, synagogue, temple or other place of worship,

(e) a recreational camp,

(f) a recreational or athletic facility,

(g) a place, other than a private residence, where a service club or fraternal organization meets on a regular basis, or

(h) any place where the general public has access to a washroom, drinking water fountain or shower; ("installation publique")

"resample and test" means,

(a) with respect to corrective action that arises from the test of a water sample for a microbiological parameter,

(i) take a set of water samples, at approximately the same time, with,

(A) at least one sample from the same location as the sample that gave rise to the corrective action,

(B) at least one sample from a location that is a significant distance upstream from the location described in sub-subclause (A), if that is reasonably possible, and

(C) at least one sample from a location that is a significant distance downstream from the location described in sub-subclause (A), if that is reasonably possible, and

(ii) conduct, on the samples taken under subclause (i), the same test that gave rise to the corrective action, or

(b) with respect to corrective action that arises from the test of a water sample for a parameter that is not a microbiological parameter,

(i) take a water sample from the same location as the sample that gave rise to the corrective action, and

(ii) conduct, on the sample taken under subclause (i), the same test that gave rise to the corrective action; ("prélever de nouveaux échantillons et les analyser")

"school" means a school as defined in the *Education Act*; ("école")

"secondary disinfection" means a process or series of processes intended to provide and maintain a disinfectant residual in a drinking water system's distribution system, and in plumbing connected to the distribution system, for the purposes of,

(a) protecting water from microbiological re-contamination,

(b) reducing bacterial regrowth,

(c) controlling biofilm formation, and

(d) serving as an indicator of distribution system integrity,

and includes the use of disinfectant residuals from primary disinfection to provide and maintain a disinfectant residual in a drinking water system's distribution system for the purposes described in clauses (a) to (d); ("désinfection secondaire")

"service connection" means,

(a) a point where a drinking water system connects to plumbing, other than plumbing in a trailer park or campground, or

(b) in a trailer park or campground, a fixture that allows a trailer or other vehicle to connect to the trailer park's or campground's drinking water system; ("branchement d'eau")

"service pipe" means the pipe portion of a drinking water system that extends from a watermain to the property line of a property serviced by the watermain; ("conduite de branchement")

"small municipal non-residential system" means a municipal drinking water system that does not serve a major residential development, is not capable of supplying drinking water at a rate of more than 2.9 litres per second and serves a designated facility or public facility; ("petit réseau non résidentiel municipal")

"small municipal residential system" means a municipal drinking water system that serves a major residential development but serves fewer than 101 private residences; ("petit réseau résidentiel municipal")

"small non-municipal non-residential system" means a non-municipal drinking water system that is not capable of supplying drinking water at a rate of more than 2.9 litres per second, serves a designated facility or public facility and does not serve,

(a) a major residential development, or

(b) a trailer park or campground that has more than five service connections; ("petit réseau non résidentiel et non municipal")

"social care facility" means,

(a) a supported group living residence or intensive support residence that receives funding under the *Services and Supports to Promote the Social Inclusion of Persons with Developmental Disabilities Act, 2008*,

(b)-(d) REVOKED: O. Reg. 253/05, s. 1 (8).

(e) a place where an emergency shelter service that receives funding under the *Ministry of Community and Social Services Act* is provided, unless the place is located in a private residence,

(f), (g) REVOKED: O. Reg. 253/05, s. 1 (8).

(h) a sheltered workshop that receives funding under the *Ministry of Community and Social Services Act*,

(i) a place where a supported employment program that receives funding under the *Ministry of Community and Social Services Act* is provided,

(j) a place where community participation services and supports that receive funding under the *Services and Supports to Promote the Social Inclusion of Persons with Developmental Disabilities Act, 2008* are provided, unless the place is located in a private residence,

(k) a place where an employment preparation, training and job placement program that receives funding under the *Ontario Disability Support Program Act, 1997* is provided,

(l) a place where a violence against women program that receives funding under the *Ministry of Community and Social Services Act* is provided, unless the place is located in a private residence,

(m) a place where an aboriginal healing and wellness program funded under the Aboriginal Healing and Wellness Strategy is provided; ("établissement de services sociaux")

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

"trained person" means,

(a) an individual who holds or is deemed to hold a certificate under Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts), other than an individual who holds or is deemed to hold only a water quality analyst's certificate or conditional water quality analyst's certificate under that regulation, or

(b) a person who, in the preceding 36 months, successfully completed a course approved by the Director that relates to the operation and routine maintenance of drinking water systems; ("personne qualifiée")

"watermain" means any system of pipes and appurtenances used for the distribution of drinking water, but does not include plumbing or a pumping facility; ("conduite d'eau principale")

"water quality analyst" has the same meaning as in Ontario Regulation 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts); ("analyste de la qualité de l'eau")

"week" means a period of seven days that begins on Sunday and ends on the following Saturday. ("semaine") O. Reg. 170/03, s. 1 (1); O. Reg. 170/03, s. 1 (12); O. Reg. 249/03, s. 1; O. Reg. 269/03, s. 1; O. Reg. 165/04, s. 1; O. Reg. 126/04, s. 1; O. Reg. 253/05, s. 1 (1-8); O. Reg. 247/06, s. 1; O. Reg. 326/08, s. 1; O. Reg. 418/09, s. 1 (1-4); O. Reg. 106/10, s. 1; O. Reg. 420/12, s. 1; O. Reg. 374/15, s. 1; O. Reg. 458/16, s. 1; O. Reg. 509/17, s. 1; O. Reg. 185/18, s. 1; O. Reg. 65/20, s. 1.

(2) Despite the definition of "large municipal non-residential system" in subsection (1), a drinking water system described in that definition that has one or more distribution lines that supply water exclusively for operations described in subsection (3), shall be deemed to be a small municipal non-residential system for the purposes of this Regulation if the result of the following calculation is 2.9 litres per second or less:

$$A - B$$

where,

A = the maximum rate, expressed in litres per second, at which the drinking water system can supply drinking water,

B = the sum of the average rates, expressed in litres per second, at which the drinking water system supplied drinking water in the preceding calendar year to the distribution lines that supply water exclusively for operations described in subsection (3).

O. Reg. 170/03, s. 1 (2).

(3) The operations referred to in subsections (2) and (6) are the following:

1. Agricultural operations.
2. Landscaping operations.
3. Industrial or manufacturing operations, including food manufacturing or processing operations.
4. Swimming pool or skating rink maintenance operations. O. Reg. 170/03, s. 1 (3).

(4) Despite subsection (2) and the definition of “large municipal non-residential system” in subsection (1), a drinking water system described in subsection (2) shall be deemed, during the calendar year in which the system begins operation, to be a small municipal non-residential system for the purposes of this Regulation if the owner of the system, on reasonable grounds, estimates that the result of the calculation referred to in subsection (2) would be 2.9 litres per second or less if the system had operated during all of the preceding calendar year. O. Reg. 170/03, s. 1 (4).

(5) REVOKED: O. Reg. 253/05, s. 1 (9).

(6) Despite the definition of “large non-municipal non-residential system” in subsection (1), a drinking water system described in that definition that has one or more distribution lines that supply water exclusively for operations described in subsection (3) shall be deemed to be a small non-municipal non-residential system for the purposes of this Regulation if the result of the following calculation is 2.9 litres per second or less:

A – B

where,

A = the maximum rate, expressed in litres per second, at which the drinking water system can supply drinking water,

B = the sum of the average rates, expressed in litres per second, at which the drinking water system supplied drinking water in the preceding calendar year to the distribution lines that supply water exclusively for operations described in subsection (3).

O. Reg. 170/03, s. 1 (6).

(7) Despite subsection (6) and the definition of “large non-municipal non-residential system” in subsection (1), a drinking water system described in subsection (6) shall be deemed, during the calendar year in which the system begins operation, to be a small non-municipal non-residential system for the purposes of this Regulation if the owner of the system, on reasonable grounds, estimates that the result of the calculation referred to in subsection (6) would be 2.9 litres per second or less if the system had operated during all of the preceding calendar year. O. Reg. 170/03, s. 1 (7).

(8) REVOKED: O. Reg. 253/05, s. 1 (10).

(9) For the purposes of the definition of “non-municipal seasonal residential system” in subsection (1), a drinking water system that, during the 365-day period that begins on the day the system begins operation, will not supply water for at least 60 consecutive days to a development, trailer park or campground referred to in clause (a) of that definition shall be deemed, during that 365-day period, to be a drinking water system that does not operate to supply water to a development, trailer park or campground referred to in clause (a) of that definition for at least 60 consecutive days in every calendar year. O. Reg. 253/05, s. 1 (11).

(10) SPENT: O. Reg. 170/03, s. 1 (10).

(11) SPENT: O. Reg. 170/03, s. 1 (11).

(12) SPENT: O. Reg. 170/03, s. 1 (12).

Interpretation: ground water under direct influence of surface water

2. (1) A drinking water system that obtains water from a raw water supply that is ground water under the direct influence of surface water is deemed, for the purposes of this Regulation, to be a drinking water system that obtains water from a raw water supply that is surface water. O. Reg. 170/03, s. 2 (1).

(2) The following drinking water systems are deemed, for the purposes of this Regulation, to be drinking water systems that obtain water from a raw water supply that is ground water under the direct influence of surface water:

1. A drinking water system that obtains water from a well that is not a drilled well or from a well that does not have a watertight casing that extends to a depth of six metres below ground level.
2. A drinking water system that obtains water from an infiltration gallery.
3. A drinking water system that is not capable of supplying water at a rate greater than 0.58 litres per second and that obtains water from a well, any part of which is within 15 metres of surface water.
4. A drinking water system that is capable of supplying water at a rate greater than 0.58 litres per second and that obtains water from an overburden well, any part of which is within 100 metres of surface water.
5. A drinking water system that is capable of supplying water at a rate greater than 0.58 litres per second and that obtains water from a bedrock well, any part of which is within 500 metres of surface water.
6. A drinking water system that exhibits evidence of contamination by surface water.
7. A drinking water system in respect of which a written report has been prepared by a licensed engineering practitioner or professional hydrogeologist that concludes that the system's raw water supply is ground water under the direct influence of surface water and that includes a statement of his or her reasons for reaching that conclusion. O. Reg. 170/03, s. 2 (2); O. Reg. 418/09, s. 1 (5).

(3) Subsection (2) does not apply to a drinking water system if,

(a) a written report prepared after August 1, 2000 by a licensed engineering practitioner or professional hydrogeologist concludes that the raw water supply is not ground water under the direct influence of surface water and the report includes a statement of his or her reasons for reaching that conclusion; and

(b) in the case of a drinking water system that requires an approval, drinking water works permit or municipal drinking water licence, the Director agrees that the raw water supply is not ground water under the direct influence of surface water. O. Reg. 170/03, s. 2 (3); O. Reg. 418/09, ss. 1 (5), 2.

(4) A drinking water system that obtains water from a raw water supply that is surface water is deemed, for the purposes of this Regulation, not to be a drinking water system that obtains water from a raw water supply that is ground water. O. Reg. 170/03, s. 2 (4).

Interpretation: open designated facilities and public facilities

3. (1) For the purposes of this Regulation, a school or private school is open on a day if, at any time during that day, programs for children under 18 years of age are held at the school or private school. O. Reg. 170/03, s. 3 (1).

(2) For the purposes of this Regulation, a designated facility other than a school or private school is open on a day if, at any time during that day, any of the persons that the facility serves, cares for or provides programming for are present at the facility. O. Reg. 170/03, s. 3 (2).

(3) For the purposes of this Regulation, a public facility is open on a day unless persons served by the facility are denied access to the facility during the entire day. O. Reg. 170/03, s. 3 (3).

(4) For the purposes of this Regulation, a place that is both a designated facility and a public facility is open on a day, despite subsections (1) to (3), if,

(a) as a designated facility, it is open on that day, according to subsection (1) or (2), whichever is applicable; or

(b) as a public facility, it is open on that day, according to subsection (3). O. Reg. 249/03, s. 2.

Application

4. Unless otherwise provided, this Regulation applies to the drinking water systems referred to in the following Table, with each row of the Table setting out the Schedules to this Regulation that apply to the drinking water systems referred to in that row:

TABLE

APPLICATION OF SCHEDULES

Item	Drinking Water Systems	Applicable Schedules - Treatment	Applicable Schedules - Operational Checks, Sampling and Testing	Applicable Schedules - Adverse Test Results and Other Problems	Applicable Schedules - Reports	Applicable Schedules - Chemical Testing Parameters
1.	Large municipal residential systems	1	6, 7, 10, 13, 15.1	16, 17	22	23, 24
2.	Small municipal residential systems	1, 3	6, 7, 11, 13, 15.1	16, 18, 19	22	23, 24
3.	Large municipal non-residential systems	2, 3	6, 8, 12, 15, 15.2	16, 18, 19	21	23, 24
4.	Small municipal non-residential systems	2, 3	6, 9, 12, 15, 15.2	16, 18, 19	21	23, 24
5.	Non-municipal year-round residential systems	2, 3	6, 8, 11, 13, 15.1	16, 18, 19	21	23, 24
6.	Non-municipal seasonal residential systems	2, 3	6, 9, 12, 15, 15.2	16, 18, 19	21	23, 24
7.	Large non-municipal non-residential systems	2, 3	6, 8, 12, 15, 15.2	16, 18, 19	21	23, 24
8.	Small non-municipal non-residential systems	2, 3	6, 9, 12, 15, 15.2	16, 18, 19	21	23, 24

O. Reg. 170/03, s. 4; O. Reg. 247/06, s. 2; O. Reg. 399/07, s. 1; O. Reg. 458/16, s. 2.

Exemptions: certain systems that do not serve designated facilities

4.1 This Regulation, except section 8.0.1, does not apply to any of the following drinking water systems unless the system serves a designated facility:

1. Large municipal non-residential systems.
2. Small municipal non-residential systems.
3. Non-municipal seasonal residential systems.
4. Large non-municipal non-residential systems.
5. Small non-municipal non-residential systems. O. Reg. 253/05, s. 2; O. Reg. 326/08, s. 2.

Exemptions: residential systems

5. (1) If a large municipal residential system or small municipal residential system obtains all of its water from a drinking water system

described in subsection (1.1), Schedules 1, 7, 10, 11 and 13 do not apply to the system that obtains the water, except for the following provisions:

1. Section 7-1, subsections 7-2 (3) to (6) and section 7-5 of Schedule 7.
2. Sections 10-1 and 10-2 of Schedule 10.
3. Sections 11-1, 11-2 and 11-4 of Schedule 11.
4. Sections 13-1, 13-5, 13-6, 13-6.1, 13-10 and 13-11 of Schedule 13. O. Reg. 247/06, s. 3 (1); O. Reg. 399/07, s. 2 (1); O. Reg. 458/16, s. 3 (1).

(1.1) Subsection (1) applies if the drinking water system from which water is obtained,

(a) is a large municipal residential system or small municipal residential system to which this Regulation applies;

(b) provides primary disinfection in accordance with section 1-3 of Schedule 1, or provides filtration and primary disinfection in accordance with section 1-4 of Schedule 1; and

(c) provides secondary disinfection in accordance with section 1-5 of Schedule 1. O. Reg. 247/06, s. 3 (1).

(2) If a non-municipal year-round residential system obtains all of its water from a drinking water system described in subsection (3.1), Schedules 2, 8, 11, 13 and 21 do not apply to the system that obtains the water, except for the following provisions:

1. Sections 8-1 and 8-2, subsections 8-3 (3) and (3.1) and sections 8-5 and 8-7 of Schedule 8.
2. Sections 11-1, 11-2 and 11-4 of Schedule 11.
3. Sections 13-1, 13-5, 13-10 and 13-11 of Schedule 13.
4. If the system that obtains the water rechlorinates the water, sections 13-6 and 13-6.1 of Schedule 13 and Schedule 21. O. Reg. 170/03, s. 5 (2); O. Reg. 249/03, s. 3 (2); O. Reg. 247/06, s. 3 (2, 3); O. Reg. 399/07, s. 2 (2); O. Reg. 458/16, s. 3 (2, 3).

(3) If a non-municipal seasonal residential system obtains all of its water from a drinking water system described in subsection (3.1), Schedules 2, 9, 12, 15 and 21 do not apply to the system that obtains the water, except for the following provisions:

1. Sections 9-1 and 9-2, subsections 9-3 (3) and (3.1) and sections 9-5, 9-6 and 9-8 of Schedule 9.
2. Sections 12-1, 12-2 and 12-4 of Schedule 12.
3. Sections 15-1 and 15-7 of Schedule 15.
4. If the system that obtains the water rechlorinates the water, Schedule 21. O. Reg. 247/06, s. 3 (4); O. Reg. 399/07, s. 2 (3); O. Reg. 458/16, s. 3 (4, 5).

(3.1) Subsections (2) and (3) apply if the drinking water system from which water is obtained,

(a) is a drinking water system to which this Regulation applies;

(b) provides primary disinfection in accordance with section 1-3 of Schedule 1 or section 2-3 of Schedule 2, or provides filtration and primary disinfection in accordance with section 1-4 of Schedule 1 or section 2-4 of Schedule 2; and

(c) provides secondary disinfection in accordance with section 1-5 of Schedule 1 or section 2-5 of Schedule 2. O. Reg. 247/06, s. 3 (5).

(4) This Regulation, except sections 8.1, 9, 10 and 10.1 and subsections 11 (2.1), (8) and (9), does not apply to a drinking water system that obtains all of its water from another drinking water system if,

(a) pursuant to subsection (1), (2) or (3), the drinking water system that obtains the water is exempt from provisions of this Regulation; and

(b) the owner of the drinking water system from which the water is obtained has agreed in writing,

(i) to ensure that the treatment equipment that provides secondary disinfection in accordance with section 1-5 of Schedule 1 or 2-5 of Schedule 2 is operated so that, at all times and at all locations within the distribution system of the system that obtains the water,

(A) the free chlorine residual is never less than 0.05 milligrams per litre, if the drinking water system from which the water is obtained provides chlorination and does not provide chloramination, or

(B) the combined chlorine residual is never less than 0.25 milligrams per litre, if the drinking water system from which the water is obtained provides chloramination,

(ii) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system from which the water is obtained, and

(iii) to comply, on behalf of the owner of the system that obtains the water and the operating authority for the system,

(A) with Schedule 15.1, in the case of a large municipal residential system, a small municipal residential system or a non-municipal year-round residential system, or

(B) with Schedule 15.2, in the case of a seasonal residential system. O. Reg. 269/03, s. 2 (2); O. Reg. 247/06, s. 3 (6); O. Reg. 399/07, s. 2 (4).

(5) If a drinking water system obtains water from another drinking water system and the owner of the system from which water is obtained has agreed in writing to do anything referred to in subclauses (4) (b) (i), (ii) and (iii), the owner shall comply with the agreement. O. Reg. 247/06, s. 3 (7); O. Reg. 418/09, s. 3.

(6) This section applies whether the water that is obtained,

(a) is obtained through connections;

(b) is obtained through transportation; or

(c) is obtained through a combination of connections and transportation. O. Reg. 247/06, s. 3 (7).

Water obtained through transportation

5.1 (1) If a drinking water system to which an exemption set out in section 5 applies obtains water through transportation, the transported drinking water must be stored in a container that is constructed and maintained in a manner that prevents surface water and other foreign materials from coming into contact with the drinking water. O. Reg. 418/09, s. 4.

(2) If a non-municipal year-round residential system obtains all of its water through transportation, Schedule 21 does not apply to the system that obtains the water. O. Reg. 418/09, s. 4.

(3) If a non-municipal seasonal residential system obtains all of its water through transportation, Schedule 21 does not apply to the system that obtains the water. O. Reg. 418/09, s. 4.

Exemptions: non-residential systems connected to other systems

6. (1) This Regulation, except section 8.1, subsection 9 (1), sections 9.1, 10 and 10.1 and subsections 11 (2.1), (8) and (9), does not apply to a drinking water system listed in subsection (2) if,

(a) the drinking water system is connected to and receives all of its drinking water from another drinking water system to which this Regulation does apply;

(a.1) the drinking water system from which the drinking water is obtained provides primary disinfection in accordance with section 1-3 of Schedule 1 or section 2-3 of Schedule 2, or provides filtration and primary disinfection in accordance with section 1-4 of Schedule 1 or section 2-4 of Schedule 2;

(b) the drinking water system from which the drinking water is obtained provides secondary disinfection in accordance with section 1-5 of Schedule 1 or section 2-5 of Schedule 2; and

(c) the owner of the drinking water system from which the water is obtained has agreed in writing,

(i) to ensure that the treatment equipment that provides the secondary disinfection referred to in clause (b) is operated so that, at all times and at all locations within the distribution system of the system that obtains the water,

(A) the free chlorine residual is never less than 0.05 milligrams per litre, if the drinking water system from which the water is obtained provides chlorination and does not provide chloramination, or

(B) the combined chlorine residual is never less than 0.25 milligrams per litre, if the drinking water system from which the water is obtained provides chloramination,

(ii) to sample and test the water in the distribution system of the system that obtains the water as if it were part of the distribution system of the system from which the water is obtained, and

(iii) to comply with Schedule 15.2 on behalf of the owner of the system that obtains the water and the operating authority for the system. O. Reg. 170/03, s. 6 (1); O. Reg. 269/03, s. 3; O. Reg. 253/05, s. 3; O. Reg. 247/06, s. 4 (1, 2); O. Reg. 399/07, s. 3.

(2) The exemption provided by subsection (1) applies to the following drinking water systems:

1. A large municipal non-residential system.
2. A small municipal non-residential system.
3. A large non-municipal non-residential system.
4. A small non-municipal non-residential system. O. Reg. 170/03, s. 6 (2).

(3) If a drinking water system obtains water from another drinking water system and the owner of the system from which water is obtained has agreed in writing to do anything referred to in subclauses (1) (c) (i) and (ii), the owner shall comply with the agreement. O. Reg. 247/06, s. 4 (3).

Exemptions: non-residential systems that receive transported water

7. (1) Schedules 2, 3, 8, 9, 11 to 15 and 21 do not apply to one of the following drinking water systems if all of its drinking water is transported to the system from a drinking water system described in subsection (1.1) and the drinking water is stored in a container that is constructed and maintained in a manner that prevents surface water and other foreign materials from coming into contact with the drinking water:

1. A large municipal non-residential system.
2. A small municipal non-residential system.
3. A large non-municipal non-residential system.
4. A small non-municipal non-residential system. O. Reg. 170/03, s. 7 (1); O. Reg. 247/06, s. 5 (1); O. Reg. 418/09, s. 5.

(1.1) Subsection (1) applies if the drinking water system from which drinking water is transported,

(a) provides primary disinfection in accordance with section 1-3 of Schedule 1 or section 2-3 of Schedule 2, or provides filtration and primary disinfection in accordance with section 1-4 of Schedule 1 or section 2-4 of Schedule 2; and

(b) provides secondary disinfection in accordance with section 1-5 of Schedule 1 or section 2-5 of Schedule 2. O. Reg. 247/06, s. 5 (2).

(2) The owner of the drinking water system referred to in subsection (1) that receives the drinking water and the operating authority for the system shall ensure that a distribution sample is taken at least once a day and is tested for,

(a) free chlorine residual, if the system from which the drinking water is obtained provides chlorination and does not provide chloramination; or

(b) combined chlorine residual, if the system from which the drinking water is obtained provides chloramination. O. Reg. 170/03,

s. 7 (2).

(3) Subsection (2) does not apply to a drinking water system on days on which all designated facilities and all public facilities served by the system are not open. O. Reg. 269/03, s. 4.

(4) Subsection (2) does not apply to a drinking water system if all of the following criteria are satisfied:

1. A point of entry treatment unit owned or leased by the owner of the system is connected to the plumbing of every building and other structure that is served by the drinking water system and is part of a designated facility or public facility.
2. None of the point of entry treatment units use chlorination or chloramination.
3. Each point of entry treatment unit,
    i. has a feature that ensures that no water is directed to users of water treated by the unit in the event that the unit malfunctions, loses power or ceases to provide the appropriate level of disinfection, or
    ii. is designed and operated in accordance with the standards described in subsection (5).
4. If a point of entry treatment unit has a feature described in subparagraph 3 i and the unit malfunctions, loses power or ceases to provide the appropriate level of disinfection, a person takes appropriate action at the location where the unit is installed before water is again directed to users of water treated by the unit. O. Reg. 247/06, s. 5 (3).

(5) The standards referred to in subparagraph 3 ii of subsection (4) are the following:

1. The point of entry treatment unit must have a feature that causes an alarm to signal immediately at the following locations if the unit malfunctions, loses power or ceases to provide the appropriate level of disinfection:
    i. The building or structure where the point of entry treatment unit is installed.
    ii. A location where a person is present, if a person is not always present at the location described in subparagraph i.
    iii. Every designated facility served by the drinking water system.
2. If an alarm signals under paragraph 1, a person who is at the building or structure where the point of entry treatment unit is installed must take appropriate action or a person must promptly be dispatched to that location to take appropriate action.
3. A person who is dispatched under paragraph 2 must arrive at the building or structure where the point of entry treatment unit is installed as soon as possible. O. Reg. 247/06, s. 5 (3); O. Reg. 458/16, s. 4.

Exemptions: warning notices for systems and users without electricity, etc.

8. (1) Subject to subsections (2) and (5), this Regulation does not apply to a drinking water system if,

(a) the owner of the system posts warning notices in accordance with subsection (6);

(b) the owner of the system complies with subsections (8) and (9);

(c) all drinking water fountains that are connected to the drinking water system have been rendered inoperative; and

(d) the owner of the system has notified the Director in writing that the steps described in clauses (a) and (c) have been taken. O. Reg. 170/03, s. 8 (1); O. Reg. 249/03, s. 4 (1, 2); O. Reg. 165/04, s. 2 (1); O. Reg. 253/05, s. 4 (1).

(2) Subsection (1) applies to a drinking water system only if the system does not use electricity and does not serve any building or other structure that uses electricity. O. Reg. 253/05, s. 4 (2).

(3), (4) REVOKED: O. Reg. 253/05, s. 4 (2).

(4.1), (4.2) REVOKED: O. Reg. 253/05, s. 4 (2).

(5) The exemption provided by subsection (1) does not apply to the following provisions:

1. Sections 8.1, 9, 9.1, 10 and 10.1.
2. REVOKED: O. Reg. 458/16, s. 5.

O. Reg. 170/03, s. 8 (5); O. Reg. 253/05, s. 4 (3); O. Reg. 247/06, s. 6 (1); O. Reg. 458/16, s. 5.

(6) A warning notice must be posted at every tap that supplies water from the drinking water system in a location where it is likely to come to the attention of all users and potential users of the tap. O. Reg. 170/03, s. 8 (6).

(7) REVOKED: O. Reg. 165/04, s. 2 (5).

(8) The owner of the drinking water system shall ensure that the warning notices are checked at least once a week to ensure that they are legible and comply with this section. O. Reg. 170/03, s. 8 (8).

(8.1) The owner of the drinking water system shall ensure that a check that is done during a week for the purpose of subsection (8) is done at least five days, and not more than 10 days, after a check that was done for that purpose in the previous week. O. Reg. 247/06, s. 6 (2).

(9) The owner of the drinking water system shall ensure that,

(a) every time the warning notices are checked under subsection (8), a record is made of the date and time and of the name of the person who performed the check; and

(b) the records referred to in clause (a) are kept for at least 12 months at a location where they can conveniently be viewed by a provincial officer who is inspecting the warning notices. O. Reg. 170/03, s. 8 (9); O. Reg. 247/06, s. 6 (3).

(10) Nothing in this section relieves any person of any obligation to provide potable water or water that meets the standards prescribed by the Ontario Drinking Water Quality Standards. O. Reg. 170/03, s. 8 (10).

Systems regulated under the *Health Protection and Promotion Act*

8.0.1 The Act, except sections 1, 2, 3, 6, 7, 8, 10, 18.1, 20, 62 to 80, 100, 104, 108, 109, 110, 118 and 122 to 170, does not apply in respect of a small drinking water system within the meaning of the *Health Protection and Promotion Act*. O. Reg. 326/08, s. 3.

Exemption from certified operator requirement of Act

8.1 (1) Section 12 of the Act does not apply to a person operating a municipal drinking water system unless the system is,

(a) a large municipal residential system;

(b) a small municipal residential system; or

(c) a large municipal non-residential system. O. Reg. 249/03, s. 5; O. Reg. 418/09, s. 6 (1).

(2) Section 12 of the Act does not apply to a person operating a large municipal non-residential system if, pursuant to section 6 or 7 of this Regulation, provisions of this Regulation do not apply to the system. O. Reg. 249/03, s. 5; O. Reg. 418/09, s. 6 (2).

(3) Section 12 of the Act does not apply to a person operating a non-municipal year-round residential system if,

(a) pursuant to subsection 5 (2) of this Regulation, provisions of this Regulation do not apply to the system; and

(b) the system does not rechlorinate the water it obtains. O. Reg. 269/03, s. 5; O. Reg. 418/09, s. 6 (3).

(4) Section 12 of the Act does not apply to a person operating a non-municipal year-round residential system if, pursuant to subsection

5 (4) of this Regulation, provisions of this Regulation do not apply to the system. O. Reg. 269/03, s. 5; O. Reg. 418/09, s. 6 (4).

(5) Section 12 of the Act does not apply to a person operating a large non-municipal non-residential system if, pursuant to section 6 or 7 of this Regulation, provisions of this Regulation do not apply to the system. O. Reg. 269/03, s. 5; O. Reg. 418/09, s. 6 (5).

(5.1) Section 12 of the Act does not apply to a person operating a non-municipal year-round residential system if, pursuant to section 8-6.1 of Schedule 8, a reference in that Schedule to a certified operator is deemed, with respect to that system, to be a reference to any person. O. Reg. 247/06, s. 7; O. Reg. 418/09, s. 6 (6).

(6) Section 12 of the Act does not apply to a person operating a large municipal non-residential system, non-municipal year-round residential system or large non-municipal non-residential system if, pursuant to section 8-7 of Schedule 8, a reference in that Schedule to a certified operator is deemed, with respect to that system, to be a reference to any person. O. Reg. 165/04, s. 3; O. Reg. 418/09, s. 6 (7).

(7) Section 12 of the Act does not apply to a person operating a drinking water system that is not listed in the Table to section 4. O. Reg. 253/05, s. 5; O. Reg. 418/09, s. 6 (8).

Exemptions from approval requirements of Act

9. (1) Subsection 31 (1) of the Act does not apply to a municipal drinking water system unless the system is,

(a) a large municipal residential system; or

(b) a small municipal residential system. O. Reg. 249/03, s. 6.

(2) Subsection 31 (1) of the Act does not apply to a large municipal residential system or a small municipal residential system in respect of,

(a) the establishment or alteration of or a change to a service pipe;

(b) the establishment or alteration of or a change in an appurtenance of a watermain, if the appurtenance does not disrupt the operation of the drinking water system that the watermain is part of;

(c) the relining of a watermain, if the new lining does not disrupt the operation of the drinking water system that the watermain is part of;

(d) the replacement of an existing watermain with a new watermain that has similar dimensions and performance criteria and that is in the same or approximately the same location, if the existing watermain was established or altered in accordance with an approval, drinking water works permit or municipal drinking water licence. O. Reg. 170/03, s. 9 (2); O. Reg. 418/09, s. 7.

(3) Subsection 31 (1) of the Act does not apply to a municipal drinking water system that is not listed in the Table to section 4. O. Reg. 253/05, s. 6.

Exemptions from transfer of ownership requirements of Act

9.1 Section 51 of the Act does not apply to a large municipal non-residential system or small municipal non-residential system. O. Reg. 247/06, s. 8.

Revocation of OWRA approvals for non-municipal systems

10. For the purpose of subsection 52 (7) of the Act, the earliest of the following dates is prescribed as the date that the approval under the *Ontario Water Resources Act* is deemed to be revoked:

1. REVOKED: O. Reg. 253/05, s. 7.

2. The date the owner of the drinking water system gives the Director a notice that complies with section 21-7 of Schedule 21.

3. The date the owner of the drinking water system gives the Director a statement under subsection 21-2 (3) of Schedule 21.

4. The date the Director is notified in accordance with clause 8 (1) (d) that the steps described in clauses 8 (1) (a), (b) and (c) have been taken.
5. The date the Director imposes a condition under subsection 60 (2) of the Act in an approval under Part VI of the Act. O. Reg. 170/03, s. 10; O. Reg. 253/05, s. 7.

System information

10.1 (1) The owner of a drinking water system that commences operation after this section comes into force shall give the Director a written notice containing information about the system within 30 days after the system commences operation. O. Reg. 247/06, s. 9.

(2) The owner of a drinking water system that commenced operation before this section came into force shall give the Director a written notice containing information about the system within 60 days after this section comes into force. O. Reg. 247/06, s. 9.

(3) If there is any change to the information given to the Director under subsection (1) or (2), the owner of the drinking water system shall give the Director written notice of the change within 10 days of the change. O. Reg. 247/06, s. 9.

(4) The owner of a drinking water system shall be deemed to have given the Director written notice in accordance with subsection (2) if, before this section came into force, a written notice or report that relates to the system was submitted to the Director in a form that complied with section 14. O. Reg. 247/06, s. 9.

Annual reports

11. (1) The owner of a drinking water system shall ensure that an annual report is prepared in accordance with this section. O. Reg. 170/03, s. 11 (1); O. Reg. 247/06, s. 10 (1).

(2) The owner of a drinking water system, other than a large municipal residential system or a small municipal residential system, shall ensure that, when the annual report is prepared, a copy of the report is given to,

(a) each designated facility served by the system; and

(b) the interested authority for each designated facility served by the system. O. Reg. 170/03, s. 11 (2); O. Reg. 247/06, s. 10 (2).

(2.1) If a drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the system from which the water is obtained shall ensure that, when the annual report for the system is prepared, a copy of the report is given to the owner of the system that obtains the water. O. Reg. 269/03, s. 6 (1); O. Reg. 247/06, s. 10 (3).

(3) In the case of the following drinking water systems, the annual report must cover the period from January 1 to December 31 in a year and must be prepared not later than February 28 of the following year:

1. Large municipal residential systems.
2. Small municipal residential systems.
3. Large municipal non-residential systems.
4. Small municipal non-residential systems.
5. Non-municipal year-round residential systems. O. Reg. 170/03, s. 11 (3); O. Reg. 247/06, s. 10 (4).

(4) In the case of non-municipal seasonal residential systems and large non-municipal non-residential systems, the annual report must cover the period from November 1 in a year to October 31 of the following year and must be prepared not later than December 31 of the latter year. O. Reg. 170/03, s. 11 (4); O. Reg. 247/06, s. 10 (5).

(5) In the case of small non-municipal non-residential systems, the annual report must cover the period from April 1 in a year to March 31 of the following year and must be prepared not later than May 31 of the latter year. O. Reg. 170/03, s. 11 (5); O. Reg. 247/06, s. 10 (6).

(6) The annual report must,

(a) contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system during the period covered by the report;

(b) summarize any reports made to the Ministry under subsection 18 (1) of the Act or section 16-4 of Schedule 16 during the period covered by the report;

(c) summarize the results of tests required under this Regulation, or under an approval, municipal drinking water licence or order, including an OWRA order, during the period covered by the report and, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;

(d) describe any corrective actions taken under Schedule 17 or 18 during the period covered by the report;

(e) describe any major expenses incurred during the period covered by the report to install, repair or replace required equipment;

(f) in the case of a large municipal residential system or a small municipal residential system, include a statement of where a report prepared under Schedule 22 will be available for inspection under subsection 12 (4); and

(g) in the case of a large municipal residential system, small municipal residential system or non-municipal year-round residential system, specify the number of points sampled during the periods described in subsection 15.1-4 (2) or subsection 15.1-5 (5) of Schedule 15.1 to the Regulation, the number of samples taken, and the number of points where a sample exceeded the prescribed standard for lead during those periods. O. Reg. 170/03, s. 11 (6); O. Reg. 418/09, s. 8; O. Reg. 458/16, s. 6 (1).

(6.1) Clause (6) (g) does not apply unless a sample is taken from plumbing under subsection 15.1-4 (1) or (3) or subsection 15.1-5 (3), (4) or (8) of Schedule 15.1 to the Regulation. O. Reg. 458/16, s. 6 (2).

(7) The owner of a drinking water system shall ensure that a copy of an annual report for the system is given, without charge, to every person who requests a copy. O. Reg. 269/03, s. 6 (2).

(8) If a drinking water system is connected to and receives all of its drinking water from another drinking water system, the owner of the system that obtains the water shall ensure that a copy of an annual report for the system from which the water is obtained is given, without charge, to every person who requests a copy. O. Reg. 269/03, s. 6 (2).

(9) Subsections (7) and (8) do not apply to an annual report that is more than two years old. O. Reg. 269/03, s. 6 (2).

(9.1) Every time that an annual report is prepared for a drinking water system, the owner of the system shall ensure that effective steps are taken to advise users of water from the system that copies of the report are available, without charge, and of how a copy may be obtained. O. Reg. 269/03, s. 6 (2).

(10) If a large municipal residential system serves more than 10,000 people, the owner of the system shall ensure that a copy of every report prepared under this section is available to the public at no charge on a website on the Internet. O. Reg. 170/03, s. 11 (10).

(11) The obligation to ensure that a report be given to the interested authority for a designated facility under subsection (2) does not apply to the following designated facilities:

1. A private school.
2. A children's camp.
3. A residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy. O. Reg. 170/03, s. 11 (11).

(12)-(17) REVOKED: O. Reg. 253/05, s. 8 (1).

(18) If section 12 of Ontario Regulation 459/00 and section 15 of Ontario Regulation 505/01 did not apply to the owner of a system to

which subsection (5) applies, no report is required to be prepared under subsection (5) until May 31, 2006 and, despite that subsection, the report required to be prepared not later than May 31, 2006 shall cover the period from June 1, 2005 to March 31, 2006. O. Reg. 247/06, s. 10 (7).

(19) REVOKED: O. Reg. 253/05, s. 8 (2).

Information to be available

12. (1) The owner of a drinking water system shall ensure that the following information is available for inspection in accordance with subsection (4):

1. A copy of every test result obtained in respect of a test required under this Regulation, or where continuous monitoring equipment is used under section 6-5 of Schedule 6, the daily minimum, maximum, and mean results obtained in respect of a test required under this Regulation, or under an approval, municipal drinking water licence or order, including an OWRA order.
2. A copy of every approval, drinking water works permit, municipal drinking water licence and order, including OWRA orders, that applies to the system and is still in effect, if the approval, permit, licence or order was issued after January 1, 2001.
3. A copy of every annual report prepared under section 11.
4. A copy of every report prepared under Schedule 21 or 22.
5. A copy of this Regulation. O. Reg. 170/03, s. 12 (1); O. Reg. 247/06, s. 11; O. Reg. 418/09, s. 9.

(2) Paragraphs 1 and 2 of subsection (1) do not apply to a record, report or test result until the day after it comes into the owner's possession. O. Reg. 170/03, s. 12 (2).

(3) Paragraphs 1 to 4 of subsection (1) do not apply to a record, report or test result that is more than two years old. O. Reg. 170/03, s. 12 (3); O. Reg. 253/05, s. 9 (1).

(4) The information must be available for inspection by any member of the public during normal business hours without charge,

(a) at the office of the owner or, if the office of the owner is not reasonably convenient to users of water from the system, at a location that is reasonably convenient to those users; and

(b) if the owner is not a municipality but the system serves a municipality, at the office of the municipality. O. Reg. 170/03, s. 12 (4).

(5) If the owner of a drinking water system provides the operator of a designated facility with a copy of the information referred to in subsection (1), the operator of the facility shall ensure that the information is available at the facility, between 9 a.m. and 5 p.m. or during normal business hours, for inspection without charge by any person allowed to enter the facility. O. Reg. 170/03, s. 12 (5).

(6) REVOKED: O. Reg. 253/05, s. 9 (2).

Retention of records

13. (1) The owner of a drinking water system shall ensure that the following documents and other records are kept for at least two years:

1. Every record or report related to a test required under any of the following provisions:
    i. Section 7.
    ii. Schedules 6 to 12.
    iii. Sections 17-5 to 17-9 of Schedule 17.
    iv. Sections 18-5 to 18-9 of Schedule 18.

2. Every record or report related to a test required under an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, unless the record or report relates to a parameter listed in Schedule 23 or 24 to this Regulation or Schedule 3 to Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards).
3. Every record made under subsection 8-2 (5) of Schedule 8 or subsection 9-2 (5) of Schedule 9.
4. Every record made under subsection 3-1.1 (6) or (7) of Schedule 3. O. Reg. 247/06, s. 12; O. Reg. 418/09, s. 10 (1).

(2) The owner of a drinking water system shall ensure that the following documents and other records are kept for at least six years:

1. Every record or report related to a test required under any of the following provisions:
   i. Subsection 13-2 (2), subsection 13-4 (2) and sections 13-5, 13-6, 13-6.1 and 13-7 of Schedule 13.
   ii. Section 15-4 of Schedule 15.
   ii.1 Any provision in Schedule 15.1.
   ii.2 Section 15.2-2 of Schedule 15.2.
   iii. Sections 17-10 to 17-12 of Schedule 17.
2. Every record or report related to a test required under an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, if the record or report relates to a parameter listed in Schedule 23 or 24 to this Regulation or Schedule 3 to Ontario Regulation 169/03 (Ontario Drinking Water Quality Standards).
3. Every annual report prepared under section 11.
4. Every report prepared under Schedule 22. O. Reg. 247/06, s. 12; O. Reg. 399/07, s. 4 (1, 2); O. Reg. 418/09, s. 10 (2, 3); O. Reg. 458/16, s. 7.

(3) The owner of a drinking water system shall ensure that the following documents and other records are kept for at least 15 years:

1. Every record or report related to a test required under any of the following provisions:
   i. Subsections 13-2 (3) and 13-4 (3) and sections 13-8 and 13-9 of Schedule 13.
   ii. Sections 15-2, 15-5 and 15-6 of Schedule 15.
   iii. Section 17-13 of Schedule 17.
   iv. Sections 18-10 to 18-13 of Schedule 18.
2. Every report prepared under Schedule 21.
3. Every report referred to in paragraph 7 of subsection 2 (2) or clause 2 (3) (a) that is related to the system's raw water supply.
4. If the owner gave the Director a written statement by a licensed engineering practitioner under subsection 21-2 (3) of Schedule 21, a copy of the OWRA approval referred to in that subsection. O. Reg. 247/06, s. 12; O. Reg. 399/07, s. 4 (3); O. Reg. 418/09, s. 1 (5).

(4) The owner of a drinking water system shall ensure that reports prepared under Schedule 21 are kept at a location where they can conveniently be viewed by a provincial officer who is inspecting the system's water treatment equipment. O. Reg. 247/06, s. 12.

(5) If the Director or a provincial officer makes a request for a document or other record referred to in subsection (1), (2) or (3), the owner of a drinking water system shall ensure that the document or other record is given to the Director or provincial officer within such period as the Director or provincial officer may specify. O. Reg. 247/06, s. 12.

(6) If a licensed engineering practitioner or professional hydrogeologist is preparing an opinion, report or assessment referred to in this Regulation in respect of a drinking water system and makes a request for a document or other record referred to in subsection (1), (2) or (3), the owner of the system shall ensure that the document or other record is given to the licensed engineering practitioner or professional hydrogeologist within such period as the licensed engineering practitioner or professional hydrogeologist may specify. O. Reg. 247/06, s. 12; O. Reg. 418/09, s. 1 (5).

(7) For the purpose of this section,

(a) a reference in subsection (1), (2) or (3) to tests required under a provision of this Regulation shall be deemed to include a reference to,

(i) tests required for the same parameter under section 7 of Ontario Regulation 459/00 (Drinking Water Protection — Larger Water Works), if that regulation applied to the drinking water system, or

(ii) tests required for the same parameter under section 9 of Ontario Regulation 505/01 (Drinking Water Protection — Small Water Works Serving Designated Facilities), if that regulation applied to the drinking water system;

(b) a reference in paragraph 3 of subsection (2) to annual reports prepared under section 11 shall be deemed to include a reference to,

(i) reports prepared under section 12 of Ontario Regulation 459/00, if that regulation applied to the drinking water system, or

(ii) reports prepared under section 15 of Ontario Regulation 505/01, if that regulation applied to the drinking water system; and

(c) a reference in paragraph 2 of subsection (3) to reports prepared under Schedule 21 shall be deemed to include a reference to reports prepared under section 5 of Ontario Regulation 505/01, if that regulation applied to the drinking water system. O. Reg. 247/06, s. 12.

Forms

14. (1) Where this Regulation requires or permits the submission of a written notice or report or the posting of a warning notice, the notice or report must be in a form provided by or approved by the Director. O. Reg. 170/03, s. 14 (1).

(2) The Director may require that a document or other record that is given to the Director under this Regulation be given in an electronic format specified by the Director. O. Reg. 170/03, s. 14 (2).

Purpose of notice to interested authorities

15. The sole purpose of the provisions of this Regulation that require notice to be given to interested authorities is to provide interested authorities with information relating to compliance with this Regulation. O. Reg. 170/03, s. 15.

16. OMITTED (PROVIDES FOR COMING INTO FORCE OF PROVISIONS OF THE ENGLISH VERSION OF THIS REGULATION). O. Reg. 170/03, s. 16.

SCHEDULE 1
TREATMENT EQUIPMENT

Municipal: Large Residential
Small Residential

Application

1-1. This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.

General obligations

1-2. (1) The owner of a drinking water system shall ensure the following:

1. 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.
2. Water treatment equipment is provided in accordance with sections 1-3 to 1-5.

(2) The owner of a drinking water system and the operating authority for the system shall ensure the following:

1. The water treatment equipment is in operation whenever water is being supplied.
2. The water treatment equipment is operated in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.
3. The water treatment equipment required by section 1-3 or 1-4 is operated in a manner that achieves the design capabilities it is required to have under that section.
4. If the drinking water system's water treatment equipment provides chlorination or chloramination for secondary disinfection, the equipment is operated so that, at all times and at all locations within the distribution system,
    i. the free chlorine residual is never less than 0.05 milligrams per litre, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. the combined chlorine residual is never less than 0.25 milligrams per litre, if the drinking water system provides chloramination.

5. Adjustments to the water treatment equipment are carried out only by certified operators.

Primary disinfection for ground water raw water supply

1-3. The owner of a drinking water system that obtains water from a raw water supply that is ground water shall ensure provision of water treatment equipment that 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*, including at least 99 per cent removal or inactivation of viruses by the time,

(a) water leaves the point of entry treatment units, in the case of a drinking water system to which, pursuant to section 3-1.1 of Schedule 3, section 1-5 does not apply; or

(b) water enters the distribution system, in any other case.

Filtration and primary disinfection for surface water raw water supply

1-4. The owner of a drinking water system that obtains water from a raw water supply that is surface water shall ensure provision of,

(a) water treatment equipment that,

(i) is designed to be capable of chemically assisted filtration, and

(ii) 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*, including 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,

(A) water leaves the point of entry treatment units, in the case of a drinking water system to which, pursuant to section 3-1.1 of Schedule 3, section 1-5 does not apply, or

(B) water enters the distribution system, in any other case; or

(b) other water treatment equipment that, in the Director's opinion, is designed to be capable of producing water of equal or better quality than the equipment described in clause (a).

Secondary disinfection

1-5. The owner of a drinking water system shall ensure provision of,

(a) water treatment equipment that is designed to be capable of secondary disinfection using chlorination or chloramination in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario* and that is designed to be capable of achieving, at all locations within the distribution system,

(i) a free chlorine residual of 0.2 milligrams per litre, if the drinking water system provides chlorination and does not provide chloramination, or

(ii) a combined chlorine residual of 1.0 milligrams per litre, if the drinking water system provides chloramination; or

(b) other water treatment equipment that, in the Director's opinion, is designed to be capable of providing secondary disinfection that is equivalent to or better than the secondary disinfection provided by the equipment described in clause (a).

Primary disinfection equipment that does not use chlorination or chloramination

1-6. (1) 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.

(2) The standards referred to in subsection (1) are the following:

1. The disinfection equipment must have a feature that causes an alarm to signal immediately in the following locations if the disinfection equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection:

i. The building or structure where the disinfection equipment is installed.

ii. A location where a person is present, if a person is not always present at the building or structure where the disinfection equipment is installed.

2. If an alarm signals under paragraph 1, a certified operator who is at the building or structure where the disinfection equipment is installed must take appropriate action or, if no certified operator is at that location, a certified operator must promptly be dispatched to that location to take appropriate action.

3. A certified operator who is dispatched under paragraph 2 must arrive at the building or structure where the disinfection equipment is installed as soon as possible.

(3) If primary disinfection equipment that does not use chlorination or chloramination is provided by a large municipal residential system, the owner of the system and the operating authority for the system shall ensure that the disinfection equipment has a recording device that continuously records the performance of the disinfection equipment.

OWRA approvals and OWRA orders with less stringent requirements

1-7. This Schedule prevails over an OWRA approval or OWRA order granted or issued before August 1, 2000 that provides for less stringent requirements.

OWRA approvals that give additional time for compliance

1-8. If an OWRA approval granted on or after August 1, 2000 provides that a drinking water system is required, by a date specified in the approval that is later than the date this Regulation comes into force,

(a) to comply with section 5 of Ontario Regulation 459/00 (Drinking Water Protection — Larger Water Works); or

(b) to ensure that water treatment equipment is provided for primary disinfection, secondary disinfection or filtration,

sections 1-3 to 1-6 do not apply until the date specified in the approval.

1-9. REVOKED: O. Reg. 253/05, s. 11.

O. Reg. 170/03, Sched. 1; O. Reg. 249/03, s. 8; O. Reg. 253/05, s. 11; O. Reg. 247/06, s. 13; O. Reg. 326/08, s. 4; O. Reg. 418/09, s. 11; O. Reg. 458/16, s. 8.

SCHEDULE 2
TREATMENT EQUIPMENT

Municipal: Large Non-Residential
Small Non-Residential

Non-Municipal: Year-Round Residential
Seasonal Residential
Large Non-Residential
Small Non-Residential

Application

2-1. This Schedule applies to the following drinking water systems:

1. Large municipal non-residential systems.
2. Small municipal non-residential systems.
3. Non-municipal year-round residential systems.
4. Non-municipal seasonal residential systems.
5. Large non-municipal non-residential systems.
6. Small non-municipal non-residential systems.

General obligations

2-2. (1) The owner of a drinking water system shall ensure the following:

1. 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.
2. Water treatment equipment is provided in accordance with sections 2-3 to 2-5.

(2) The owner of a drinking water system and the operating authority for the system shall ensure the following:

1. The water treatment equipment is in operation whenever water is being supplied.
2. The water treatment equipment is operated in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.
3. The water treatment equipment required by section 2-3 or 2-4 is operated in a manner that achieves the design capabilities it is required to have under that section.
4. The water treatment equipment required by section 2-5 is operated so that, at all times and at all locations within the distribution system,
    i. the free chlorine residual is never less than 0.05 milligrams per litre, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. the combined chlorine residual is never less than 0.25 milligrams per litre, if the drinking water system provides

chloramination.

5. The water treatment equipment is properly maintained.

6. Written operating instructions for the water treatment equipment are kept near the equipment.

7. Clearly marked adequate supplies of chemicals or other materials necessary for the operation of the water treatment equipment are kept nearby, separate from other chemicals and materials that are not used for the drinking water system.

8. Replacement parts are kept nearby for those parts of the water treatment equipment that may be expected to require periodic replacement.

9. Adjustments to the water treatment equipment are carried out only by,

i. certified operators, in the case of,

A. a large municipal non-residential system,

B. a non-municipal year-round residential system, or

C. a large non-municipal non-residential system, or

ii. trained persons, in the case of,

A. a small municipal non-residential system,

B. a non-municipal seasonal residential system, or

C. a small non-municipal non-residential system.

(3) Subsection (2) does not apply to a large municipal non-residential system, small municipal non-residential system, large non-municipal non-residential system or small non-municipal non-residential system on days when the system is not supplying water to any designated facilities or public facilities that are open.

(4) Subsection (2) does not apply to a non-municipal seasonal residential system during a period of 60 or more consecutive days when the system,

(a) is not supplying water to any designated facilities or public facilities that are open;

(b) is not supplying water to any major residential development; and

(c) is not supplying water to any trailer park or campground that has more than five service connections.

Primary disinfection for ground water raw water supply

2-3. (1) The owner of a drinking water system that obtains water from a raw water supply that is ground water shall ensure provision of water treatment equipment that 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*, including at least 99 per cent removal or inactivation of viruses by the time,

(a) water leaves the point of entry treatment units, in the case of a drinking water system to which, pursuant to section 3-1.1 or 3-2 of Schedule 3, section 2-5 does not apply; or

(b) water enters the distribution system, in any other case.

(2) Subsection (1) also applies in respect of a non-municipal year-round residential system that is deemed, under paragraph 4 or 5 of subsection 2 (2), to obtain water from a raw water supply that is ground water under the direct influence of surface water if,

(a) the system does not serve any designated facilities; and

(b) the owner of the system gives the Director,

(i) a written notice that complies with section 2-12, and

(ii) a written notice stating that the owner of the system and the operating authority for the system have complied with section 11-3 of Schedule 11 and sections 18-5 and 18-6 of Schedule 18 for a period of 12 consecutive months and that, during that period,

(A) no test results from water samples described in subsection 11-3 (1) of Schedule 11 from the system's raw water indicated the presence of *Escherichia coli* (E. coli) or total coliforms, and

(B) no test results from water samples taken under section 18-5 or 18-6 of Schedule 18 indicated the presence of *Escherichia coli* (E. coli) or total coliforms.

(3) Subsection (1) also applies, until the end of the month following the first anniversary of the day the system commences operation, in respect of a non-municipal year-round residential system that is deemed under paragraph 4 or 5 of subsection 2 (2) to obtain water from a raw water supply that is ground water under the direct influence of surface water, if,

(a) the system commences operation after this section comes into force;

(b) the system does not serve any designated facilities; and

(c) before the system commences operation, the owner of the system gives the Director a written notice that complies with section 2-12.

(4) Subsections (2) and (3) cease to apply to a non-municipal year-round residential system 90 days after,

(a) a test result obtained under paragraph 2 of section 18-5 of Schedule 18 indicates the presence of *Escherichia coli* (E. coli) in a water sample; or

(b) a test result obtained under paragraph 1 of section 18-6 of Schedule 18 indicates the presence of total coliforms in a water sample, if the day on which the sample was taken is the second day during a period of 12 consecutive months on which a water sample was taken under paragraph 1 of section 18-6 of Schedule 18 that produced a test result indicating the presence of total coliforms.

(5) No notice may be given to the Director under clause (2) (b) if subsection (2) or (3) previously ceased to apply to the system under subsection (4).

Filtration and primary disinfection for surface water raw water supply

2-4. (1) The owner of a drinking water system that obtains water from a raw water supply that is surface water shall ensure provision of,

(a) water treatment equipment that,

(i) is designed to be capable of chemically assisted filtration, and

(ii) 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*, including 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,

(A) water leaves the point of entry treatment units, in the case of a drinking water system to which, pursuant to section 3-1.1 or 3-2 of Schedule 3, section 2-5 does not apply, or

(B) water enters the distribution system, in any other case; or

(b) other water treatment equipment that, in the opinion of a licensed engineering practitioner, is designed to be capable of producing water of equal or better quality than the equipment described in clause (a).

(2) Subsection (1) does not apply in respect of a non-municipal year-round residential system if subsection 2-3 (1) applies in respect of

the system.

Secondary disinfection

2-5. (1) The owner of a drinking water system shall ensure provision of,

(a) water treatment equipment that is designed to be capable of secondary disinfection using chlorination or chloramination in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario* and that is designed to be capable of achieving, at all locations within the distribution system,

(i) a free chlorine residual of 0.2 milligrams per litre, if the drinking water system provides chlorination and does not provide chloramination, or

(ii) a combined chlorine residual of 1.0 milligrams per litre, if the drinking water system provides chloramination; or

(b) 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 equipment described in clause (a).

(2) This section does not apply if,

(a) the owner complies with section 2-3 or 2-4, whichever is applicable; and

(b) all parts of the drinking water system and of the plumbing connected to the drinking water system that are downstream of the equipment provided in accordance with section 2-3 or 2-4 are enclosed in a building or other protective structure.

Primary disinfection equipment that does not use chlorination or chloramination

2-6. (1) 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 person described in paragraph 9 of subsection 2-2 (2) takes appropriate action at the location where the equipment is installed before water is again directed to users of water treated by the equipment.

(2) The standards referred to in subsection (1) are the following:

1. The disinfection equipment must have a feature that causes an alarm to signal immediately in the following locations if the disinfection equipment malfunctions, loses power or ceases to provide the appropriate level of disinfection:

i. The building or structure where the disinfection equipment is installed.

ii. A location where a person is present, if a person is not always present at the building or structure where the disinfection equipment is installed.

2. If an alarm signals under paragraph 1, a person described in paragraph 9 of subsection 2-2 (2) who is at the building or structure where the disinfection equipment is installed must take appropriate action or, if no such person is at that location, a person described in paragraph 9 of subsection 2-2 (2) must promptly be dispatched to that location to take appropriate action.

3. A person who is dispatched under paragraph 2 must arrive at the building or structure where the disinfection equipment is installed as soon as possible.

(3) If a drinking water system provides primary disinfection with ultraviolet light disinfection equipment and not with chlorination or chloramination, the owner of the system and the operating authority for the system shall ensure that any sensors that form part of the equipment's monitoring system are checked and calibrated in accordance with the manufacturer's instructions.

OWRA approvals and OWRA orders with less stringent requirements

2-7. This Schedule prevails over an OWRA approval or OWRA order granted or issued before August 1, 2000 that provides for less stringent requirements.

OWRA approvals and OWRA orders that give additional time for compliance

2-8. If an OWRA approval or OWRA order granted or issued on or after August 1, 2000 provides that a drinking water system is required, by a date specified in the approval or order that is later than the date this Regulation comes into force,

(a) to comply with section 5 of Ontario Regulation 459/00 (Drinking Water Protection — Larger Water Works) or section 4 of Ontario Regulation 505/01 (Drinking Water Protection — Smaller Water Works Serving Designated Facilities); or

(b) to ensure that water treatment equipment is provided for primary disinfection, secondary disinfection or filtration,

sections 2-2 to 2-6 do not apply until the date specified in the approval or order.

Delayed compliance

2-9. Subject to section 2-8, if a non-municipal year-round residential system does not serve a designated facility, the system commenced operation before June 1, 2003 and, immediately before that day, the system was not in compliance with sections 2-2 to 2-6, those sections do not apply until July 1, 2006.

2-10. REVOKED: O. Reg. 247/06, s. 14 (7).

Exceptions

2-11. (1) This Schedule, except paragraph 1 of subsection 2-2 (1), does not apply to a non-municipal year-round residential system if,

(a) the system does not serve any designated facilities;

(b) the system obtains water from a raw water supply that is ground water; and

(c) the owner of the system gives the Director,

(i) a written notice that complies with section 2-12, and

(ii) a written notice stating that the owner of the system and the operating authority for the system have complied with section 11-3 of Schedule 11 and sections 18-5 and 18-6 of Schedule 18 for a period of 12 consecutive months and that, during that period,

(A) no test results from water samples described in subsection 11-3 (1) of Schedule 11 from the system's raw water indicated the presence of *Escherichia coli* (E. coli) or total coliforms, and

(B) no test results from water samples taken under section 18-5 or 18-6 of Schedule 18 indicated the presence of *Escherichia coli* (E. coli) or total coliforms.

(2) This Schedule, except paragraph 1 of subsection 2-2 (1), does not apply to a non-municipal year-round residential system until the end of the month following the first anniversary of the day the system commences operation if,

(a) the system commences operation after this section comes into force;

(b) the system does not serve any designated facilities;

(c) the system obtains water from a raw water supply that is ground water; and

(d) before the system commences operation, the owner of the system gives the Director a written notice that complies with section 2-12.

(3) Subsections (1) and (2) cease to apply to a non-municipal year-round residential system 90 days after,

(a) a test result obtained under paragraph 2 of section 18-5 of Schedule 18 indicates the presence of *Escherichia coli* (E. coli) in a water sample; or

(b) a test result obtained under paragraph 1 of section 18-6 of Schedule 18 indicates the presence of total coliforms in a water sample, if the day on which the sample was taken is the second day during a period of 12 consecutive months on which a water sample was taken under paragraph 1 of section 18-6 of Schedule 18 that produced a test result indicating the presence of total coliforms.

(4) No notice may be given to the Director under clause (1) (c) if subsection (1) or (2) previously ceased to apply to the system under subsection (3).

Well technician's notice

2-12. (1) For the purpose of this Schedule, a notice complies with this section with respect to a non-municipal year-round residential system if the notice is signed by a person described in subsection (2) and the notice states that, after the day this section came into force, the person inspected each well that is used as a raw water supply for the system and, for each of those wells, the person is of the opinion that,

(a) the well does not have a well pit;

(b) the well does not penetrate through the bottom of a bored or dug well;

(c) the well is accessible for cleaning, treatment, repair, testing, inspection and visual examination at all times;

(d) the site of the well is at an elevation higher than the immediately surrounding area;

(e) the site of the well is separated by at least the clearance distance required by Ontario Regulation 332/12 (Building Code), made under the *Building Code Act, 1992*, from a leaching bed system or other sewage system as defined in that regulation, including a sewage system that has not been constructed but for which a building permit has been issued;

(f) the site of the well is at least 15 metres from a source of pollution other than one mentioned in clause (e);

(g) the well is cased to,

(i) at least 15 centimetres above the floor, if a pump is installed directly over the well and a floor has been constructed around or adjacent to the casing, or

(ii) at least 30 centimetres above the ground surface, in any other case;

(h) the surface drainage is such that water will not collect or pond in the vicinity of the well, including the area above the annular space;

(i) the top of the well's casing is sealed with a commercially manufactured vermin-proof well cap, if a pump is not located directly over the well;

(j) the top of the well's casing is shielded in a manner sufficient to prevent entry of any material that may impair the quality of the water in the well, if a pump is installed directly over the well;

(k) the well's air vent extends above the ground surface a distance sufficient to prevent the entry of flood water from any anticipated flooding in the area;

(l) the open end of the well's air vent is shielded and screened in a manner sufficient to prevent the entry of any materials into the well;

(m) the well's casing does not impair the quality of water with which it comes in contact;

(n) the portion of the well's casing that is visible without a down-hole camera,

(i) is clean and free of contamination, and

(ii) is watertight;

(o) the portion of the well's casing that is visible without a down-hole camera has no joints, except for joints that,

(i) achieve a permanent, watertight bond, such as welded steel joints, and

(ii) are made so that the jointed casing does not impair the quality of water with which it comes in contact;

(p) any seams in the portion of the well's casing that is visible without a down-hole camera achieve a permanent watertight bond;

and

(q) a pitless adapter is used and the connection is watertight, if a connection to the casing of the well is made below the ground surface.

(2) The person referred to in subsection (1) is,

(a) a person who holds a well technician licence described as a Well Drilling licence in paragraph 1 of subsection 5 (1) of Regulation 903 of the Revised Regulations of Ontario, 1990 (Wells) made under the *Ontario Water Resources Act*;

(b) a licensed engineering practitioner who has experience in ground water supply;

(c) a professional hydrogeologist who has experience in ground water supply; or

(d) a person registered as a certified engineering technologist under the *Ontario Association of Certified Engineering Technicians and Technologists Act, 1998* who has experience in ground water supply.

(3) Words and expressions used in this section have the same meanings as in section 35 of the *Ontario Water Resources Act* and section 1 of Regulation 903 of the Revised Regulations of Ontario, 1990 (Wells) made under that Act.

O. Reg. 170/03, Sched. 2; O. Reg. 249/03, s. 9; O. Reg. 269/03, s. 7; O. Reg. 165/04, s. 4; O. Reg. 408/04, s. 2; O. Reg. 253/05, s. 12; O. Reg. 247/06, s. 14; O. Reg. 326/08, s. 5; O. Reg. 418/09, s. 1 (5), 12; O. Reg. 335/13, s. 1; O. Reg. 458/16, s. 9.

SCHEDULE 3
POINT OF ENTRY TREATMENT

Municipal: Small Residential
Large Non-Residential
Small Non-Residential

Non-Municipal: Year-Round Residential
Seasonal Residential
Large Non-Residential
Small Non-Residential

Application

3-1. This Schedule applies to the following drinking water systems:

0.1 Small municipal residential systems.

1. Large municipal non-residential systems.

2. Small municipal non-residential systems.

2.1 Non-municipal year-round residential systems.

2.2 Non-municipal seasonal residential systems.

3. Large non-municipal non-residential systems.

4. Small non-municipal non-residential systems.

Point of entry treatment units in residential systems

3-1.1 (1) Section 1-5 of Schedule 1 does not apply to a small municipal residential system, section 2-5 of Schedule 2 does not apply to a non-municipal year-round residential system that serves fewer than 101 private residences, and section 2-5 of Schedule 2 does not apply to a non-municipal seasonal residential system that has fewer than 101 service connections, if the following criteria are met:

1. A point of entry treatment unit owned or leased by the owner of the drinking water system is connected to the plumbing of every building and other structure that is part of a private residence, designated facility or public facility served by the system.

2. Every point of entry treatment unit 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.

3. None of the point of entry treatment units use chlorination or chloramination.

4. The owner of the drinking water system or the operating authority for the system has a record that,

i. sets out the location of each point of entry treatment unit and the date it was installed, and

ii. in the case of a small municipal residential system that requires an approval, drinking water works permit or municipal drinking water licence under the Act, contains a confirmation by the owner of the system that each point of entry treatment unit was installed in accordance with the approval, permit or licence.

5. The owner of the drinking water system has given the Director a written notice certifying that,

i. the owner of the drinking water system has given a written statement that contains the information set out in subsection (5) to the occupants of every private residence and the operators of every designated facility and public facility that is served by the system at the time the notice is given to the Director,

ii. the owner of the drinking water system has discussed the information set out in subsection (5), in person or by telephone, with an apparently adult occupant of every private residence and the operator of every designated facility and public facility that is served by the system at the time the notice is given to the Director, and

iii. the owner of the drinking water system has made reasonable efforts to give a written statement that contains the information set out in subsection (5) to the owner of every private residence, designated facility and public facility that is served by the system at the time the notice is given to the Director, if the owner of the residence or facility is not an occupant of the residence or the operator of the facility.

6. The owner of the drinking water system or the operating authority for the system gives notice to the occupants of a property where a point of entry treatment unit is located whenever the owner or operating authority requires permission to enter the property.

(2) If subsection (1) applies to a drinking water system and the system begins to serve another private residence, designated facility or public facility, the owner of the drinking water system shall promptly,

(a) give a written statement that contains the information set out in subsection (5) to the occupants of the private residence or the operator of the designated facility or public facility;

(b) discuss the information set out in subsection (5), in person or by telephone, with an apparently adult occupant of the private residence or the operator of the designated facility or public facility; and

(c) make reasonable efforts to give a written statement that contains the information set out in subsection (5) to the owner of the private residence, designated facility or public facility, if the owner of the residence or facility is not an occupant of the residence or the operator of the facility.

(3) If subsection (1) applies to a drinking water system and the owner of the system becomes aware that the occupants of a private residence served by the system have changed or that the operator of a designated facility or public facility served by the system has changed, the owner shall promptly,

(a) give a written statement that contains the information set out in subsection (5) to the occupants of the private residence or the operator of the designated facility or public facility; and

(b) discuss the information set out in subsection (5), in person or by telephone, with an apparently adult occupant of the private residence or the operator of the designated facility or public facility.

(4) If subsection (1) applies to a drinking water system, the owner of the system becomes aware that the owner of a private residence served by the system has changed or that the operator of a designated facility or public facility served by the system has changed, and

the owner of the residence or facility is not an occupant of the residence or the operator of the facility, the owner of the drinking water system shall promptly make reasonable efforts to give a written statement that contains the information set out in subsection (5) to the owner of the residence or facility.

(5) The following information is the information referred to in paragraph 5 of subsection (1) and in subsections (2), (3) and (4):

1. The water supplied to the private residence, designated facility or public facility, as the case may be, is treated by equipment known as a point of entry treatment unit, the purpose of which is to ensure the safety of the water.
2. A description of the location and appearance of the point of entry treatment unit that is sufficient to enable a person to identify the unit.
3. The point of entry treatment unit is owned or leased by the owner of the drinking water system and does not belong to the owner or occupants of the property where the unit is installed.
4. The point of entry treatment unit has a feature to ensure 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.
5. No person should damage or tamper with the point of entry treatment unit.
6. The owner of the drinking water system or the operating authority for the system will from time to time require access to the property where the point of entry treatment unit is installed to sample water and maintain the unit.
7. The owner of the drinking water system or, if an operating authority is responsible for the operation of the system, the operating authority, should be contacted if the supply of water is interrupted or if there is any reason to believe that the point of entry treatment unit requires repairs.
8. The owner of the drinking water system or, if an operating authority is responsible for the operation of the system, the operating authority, may be contacted if there are any questions about the point of entry treatment unit.
9. Information on how to contact the owner of the drinking water system or, if an operating authority is responsible for the operation of the system, on how to contact the operating authority.

(6) If subsection (1) applies to a small municipal residential system, the owner of the system and the operating authority for the system shall ensure that,

(a) each point of entry treatment unit is checked at least once every 12 months to confirm proper functioning; and

(b) a record is made of the date and time of every check performed under clause (a), the name of the person who performed the check and the results of the check.

(7) If subsection (1) applies to a drinking water system, the owner of the system and the operating authority for the system shall ensure that a record is made whenever the owner or operating authority fails to obtain access to a property where a point of entry treatment unit is installed for the purpose of complying with,

(a) clause (6) (a);

(b) section 8-2 of Schedule 8 or section 9-2 of Schedule 9; or

(c) section 11-2 of Schedule 11 or section 12-2 of Schedule 12.

Point of entry treatment units in non-residential systems

3-2. Section 2-5 of Schedule 2 does not apply to a large municipal non-residential system, a small municipal non-residential system, a large non-municipal non-residential system or a small non-municipal non-residential system if the following criteria are met:

1. A point of entry treatment unit owned or leased by the owner of the drinking water system is connected to the plumbing of every building and other structure that is part of a designated facility or public facility served by the system.
2. The owner of the drinking water system or the operating authority for the system gives notice to the occupants of a property where a point of entry treatment unit is located whenever the owner or operating authority requires permission to enter the

property.

3. The owner of the drinking water system has access at all times to shut-off valves that enable the owner to shut off the supply of water to the plumbing to which point of entry treatment units are connected.

O. Reg. 170/03, Sched. 3; O. Reg. 249/03, s. 10; O. Reg. 269/03, s. 8; O. Reg. 247/06, s. 15; O. Reg. 418/09, s. 13.

SCHEDULES 4, 5 REVOKED: O. REG. 458/16, S. 10.

SCHEDULE 6
OPERATIONAL CHECKS, SAMPLING AND TESTING — GENERAL

Application

6-1. This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.
3. Large municipal non-residential systems.
4. Small municipal non-residential systems.
5. Non-municipal year-round residential systems.
6. Non-municipal seasonal residential systems.
7. Large non-municipal non-residential systems.
8. Small non-municipal non-residential systems.

Frequency of sampling and equipment checks

6-1.1 (1) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires at least one water sample to be taken every week 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 week for the purpose of being tested for that parameter is taken at least five days, and not more than 10 days, after a sample was taken for that purpose in the previous week.

(2) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires at least one water sample to be taken every two weeks 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 two-week period for the purpose of being tested for that parameter is taken at least 10 days, and not more than 20 days, after a sample was taken for that purpose in the previous two-week period.

(3) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires at least one water sample to be taken every month 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 month for the purpose of being tested for that parameter is taken at least 20 days, and not more than 40 days, after a sample was taken for that purpose in the previous month.

(4) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires at least one water sample to be taken every three months or in each calendar quarter 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 three-month period or calendar quarter for the purpose of being tested for that parameter is taken at least 60 days, and not more than 120 days, after a sample was taken for that purpose in the previous three-month period or calendar quarter.

(5) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires at least one water sample to be taken every 12 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 12-month period for the purpose of being tested for that parameter is taken not more than 30 days before or after the first anniversary of the day a sample was taken for that

purpose in the previous 12-month period.

(6) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires at least one water sample to be taken every 36 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 36-month period for the purpose of being tested for that parameter is taken not more than 60 days before or after the third anniversary of the day a sample was taken for that purpose in the previous 36-month period.

(7) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, 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.

(8) This section applies, with necessary modifications, if this Regulation or an approval, drinking water works permit, municipal drinking water licence or order, including an OWRA approval or OWRA order, requires equipment to be checked at intervals to which any of subsections (1) to (7) apply.

Location of samples

6-2. Unless otherwise specified, a person who is required to ensure that samples are taken under this Regulation, or under an approval, municipal drinking water licence or order, including an OWRA order, shall ensure that they are taken from the point at which water enters the drinking water systems' distribution system or plumbing that is connected to the drinking water system.

Microbiological samples and chlorine residual

6-3. (1) If this Regulation or an approval, municipal drinking water licence or order, including an OWRA order, requires a water sample to be taken and tested for a microbiological parameter, the owner of the drinking water system and the operating authority for the system shall ensure that another sample is taken at the same time from the same location and is tested immediately for,

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or

(b) combined chlorine residual, if the system provides chloramination.

(2) Subsection (1) does not apply to water samples taken from the drinking water system's raw water or raw water supply.

(3) Subsection (1) does not apply to sampling and testing for a microbiological parameter that is conducted by microbiological in-line testing equipment.

Form of sampling

6-4. (1) A person who is required to ensure that samples are taken under this Regulation, or under an approval, municipal drinking water licence or order, including an OWRA order, shall ensure that they are taken in the form of grab samples, unless continuous monitoring equipment or microbiological in-line testing equipment is authorized or required.

(2) Continuous monitoring equipment may be used for sampling and testing that is required under this Regulation, or under an approval, municipal drinking water licence or order, for,

(a) turbidity;

(b) fluoride;

(c) free chlorine residual; and

(d) free chlorine residual and total chlorine residual measured for the purpose of determining combined chlorine residual.

(3) Microbiological in-line testing equipment may be used for sampling and testing for a microbiological parameter that is required under

this Regulation, or under an approval, municipal drinking water licence or order, if the Director is of the opinion that the testing method used by the equipment and the person operating the equipment is equivalent to a testing method for the parameter that is accredited by an accreditation body for drinking water testing that is designated or established under the Act.

Continuous monitoring

6-5. (1) If a drinking water system uses continuous monitoring equipment for sampling and testing that is required under this Regulation, or under an approval, drinking water works permit, municipal drinking water licence or order, for a parameter set out in the Table to this section, the owner of the system and the operating authority for the system shall ensure that the following standards are met:

1. The continuous monitoring equipment must, except when no water is being directed to users of water sampled by the equipment,
    i. test for the parameter with at least the minimum frequency specified in the Table for the parameter, and
    ii. record the date, time, sampling location and result of every test for the parameter with at least the minimum frequency referred to in subparagraph i.
2. If the continuous monitoring equipment tests for a parameter more often than is required by subparagraph 1 i, the equipment may, instead of complying with subparagraph 1 ii,
    i. record the minimum, maximum and mean results of tests for the parameter for every period that is equal to the length of time referred to in subparagraph 1 i, along with the sampling location, the date of the tests conducted during the period and the time at the end of the period, and
    ii. record the result of every test that causes an alarm to signal under paragraph 1 of subsection (1.1), along with the sampling location and the date and time of the test.
3. Test results recorded under paragraph 1 or 2 must be examined, within 72 hours after the tests are conducted,
    i. by a certified operator, in the case of,
        A. a large municipal residential system,
        B. a small municipal residential system,
        C. a large municipal non-residential system,
        D. a non-municipal year-round residential system, or
        E. a large non-municipal non-residential system, or
    ii. by a trained person, in the case of,
        A. a non-municipal seasonal residential system,
        B. a small municipal non-residential system, or
        C. a small non-municipal non-residential system.
4. If test results are not examined under paragraph 3 at the location where the tests are conducted, the continuous monitoring equipment must transmit the results to the location where they are examined.
5. The continuous monitoring equipment must be designed and operated in accordance with the standards described in subsection

(1.1), or,

i. the continuous monitoring equipment must have a feature that ensures that no water is directed to users of water sampled by the equipment in the event that the equipment malfunctions or loses power or a test result for a parameter is above the maximum alarm standard or below the minimum alarm standard specified in the Table to this section for the parameter, and

ii. if the continuous monitoring equipment malfunctions or loses power or a test result for a parameter is above the maximum alarm standard or below the minimum alarm standard specified in the Table to this section for the parameter, a person who is qualified to examine test results under paragraph 3 takes appropriate action at the location where tests are conducted before water is again directed to users of water sampled by the equipment.

6., 7. Revoked: O. Reg. 247/06, s. 17 (5).

8. The continuous monitoring equipment must be checked and calibrated in accordance with the manufacturer's instructions.

9. If the manufacturer's instructions do not indicate how often to check and calibrate the continuous monitoring equipment, the equipment must be checked and calibrated at least once a month while the drinking water system is in operation, in the case of,

i. a small municipal non-residential system,

ii. a non-municipal seasonal residential system, or

iii. a small non-municipal non-residential system.

10. 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 greater than 1.0 milligrams per litre,

iii. 0.1 Nephelometric Turbidity Units (NTU), in the case of turbidity.

(1.1) The standards referred to in paragraph 5 of subsection (1) are the following:

1. The continuous monitoring equipment must cause an alarm to signal immediately at the following locations if the equipment malfunctions or loses power or a test result for a parameter is above the maximum alarm standard or below the minimum alarm standard specified in the Table to this section for the parameter:

i. The location where the equipment conducts tests.

ii. A location where a person is present, if a person is not always present at the location where the equipment conducts tests.

iii. Every designated facility served by the drinking water system, unless the system is a large municipal residential system or a small municipal residential system.

2. A person qualified to examine test results under paragraph 3 of subsection (1) must take appropriate action if the person is at the location where tests are conducted and,

   i. an alarm signals under paragraph 1,

   ii. a record of a test result indicates that an alarm should have signalled under paragraph 1, or

   iii. there is good reason to believe that the continuous monitoring equipment has malfunctioned or lost power.

3. A person qualified to examine test results under paragraph 3 of subsection (1) must promptly be dispatched to the location where tests are conducted to take appropriate action if no person qualified to examine test results under paragraph 3 of subsection (1) is at that location and,

   i. an alarm signals under paragraph 1, unless a person qualified to examine test results under paragraph 3 of subsection (1) determines that,

      A. the alarm signalled because a test result for a parameter was above the maximum alarm standard or below the minimum alarm standard specified in the Table to this section for the parameter, and

      B. within two minutes, a further test result indicated that the parameter was no longer above the maximum alarm standard or below the minimum alarm standard, as the case may be,

   ii. a record of a test result indicates that an alarm should have signalled under paragraph 1, or

   iii. there is good reason to believe that the continuous monitoring equipment has malfunctioned or lost power.

4. A person who is dispatched under paragraph 3 must arrive at the location where tests are conducted as soon as possible.

(2) For the purposes of the Table to this section, the concentration of free chlorine residual or combined chlorine residual that is required to achieve primary disinfection for the drinking water system shall be determined in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.

TABLE

Item	Parameter	Minimum Testing and Recording Frequency	Maximum Alarm Standard	Minimum Alarm Standard
1.	Free chlorine residual required to achieve primary disinfection	5 minutes	Not applicable	0.1 milligrams per litre less than the concentration of free chlorine residual that is required to achieve primary disinfection
2.	Free chlorine residual and total chlorine residual measured for the purpose of determining combined chlorine residual required to achieve primary disinfection	5 minutes	Not applicable	0.1 milligrams per litre less than the concentration of combined chlorine residual that is required to achieve primary disinfection
3.	Free chlorine residual in a distribution sample	1 hour	Not applicable	0.05 milligrams per litre

4.	Free chlorine residual and total chlorine residual measured for the purpose of determining combined chlorine residual in a distribution sample	1 hour	Not applicable	0.25 milligrams per litre
5.	Turbidity	15 minutes	1.0 Nephelometric Turbidity Units (NTU)	Not applicable

Turbidity testing

6-6. If a water sample is required to be taken and tested for turbidity, the owner of the drinking water system and the operating authority for the system shall ensure that the testing is conducted using a turbidity meter that measures turbidity in Nephelometric Turbidity Units (NTU).

Chlorine residual testing

6-7. (1) If a water sample is required to be taken and tested for free chlorine residual or combined chlorine residual, the owner of the drinking water system and the operating authority for the system shall ensure that the testing is conducted using,

(a) an electronic direct readout colourimetric or amperometric chlorine analyzer; or

(b) another device, if, based on an inspection of the device and on a review of relevant records and documentation, a licensed engineering practitioner states in writing that it is equivalent to or better than an electronic direct readout colourimetric or amperometric chlorine analyzer, having regard to accuracy, reliability and ease of use.

(2) Subsection (1) does not apply to testing that is conducted by continuous monitoring equipment.

Sample handling

6-8. If this Regulation or an approval, municipal drinking water licence or order, including an OWRA order, requires a water sample to be tested for a parameter by a laboratory, the owner of the drinking water system and the operating authority for the system shall ensure that, subject to the other provisions of this Regulation, the sample is taken and handled in accordance with the directions of the laboratory to which the sample will be delivered for testing, including directions with respect to,

(a) collection procedures;

(b) the use of specified kinds of containers or of containers that are provided by the laboratory;

(c) the labelling of samples;

(d) the completion and submission of forms that are provided by the laboratory;

(e) methods of transporting samples, including temperature conditions that must be maintained during transportation; and

(f) time periods for delivery of samples.

Testing by laboratories

6-9. (1) REVOKED: O. Reg. 249/03, s. 12 (5).

(2) REVOKED: O. Reg. 249/03, s. 12 (6).

(3) REVOKED: O. Reg. 249/03, s. 12 (8).

(4) If a test of a water sample for a parameter is required by this Regulation, or by an approval, municipal drinking water licence or order, including an OWRA order, the owner of the drinking water system and the operating authority for the system shall ensure that written notice of the identity of the laboratory that will conduct the test is given to the Director before the sample is tested, unless,

(a) the Director has previously been notified under this subsection that a water sample from the drinking water system was to be tested for that parameter by that laboratory; or

(b) before this Regulation came into force, the Director was previously notified in accordance with Ontario Regulation 459/00 (Drinking Water Protection — Larger Water Works) or Ontario Regulation 505/01 (Drinking Water Protection — Smaller Water Works Serving Designated Facilities) that a water sample from the drinking water system was to be tested for that parameter by that laboratory.

(5) REVOKED: O. Reg. 249/03, s. 12 (10).

(6) If a test of a water sample for a parameter is required by an approval, municipal drinking water licence or order, including an OWRA order, and the parameter is identified in the approval or order as a health-related parameter, the owner of the drinking water system and the operating authority for the system shall ensure that the laboratory that conducts the testing is informed, when the sample is sent to the laboratory, of the maximum concentration set out for the parameter in the approval or order.

(7)-(9) REVOKED: O. Reg. 249/03, s. 12 (11).

Records

6-10. (1) The owner of a drinking water system and the operating authority for the system shall ensure that, for every sample required by this Regulation or by an approval, municipal drinking water licence or order, including an OWRA order, a record is made of the following information:

1. The date and time the sample was taken, the location where the sample was taken and the name of the person who took the sample.
2. If the sample is taken under section 7 of this Regulation or Schedule 7, 8 or 9, the date and time the sample was tested, the name of the person who conducted the test, and the results of the test.
3. If the sample is taken from a drinking water system's distribution system under section 15.1-4 or 15.1-5 of Schedule 15.1, the addresses of all premises served by the plumbing from which samples were taken on the same day in accordance with subsection 15.1-6 (3).
4. If the sample is taken under section 15.1-7 of Schedule 15.1 and tested for pH,
    i. the date and time of the test,
    ii. the name of the person who conducted it, and
    iii. the results of the test.

(2) Subsection (1) does not apply to a sample tested by continuous monitoring equipment or microbiological in-line testing equipment.

OWRA orders

6-11. If an OWRA order requires samples to be taken and tested for a parameter and a provision of Schedules 7 to 15.2 also requires samples to be taken and tested for the parameter, the provision of Schedules 7 to 15.2 prevails.

OWRA approvals

6-12. (1) If an OWRA approval requires more stringent sampling or testing than a provision of this Schedule or Schedules 7 to 15.2, the OWRA approval prevails.

(2) If an OWRA approval requires less stringent sampling or testing than a provision of this Schedule or Schedules 7 to 15.2, the provision of this Schedule or Schedules 7 to 15.2 prevails.

O. Reg. 170/03, Sched. 6; O. Reg. 249/03, s. 12; O. Reg. 269/03, s. 9; O. Reg. 253/05, s. 13; O. Reg. 247/06, s. 17; O. Reg. 399/07,

s. 5; O. Reg. 326/08, s. 7; O. Reg. 418/09, ss. 1 (5), 15; O. Reg. 374/15, s. 2; O. Reg. 458/16, s. 11.

SCHEDULE 7
OPERATIONAL CHECKS

Municipal: Large Residential
Small Residential

Application

7-1. This Schedule applies to the following drinking water systems.

1. Large municipal residential systems.
2. Small municipal residential systems.

Chlorine residual

7-2. (1) The owner of a drinking water system that provides chlorination for primary disinfection shall ensure that sampling and testing for free chlorine residual is carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.

(2) The owner of a drinking water system that provides chloramination for primary disinfection shall ensure that sampling and testing for combined chlorine residual is carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.

(3) The owner of a large municipal residential system that provides secondary disinfection and the operating authority for the system shall ensure that at least seven distribution samples are taken each week in accordance with subsection (4) and are tested immediately for,

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or

(b) combined chlorine residual, if the system provides chloramination.

(4) The following rules apply to the distribution samples referred to in subsection (3) unless at least one sample is taken on each day of the week:

1. At least four of the samples must be taken on one day of the week, at least 48 hours after the last sample was taken in the previous week.
2. At least three of the samples must be taken on a second day of the week, at least 48 hours after the last sample was taken on the day referred to in paragraph 1.
3. When more than one sample is taken on the same day of the week under paragraph 1 or 2, each sample must be taken from a different location.

(5) The owner of a small municipal residential system that provides secondary disinfection and the operating authority for the system shall ensure that at least two distribution samples are taken each week in accordance with subsection (6) and are tested immediately for,

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or

(b) combined chlorine residual, if the system provides chloramination.

(6) 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).

Turbidity

7-3. (1) The owner of a drinking water system and the operating authority for the system shall ensure that a water sample is taken at

least once every month, from a location that is before raw water enters the treatment system, and is tested for turbidity.

(1.1) If the drinking water system obtains water from a raw water supply that is ground water, the owner of the system and the operating authority for the system shall ensure that a sample is taken under subsection (1) from each well that is supplying water to the system.

(2) If a drinking water system obtains water from a raw water supply that is surface water and the system provides filtration,

(a) subsection (1) does not apply; and

(b) the owner of the system shall ensure that sampling and testing for turbidity is carried out by continuous monitoring equipment on each filter effluent line.

Fluoride

7-4. If a drinking water system provides fluoridation, the owner of the system and the operating authority for the system shall ensure that a water sample is taken at the end of the fluoridation process at least once every day and is tested for fluoride.

Testing by certified operators or water quality analysts

7-5. (1) The owner of a drinking water system and the operating authority for the system shall ensure that every test required by this Schedule is conducted by a certified operator or a water quality analyst.

(1.1) Despite subsection (1), a test required by section 7-2 or 7-3 at a small municipal residential system may be conducted by a person who is not a certified operator or water quality analyst if the person,

(a) has been trained by a certified operator to conduct the test;

(b) works under the supervision of a certified operator; and

(c) immediately advises a certified operator of all test results.

(2) Subsection (1) does not apply to tests conducted by continuous monitoring equipment.

O. Reg. 170/03, Sched. 7; O. Reg. 249/03, s. 13; O. Reg. 247/06, s. 18; O. Reg. 402/06, s. 1; O. Reg. 326/08, s. 8; O. Reg. 418/09, s. 16.

SCHEDULE 8
MAINTENANCE AND OPERATIONAL CHECKS

Municipal: Large Non-Residential

Non-Municipal: Year-Round Residential
Large Non-Residential

Application

8-1. This Schedule applies to the following drinking water systems:

1. Large municipal non-residential systems.
2. Non-municipal year-round residential systems.
3. Large non-municipal non-residential systems.

Equipment maintenance

8-2. (1) If a report that complies with section 21-5 of Schedule 21 has been prepared in respect of a drinking water system in accordance with that Schedule, the owner of the system and the operating authority for the system shall ensure that the maintenance schedule referred to in clause 21-5 (d) of Schedule 21 is complied with by a certified operator.

(2) If subsection (1) does not apply but a manufacturer of a drinking water system's water treatment equipment has given instructions

with respect to the checking or maintenance of the equipment, the owner of the system and the operating authority for the system shall ensure that the instructions are complied with by a certified operator.

(3) If subsections (1) and (2) do not apply and a drinking water system provides chlorination or chloramination, the owner of the system and the operating authority for the system shall ensure that all water treatment equipment is checked at least once every week by a certified operator to confirm proper functioning.

(4) If subsections (1), (2) and (3) do not apply, the owner of a drinking water system and the operating authority for the system shall ensure that all water treatment equipment is checked at least once every three months by a certified operator to confirm proper functioning.

(5) The owner of the drinking water system and the operating authority for the system shall ensure that a record is made of the date and time of every action taken under subsections (1) to (4), the name of the person who took the action and the results of the action.

Chlorine residual

8-3. (1) The owner of a drinking water system that provides chlorination for primary disinfection and the operating authority for the system shall ensure that a water sample is taken at least once every day, in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*, and is tested immediately for free chlorine residual.

(2) The owner of a drinking water system that provides chloramination for primary disinfection shall ensure that sampling and testing for combined chlorine residual is carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.

(3) The owner of a drinking water system that provides secondary disinfection and the operating authority for the system shall ensure that at least two distribution samples are taken each week in accordance with subsection (3.1) and are tested immediately for,

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or

(b) combined chlorine residual, if the system provides chloramination.

(3.1) At least one of the distribution samples referred to in subsection (3) must be taken at least 48 hours after, and during the same week as, one of the other distribution samples referred to in subsection (3).

(4) Subsection (3) does not apply if,

(a) the owner complies with section 2-3 or 2-4 of Schedule 2, whichever is applicable; and

(b) all parts of the drinking water system and of the plumbing connected to the drinking water system that are downstream of the equipment provided in accordance with section 2-3 or 2-4 of Schedule 2 are enclosed in a building or other protective structure.

Turbidity

8-4. (1) The owner of a drinking water system that obtains water from a raw water supply that is ground water, and the operating authority for the system, shall ensure that a water sample is taken at least once every month, from a location that is before raw water enters the treatment system, and is tested for turbidity.

(1.1) If the drinking water system obtains water from a raw water supply that is ground water, the owner of the system and the operating authority for the system shall ensure that a sample is taken under subsection (1) from each well that is supplying water to the system.

(2) If, with respect to a drinking water system that obtains water from a raw water supply that is surface water, continuous monitoring equipment is required to comply with section 2-4 of Schedule 2, the owner of the system shall ensure that sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line.

(3) If subsection (2) does not apply to a drinking water system that obtains water from a raw water supply that is surface water, the owner of the system, and the operating authority for the system, shall ensure that a water sample is taken at least once every day on each filter effluent line and is tested immediately for turbidity.

(3.1) Subsections (2) and (3) do not apply to a large municipal non-residential system or large non-municipal non-residential system that provides ultraviolet light disinfection equipment for primary disinfection and does not use chlorination or chloramination for primary disinfection, if,

(a) section 2-6 of Schedule 2 is complied with; and

(b) the ultraviolet light 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.

(4) Subsections (2) and (3) do not apply to a drinking water system until the equipment required to ensure compliance with Schedule 2 commences operation.

Testing by certified operators or water quality analysts

8-5. (1) The owner of a drinking water system and the operating authority for the system shall ensure that every test required by this Schedule is conducted by a certified operator or a water quality analyst.

(1.1) Despite subsection (1), a test required by this Schedule may be conducted by a person who is not a certified operator or water quality analyst if the person,

(a) has been trained by a certified operator to conduct the test;

(b) works under the supervision of a certified operator; and

(c) immediately advises a certified operator of all test results.

(2) Subsection (1) does not apply to tests conducted by continuous monitoring equipment.

Non-residential systems

8-6. Sections 8-2, 8-3 and 8-4 do not apply to the following drinking water systems during days on which all designated facilities and all public facilities served by the system are not open:

1. A large municipal non-residential system.
2. A large non-municipal non-residential system.

Non-municipal year-round residential system: certified operators

8-6.1 If, pursuant to subsection 2-11 (1) or (2) of Schedule 2, the owner of a non-municipal year-round residential system is not required to comply with provisions of that Schedule, a reference in this Schedule to a certified operator shall be deemed, with respect to that system, to be a reference to any person.

Transition: certified operators

8-7. If the owner of a drinking water system is not required to comply with sections 2-2 to 2-6 of Schedule 2 until after June 1, 2003, a reference in this Schedule to a certified operator shall be deemed, with respect to that system, to be a reference to any person until the equipment required to ensure compliance with Schedule 2 commences operation.

O. Reg. 170/03, Sched. 8; O. Reg. 249/03, s. 14; O. Reg. 247/06, s. 19; O. Reg. 402/06, s. 2; O. Reg. 326/08, s. 9; O. Reg. 418/09, s. 17.

SCHEDULE 9
MAINTENANCE AND OPERATIONAL CHECKS

Municipal: Small Non-Residential

Non-Municipal: Seasonal Residential
Small Non-Residential

Application

9-1. This Schedule applies to the following drinking water systems:

1. Small municipal non-residential systems.
2. Non-municipal seasonal residential systems.
3. Small non-municipal non-residential systems.

Equipment maintenance

9-2. (1) If a report that complies with section 21-5 of Schedule 21 has been prepared in respect of a drinking water system in accordance with that Schedule, the owner of the system and the operating authority for the system shall ensure that the maintenance schedule referred to in clause 21-5 (d) of Schedule 21 is complied with by a trained person.

(2) If subsection (1) does not apply but a manufacturer of a drinking water system's water treatment equipment has given instructions with respect to the checking or maintenance of the equipment, the owner of the system and the operating authority for the system shall ensure that the instructions are complied with by a trained person.

(3) If subsections (1) and (2) do not apply and a drinking water system provides chlorination or chloramination, the owner of the system and the operating authority for the system shall ensure that all water treatment equipment is checked at least once every week by a trained person to confirm proper functioning.

(4) If subsections (1), (2) and (3) do not apply, the owner of a drinking water system and the operating authority for the system shall ensure that all water treatment equipment is checked at least once every three months by a trained person to confirm proper functioning.

(5) The owner of the drinking water system and the operating authority for the system shall ensure that a record is made of the date and time of every action taken under subsections (1) to (4), the name of the person who took the action and the results of the action.

Chlorine residual

9-3. (1) The owner of a drinking water system that provides chlorination for primary disinfection and the operating authority for the system shall ensure that a water sample is taken at least once every day, in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*, and is tested immediately for free chlorine residual.

(2) The owner of a drinking water system that provides chloramination for primary disinfection shall ensure that sampling and testing for combined chlorine residual is carried out by continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*.

(3) The owner of a drinking water system that provides secondary disinfection and the operating authority for the system shall ensure that at least two distribution samples are taken each week in accordance with subsection (3.1) and are tested immediately for,

(a) free chlorine residual, if the system provides chlorination and does not provide chloramination; or

(b) combined chlorine residual, if the system provides chloramination.

(3.1) At least one of the distribution samples referred to in subsection (3) must be taken at least 48 hours after, and during the same week as, one of the other distribution samples referred to in subsection (3).

(4) Subsection (3) does not apply if,

(a) the owner complies with section 2-3 or 2-4 of Schedule 2, whichever is applicable; and

(b) all parts of the drinking water system and of the plumbing connected to the drinking water system that are downstream of the equipment provided in accordance with section 2-3 or 2-4 of Schedule 2 are enclosed in a building or other protective structure.

Turbidity

9-4. (1) If, with respect to a drinking water system that obtains water from a raw water supply that is surface water, continuous monitoring equipment is required to comply with section 2-4 of Schedule 2, the owner of the system shall ensure that sampling and testing for turbidity is conducted by continuous monitoring equipment on each filter effluent line.

(2) If subsection (1) does not apply to a drinking water system that obtains water from a raw water supply that is surface water, the owner of the system, and the operating authority for the system, shall ensure that a water sample is taken at least once every day on each filter effluent line and is tested immediately for turbidity.

(2.1) Subsections (1) and (2) do not apply to a small municipal non-residential system or small non-municipal non-residential system that provides ultraviolet light disinfection equipment for primary disinfection and does not use chlorination or chloramination for primary disinfection, if,

(a) section 2-6 of Schedule 2 is complied with; and

(b) the ultraviolet light 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.

(3) Subsections (1) and (2) do not apply until the equipment required to ensure compliance with Schedule 2 commences operation.

Testing by trained persons or water quality analysts

9-5. (1) The owner of a drinking water system and the operating authority for the system shall ensure that every test required by this Schedule is conducted by a trained person or a water quality analyst.

(1.1) Despite subsection (1), a test required by this Schedule may be conducted by a person who is not a trained person or water quality analyst if the person,

(a) has been trained by a certified operator to conduct the test;

(b) works under the supervision of a certified operator; and

(c) immediately advises a certified operator of all test results.

(2) Subsection (1) does not apply to tests conducted by continuous monitoring equipment.

Exceptions

9-6. (1) Sections 9-2 to 9-4 do not apply to a small municipal non-residential system or a small non-municipal non-residential system on days on which all designated facilities and all public facilities served by the system are not open.

(2) Sections 9-2 to 9-4 do not apply to a non-municipal seasonal residential system during a period of 60 or more consecutive days when the system,

(a) is not supplying water to any designated facilities or public facilities that are open;

(b) is not supplying water to any major residential development; and

(c) is not supplying water to any trailer park or campground that has more than five service connections.

9-7. REVOKED: O. Reg. 253/05, s. 14.

Transition: trained persons

9-8. If the owner of a drinking water system is not required to comply with sections 2-2 to 2-6 of Schedule 2 until after June 1, 2003, a reference in this Schedule to a trained person shall be deemed, with respect to that system, to be a reference to any person until the equipment required to ensure compliance with Schedule 2 commences operation.

O. Reg. 170/03, Sched. 9; O. Reg. 249/03, s. 15; O. Reg. 269/03, s. 10; O. Reg. 253/05, s. 14; O. Reg. 247/06, s. 20; O. Reg. 326/08, s. 10.

SCHEDULE 10
MICROBIOLOGICAL SAMPLING AND TESTING

Large Municipal Residential

Application

10-1. This Schedule applies to large municipal residential systems.

Distribution samples

10-2. (1) The owner of a drinking water system and the operating authority for the system shall ensure that,

(a) if the system serves 100,000 people or less, at least eight distribution samples, plus one additional distribution sample for every 1,000 people served by the system, are taken every month, with at least one of the samples being taken in each week; and

(b) if the system serves more than 100,000 people, at least 100 distribution samples, plus one additional distribution sample for every 10,000 people served by the system, are taken every month, with at least three of the samples being taken in each week.

(2) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for,

(a) *Escherichia coli*; and

(b) total coliforms.

(3) The owner of the drinking water system and the operating authority for the system shall ensure that at least 25 per cent of the samples required to be taken under subsection (1) are tested for general bacteria population expressed as colony counts on a heterotrophic plate count.

Treated samples

10-3. The owner of a drinking water system and the operating authority for the system shall ensure that a water sample is taken at least once every week and tested for,

(a) *Escherichia coli*;

(b) total coliforms; and

(c) general bacteria population expressed as colony counts on a heterotrophic plate count.

Raw water samples

10-4. (1) The owner of a drinking water system and the operating authority for the system shall ensure that a water sample is taken at least once every week from the drinking water system's raw water, before any treatment is applied to the water.

(2) If the drinking water system obtains water from a raw water supply that is ground water, or is deemed under section 2 to obtain water from a raw water supply that is surface water, the owner of the system and the operating authority for the system shall ensure that a sample is taken under subsection (1) from each well in the system.

(3) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for,

(a) *Escherichia coli*; and

(b) total coliforms.

10-5. REVOKED: O. Reg. 247/06, s. 21 (6).

O. Reg. 170/03, Sched. 10; O. Reg. 247/06, s. 21; O. Reg. 418/09, s. 18.

SCHEDULE 11
MICROBIOLOGICAL SAMPLING AND TESTING

Municipal: Small Residential

Non-Municipal: Year-Round Residential

Application

11-1. This Schedule applies to the following drinking water systems:

1. Small municipal residential systems.
2. REVOKED: O. Reg. 247/06, s. 22 (1).
3. Non-municipal year-round residential systems.
4. REVOKED: O. Reg. 247/06, s. 22 (2).

Distribution samples

11-2. (1) The owner of a drinking water system and the operating authority for the system shall ensure that,

(a) at least one distribution sample is taken every two weeks, if the system provides treatment equipment in accordance with Schedule 1 or 2 and the equipment is operated in accordance with that Schedule; or

(b) at least one distribution sample is taken every week, if clause (a) does not apply.

(2) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for,

(a) *Escherichia coli*;

(b) total coliforms; and

(c) if section 1-5 of Schedule 1 or subsection 2-5 (1) of Schedule 2 applies to the system, general bacteria population expressed as colony counts on a heterotrophic plate count.

(3)-(5) REVOKED: O. Reg. 247/06, s. 22 (6).

(6) If a drinking water system uses point of entry treatment units, the samples taken under subsection (1) shall be taken from locations downstream of the point of entry treatment units and shall be taken on a rotational basis so that a sample is taken from a location downstream of each point of entry treatment unit at least once every 24 months.

(7) Revoked: O. Reg. 247/06, s. 22 (7).

Raw water samples

11-3. (1) If a drinking water system obtains water from a raw water supply that is ground water or a drinking water system is deemed under section 2 to obtain water from a raw water supply that is surface water, the owner of the system and the operating authority for the system shall ensure that a water sample is taken at least once every month from the raw water in each well that is supplying water to the system, before any treatment is applied to the water.

(2) REVOKED: O. Reg. 247/06, s. 22 (8).

(3) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for,

(a) *Escherichia coli*; and

(b) total coliforms.

Seven-day shutdowns, etc.

11-4. (1) Sampling and testing is not required under sections 11-2 and 11-3 during a period of seven or more consecutive days when,

(a) the drinking water system is not in operation; or

(b) the drinking water system supplies water only to five or fewer private residences, and all private residences are occupied by the owner of the system, members of the family of the owner of the system, employees or agents of the owner of the system, or members of the families of employees or agents of the owner of the system.

(2) If, pursuant to subsection (1), sampling and testing is not required during a period of seven or more consecutive days, the owner of the system and the operating authority for the system shall ensure that no drinking water is supplied to a user of water after that period until samples have been taken and tested under sections 11-2 and 11-3 and the results of the tests have been received by the owner and the operating authority.

11-5. REVOKED: O. Reg. 249/03, s. 16 (3).

O. Reg. 170/03, Sched. 11; O. Reg. 249/03, s. 16; O. Reg. 269/03, s. 11; O. Reg. 247/06, s. 22; O. Reg. 418/09, s. 19.

SCHEDULE 12
MICROBIOLOGICAL SAMPLING AND TESTING

Municipal: Small Non-Residential
Large Non-Residential

Non-Municipal: Seasonal Residential
Small Non-Residential
Large Non-Residential

Application

12-1. This Schedule applies to the following drinking water systems:

0.1 Large municipal non-residential systems.

1. Small municipal non-residential systems.

2. Non-municipal seasonal residential systems.

2.1 Large non-municipal non-residential systems.

3. Small non-municipal non-residential systems.

Distribution samples

12-2. (1) The owner of a drinking water system and the operating authority for the system shall ensure that,

(a) at least one distribution sample is taken every month, if the system provides treatment equipment in accordance with Schedule 2 and the equipment is operated in accordance with that Schedule; or

(b) at least one distribution sample is taken every two weeks, if clause (a) does not apply.

(2) If a non-municipal seasonal residential system supplies water to more than 100 service connections, the owner of the system and the operating authority for the system shall ensure that, for every 100 service connections, at least one distribution sample is taken every month, in addition to the samples required by subsection (1).

(3) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsections (1) and (2) is tested for,

(a) *Escherichia coli*;

(b) total coliforms; and

(c) if subsection 2-5 (1) of Schedule 2 applies to the system, general bacteria population expressed as colony counts on a heterotrophic plate count.

(4)-(6) REVOKED: O. Reg. 247/06, s. 23 (5).

(7) If a drinking water system uses point of entry treatment units, the samples taken under subsection (1) shall be taken from locations downstream of the point of entry treatment units and,

(a) in the case of a non-municipal seasonal residential system that serves a major residential development, the samples shall be taken on a rotational basis so that a sample is taken from a location downstream of each point of entry treatment unit at least once every 24 months; and

(b) in any other case, the samples shall be taken on a rotational basis so that, after a sample is taken from a location downstream of a particular point of entry treatment unit, another sample is not taken from a location downstream of that unit until samples have been taken from locations downstream of all the other point of entry treatment units.

(8) REVOKED: O. Reg. 247/06, s. 23 (7).

Raw water samples

12-3. (1) If a drinking water system obtains water from a raw water supply that is ground water or a drinking water system is deemed under section 2 to obtain water from a raw water supply that is surface water, the owner of the system and the operating authority for the system shall ensure that a water sample is taken at least once every month from the raw water in each well that is supplying water to the system, before any treatment is applied to the water.

(2) REVOKED: O. Reg. 247/06, s. 23 (8).

(3) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for,

(a) *Escherichia coli*; and

(b) total coliforms.

Seven-day shutdowns, etc.

12-4. (1) Sections 12-2 and 12-3 do not apply to a large municipal non-residential system, small municipal non-residential system, large non-municipal non-residential system or small non-municipal non-residential system during a period of seven or more consecutive days when the system is not supplying water to any designated facilities or public facilities that are open.

(2) Sections 12-2 and 12-3 do not apply to a non-municipal seasonal residential system during a period of seven or more consecutive days when the system,

(a) is not supplying water to any designated facilities or public facilities that are open;

(b) is not supplying water to any major residential development; and

(c) is not supplying water to any trailer park or campground that has more than five service connections.

(3) If, pursuant to subsection (1) or (2), sections 12-2 and 12-3 do not apply to a drinking water system during a period of seven or more consecutive days, the owner of the system and the operating authority for the system shall ensure that no drinking water is supplied to a

user of water after that period until samples have been taken and tested under sections 12-2 and 12-3 and the results of the tests have been received by the owner and the operating authority.

12-5. REVOKED: O. Reg. 249/03, s. 17 (5).

12-6. REVOKED: O. Reg. 253/05, s. 15 (4).

O. Reg. 170/03, Sched. 12; O. Reg. 249/03, s. 17: O. Reg. 269/03, s. 12; O. Reg. 253/05, s. 15; O. Reg. 247/06, s. 23.

SCHEDULE 13
CHEMICAL SAMPLING AND TESTING

Municipal: Large Residential
Small Residential

Non-Municipal: Year-Round Residential

Application

13-1. This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.
3. REVOKED: O. Reg. 247/06, s. 24 (1).
4. Non-municipal year-round residential systems.
5. REVOKED: O. Reg. 247/06, s. 24 (2).

Inorganics

13-2. (1) The owner of a large municipal residential system and the operating authority for the system shall ensure that,

(a) at least one water sample is taken every 12 months, if the system obtains water from a raw water supply that is surface water; or

(b) at least one water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water.

(2) The owner of a large municipal residential system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for every parameter set out in Schedule 23.

(3) The owner of a small municipal residential system or non-municipal year-round residential system and the operating authority for the system shall ensure that at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 23.

13-3. REVOKED: O. Reg. 399/07, s. 6 (1).

Organics

13-4. (1) The owner of a large municipal residential system and the operating authority for the system shall ensure that,

(a) at least one water sample is taken every 12 months, if the system obtains water from a raw water supply that is surface water; or

(b) at least one water sample is taken every 36 months, if the system obtains water from a raw water supply that is ground water.

(2) The owner of a large municipal residential system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for every parameter set out in Schedule 24.

(3) The owner of a small municipal residential system or non-municipal year-round residential system and the operating authority for the system shall ensure that at least one water sample is taken every 60 months and tested for every parameter set out in Schedule 24.

Increased frequency under ss. 13-2 and 13-4

13-5. (1) If a test result obtained under section 13-2 or 13-4 for a parameter exceeds half of the standard prescribed for the parameter in Schedule 2 to the Ontario Drinking Water Quality Standards, the frequency of sampling and testing for that parameter under that section shall be increased so that at least one water sample is taken and tested every three months.

(2) Subsection (1) ceases to apply to a parameter if,

(a) in the case of a drinking water system that obtains water from a raw water supply that is surface water, for four consecutive three-month periods in which the system is in operation, none of the test results obtained under section 13-2 or 13-4 for the parameter exceed half of the standard prescribed for the parameter in Schedule 2 to the Ontario Drinking Water Quality Standards; or

(b) in the case of a drinking water system that obtains water from a raw water supply that is ground water, for two consecutive three-month periods in which the system is in operation, none of the test results obtained under section 13-2 or 13-4 for the parameter exceed half of the standard prescribed for the parameter in Schedule 2 to the Ontario Drinking Water Quality Standards.

Trihalomethanes

13-6. (1) 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 trihalomethanes.

(2) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for trihalomethanes.

(3) For the purposes of Schedule 2 to the Ontario Drinking Water Quality Standards, the running annual average of quarterly results with respect to trihalomethanes shall be calculated for each calendar quarter by using the following formula:

$$[A + B + C + D] \div 4$$

in which,

"A" is the average of all the results from the samples tested under subsection (2) in that calendar quarter,

"B" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "A" in which testing was carried out,

"C" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "B" in which testing was carried out, and

"D" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "C" in which testing was carried out.

(4) Despite subsection (1) and subject to subsections (5) and (6), if the following conditions have been met after samples have been taken and tested under subsections (1) and (2) in at least 12 consecutive calendar quarters, a drinking water system that is a small municipal residential system or a non-municipal year-round residential system may cease sampling and testing for eight consecutive calendar quarters:

1. No single test result obtained in the previous 12 consecutive calendar quarters indicated that the concentration of trihalomethanes was greater than 0.050 milligrams per litre.
2. The drinking water system's raw water supply is the same source of raw water supply that was used in the calendar quarters referred to in paragraph 1.
3. No alterations that may increase levels of trihalomethanes in the drinking water system have been made to the treatment equipment used in the calendar quarters referred to in paragraph 1.

4. The owner or operating authority of the drinking water system did not receive a written direction described in subsection (6) from the Director during the calendar quarters referred to in paragraph 1.

(5) Subject to subsection (6), a drinking water system that is a small municipal residential system or a non-municipal year round residential system referred to in subsection (4) that ceases to sample and test for eight consecutive calendar quarters shall resume the sampling and testing required under subsections (1) and (2) for four consecutive calendar quarters and may continue to cease sampling and testing for eight consecutive calendar quarters and resume sampling and testing for four consecutive calendar quarters for as long as the following conditions are met with respect to the period of sampling and testing:

1. No single test result obtained in the four consecutive calendar quarters period of sampling and testing indicated that the concentration of trihalomethanes was greater than 0.050 milligrams per litre.
2. The drinking water system's raw water supply is the same source of raw water supply that was used in the calendar quarters referred to in paragraph 1 as well as in the eight consecutive calendar quarters that immediately preceded the sampling and testing period.
3. No alterations that may increase levels of trihalomethanes in the drinking water system have been made to the treatment equipment used in the calendar quarters referred to in paragraph 1 as well as in the eight consecutive calendar quarters that immediately preceded the sampling and testing period.
4. The owner or operating authority of the drinking water system did not receive a written direction described in subsection (6) from the Director during the calendar quarters referred to in paragraph 1 or during the eight consecutive calendar quarters that immediately preceded the sampling and testing period.

(6) Despite subsections (4) and (5), if the Director has knowledge of water chemistry changes in the water of a drinking water system or alterations to the treatment equipment and in the Director's opinion the changes or alterations may increase levels of trihalomethanes in the drinking water system, the Director shall provide a written direction to the owner or operating authority of the drinking water system that the requirements in subsections (1) and (2) to sample and test in each calendar quarter apply to the system.

Haloacetic acids

13-6.1 (1) 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.

(2) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) is tested for haloacetic acids.

(3) For the purposes of Schedule 2 to the Ontario Drinking Water Quality Standards, the running annual average of quarterly results with respect to haloacetic acids shall be calculated for each calendar quarter by using the following formula:

$$[A + B + C + D] \div 4$$

in which,

"A" is the average of all the results from the samples tested under subsection (2) in that calendar quarter,

"B" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "A" in which testing was carried out,

"C" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "B" in which testing was carried out, and

"D" is the average of all the results from the samples tested under subsection (2) in the most recent calendar quarter preceding the calendar quarter referred to in "C" in which testing was carried out.

(4) Despite subsection (1) and subject to subsection (5), if the following conditions have been met after samples have been taken and

tested under subsections (1) and (2) in at least 12 consecutive calendar quarters, a drinking water system that is a small municipal residential system or a non-municipal year-round residential system may cease sampling and testing for eight consecutive calendar quarters:

1. No single test result obtained in the previous 12 consecutive calendar quarters indicated that the concentration of haloacetic acids was greater than 0.040 milligrams per litre.
2. The drinking water system's raw water supply is the same source of raw water supply that was used in the calendar quarters referred to in paragraph 1.
3. No alterations that may increase levels of haloacetic acids in the drinking water system have been made to the treatment equipment used in the calendar quarters referred to in paragraph 1.
4. The owner or operating authority of the drinking water system did not receive a written direction described in subsection (6) from the Director during the calendar quarters referred to in paragraph 1.

(5) A drinking water system that is a small municipal residential system or a non-municipal year round residential system referred to in subsection (4) that ceases to sample and test for eight consecutive calendar quarters shall resume the sampling and testing required under subsections (1) and (2) for four consecutive calendar quarters and may continue to cease sampling and testing for eight consecutive calendar quarters and resume sampling and testing for four consecutive calendar quarters for as long as the following conditions are met with respect to the period of sampling and testing:

1. No single test result obtained in the four consecutive calendar quarters period of sampling and testing indicated that the concentration of haloacetic acids was greater than 0.040 milligrams per litre.
2. The drinking water system's raw water supply is the same source of raw water supply that was used in the calendar quarters referred to in paragraph 1 as well as in the eight consecutive calendar quarters that immediately preceded the sampling and testing period.
3. No alterations that may increase levels of haloacetic acids in the drinking water system have been made to the treatment equipment used in the calendar quarters referred to in paragraph 1 as well as in the eight consecutive calendar quarters that immediately preceded the sampling and testing period.
4. The owner or operating authority of the drinking water system did not receive a written direction described in subsection (6) from the Director during the calendar quarters referred to in paragraph 1 or during the eight consecutive calendar quarters that immediately preceded the sampling and testing period.

(6) Despite subsections (4) and (5), if the Director has knowledge of water chemistry changes in the water of a drinking water system or alterations to the treatment equipment and in the Director's opinion the changes or alterations may increase levels of haloacetic acids in the drinking water system, the Director shall provide a written direction to the owner or operating authority of the drinking water system that the requirements in subsections (1) and (2) to sample and test in each calendar quarter apply to the system.

Nitrate and nitrite

13-7. 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 three months and tested for nitrate and nitrite.

Sodium

13-8. 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.

Fluoride

13-9. 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.

First tests

13-10. Where this Schedule requires that water samples be taken and tested for a parameter with a frequency of a period of time fixed

by this Schedule, the owner of the drinking water system and the operating authority for the system shall ensure that the first sample is taken and tested for that parameter,

(a) within that period of time after the latest of,

(i) the date the last sample was taken and tested for that parameter under Ontario Regulation 459/00 (Drinking Water Protection — Larger Water Works) or Ontario Regulation 505/01 (Drinking Water Protection — Smaller Water Works Serving Designated Facilities), if one of those regulations applied to the drinking water system,

(ii) the date the last sample was taken and tested for that parameter for the purpose of preparing a report under section 13 of Ontario Regulation 459/00, if that regulation applied to the drinking water system, and

(iii) the date the last sample was taken and tested for that parameter before this Regulation came into force for the purpose of complying with an OWRA approval or OWRA order or making an application for an OWRA approval, if a sample was taken and tested for that parameter for that purpose before this Regulation came into force; or

(b) within that period of time or 12 months, whichever is shorter, after this Schedule begins to apply to the drinking water system, if clause (a) does not apply.

60-day shutdowns, etc.

13-11. Sampling and testing is not required under sections 13-5, 13-6, 13-6.1 and 13-7 during a period of 60 or more consecutive days when,

(a) the drinking water system is not in operation; or

(b) the drinking water system supplies water only to five or fewer private residences, and all private residences are occupied by the owner of the system, members of the family of the owner of the system, employees or agents of the owner of the system, or members of the families of employees or agents of the owner of the system.

13-12. REVOKED: O. Reg. 249/03, s. 18.

O. Reg. 170/03, Sched. 13; O. Reg. 249/03, s. 18; O. Reg. 269/03, s. 13; O. Reg. 247/06, s. 24; O. Reg. 399/07, s. 6; O. Reg. 418/09, s. 20; O. Reg. 374/15, s. 3, 4; O. Reg. 458/16, s. 12.

SCHEDULE 14 REVOKED: O. REG. 247/06, S. 25.

SCHEDULE 15
CHEMICAL SAMPLING AND TESTING

Municipal: Large Non-Residential
Small Non-Residential

Non-Municipal: Seasonal Residential
Large Non-Residential
Small Non-Residential

Application

15-1. This Schedule applies to the following drinking water systems:

1. Large municipal non-residential systems.
2. Small municipal non-residential systems.
3. Non-municipal seasonal residential systems.
4. Large non-municipal non-residential systems.
5. Small non-municipal non-residential systems.

Inorganics and organics

15-2. The owner of a drinking water system that serves a designated facility, and the operating authority for the system, shall ensure

that at least one water sample is taken every 60 months and tested for every parameter set out in Schedules 23 and 24.

15-3. REVOKED: O. Reg. 399/07, s. 7.

Nitrate and nitrite

15-4. (1) 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 three months and tested for nitrate and nitrite.

(2) Subsection (1) does not apply to a large municipal non-residential system, small municipal non-residential system, large non-municipal non-residential system or small non-municipal non-residential system during a period of 60 or more consecutive days when the system is not supplying water to any designated facilities or public facilities that are open.

(3) Subsection (1) does not apply to a non-municipal seasonal residential system during a period of 60 or more consecutive days when the system,

(a) is not supplying water to any designated facilities or public facilities that are open;

(b) is not supplying water to any major residential development; and

(c) is not supplying water to any trailer park or campground that has more than five service connections.

Sodium

15-5. 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.

Fluoride

15-6. The owner of the system and the operating authority for the system shall ensure that at least one water sample is taken at least once every 60 months and tested for fluoride.

First tests

15-7. Where this Schedule requires that water samples be taken and tested for a parameter with a frequency of a period of time fixed by this Schedule, the owner of the drinking water system and the operating authority for the system shall ensure that the first sample is taken and tested for that parameter,

(a) within that period of time after the later of,

(i) the date the last sample was taken and tested for that parameter under Ontario Regulation 459/00 (Drinking Water Protection — Larger Water Works) or Ontario Regulation 505/01 (Drinking Water Protection — Smaller Water Works Serving Designated Facilities), if one of those regulations applied to the drinking water system, and

(ii) the date the last sample was taken and tested for that parameter before this Regulation came into force for the purpose of complying with an OWRA approval or OWRA order or making an application for an OWRA approval, if a sample was taken and tested for that parameter for that purpose before this Regulation came into force; or

(b) within that period of time or 12 months, whichever is shorter, after this Schedule begins to apply to the drinking water system, if clause (a) does not apply.

15-8. REVOKED: O. Reg. 249/03, s. 20 (2).

15-9. REVOKED: O. Reg. 253/05, s. 16.

O. Reg. 170/03, Sched. 15; O. Reg. 249/03, s. 20; O. Reg. 269/03, s. 15; O. Reg. 253/05, s. 16; O. Reg. 247/06, s. 26; O. Reg. 399/07, s. 7.

SCHEDULE 15.1
LEAD

Municipal: Large Residential
Small Residential

Non-Municipal: Year-Round Residential

Application

15.1-1. This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.
3. Non-municipal year-round residential systems.

Limited meaning of "serve"

15.1-2. For the purposes of this Schedule,

(a) a drinking water system serves a population if its distribution system is directly connected to the plumbing that serves the population;

(b) a drinking water system serves a private residence or other building if its distribution system is directly connected to the plumbing that serves the private residence or other building.

Definitions

15.1-3. In this Schedule,

"lead plumbing" and "lead service pipes" mean plumbing and service pipes with a lead content greater than 8 per cent; ("installation de plomberie en plomb", "conduites de branchement en plomb")

"lead solder" means solder with a lead content greater than 0.2 per cent; ("soudures de plomb")

"Schedule 2 standard" means a standard prescribed for any substance in Schedule 2 to the Ontario Drinking Water Quality Standards; ("norme prescrite à l'annexe 2")

"standard prescribed for lead" means the standard prescribed for lead in Schedule 2 to the Ontario Drinking Water Quality Standards; ("norme prescrite à l'égard du plomb")

Standard sampling

15.1-4. (1) The owner of a drinking water system and the operating authority for the system shall ensure that, in accordance with sections 15.1-6 and 15.1-7, samples are taken during the periods described in subsection (2),

(a) in plumbing that serves private residences, from at least the number of points set out in Column 3 of the Table to this section opposite the population served by the drinking water system;

(b) in plumbing that does not serve private residences, from at least the number of points set out in Column 4 of the Table to this section opposite the population served by the drinking water system; and

(c) in the drinking water system's distribution system, from at least the number of points set out in Column 5 of the Table to this section opposite the population served by the drinking water system.

(2) The samples required by subsection (1) must be taken during each of the following periods:

1. The period from December 15, 2007 to April 15, 2008 and the corresponding period in every subsequent 12-month period.
2. The period from June 15, 2008 to October 15, 2008 and the corresponding period in every subsequent 12-month period.

(3) Despite subsection (1), if the population served by a drinking water system is less than 100 and if the number of buildings served by the system is less than five, the sampling requirements set out in subsection (1) do not apply and instead, one sample per building must

be taken from plumbing that serves a private residence within the building, during the periods described in subsection (2) and in accordance with subsection 15.1-6 (1), paragraphs 1 and 2 of subsection 15.1-6 (2) and subsections 15.1-7 (1), (3) and (4).

TABLE
STANDARD SAMPLING — NUMBER OF SAMPLING LOCATIONS

Column 1 Item	Column 2 Population Served by Drinking Water System	Column 3 Number of Sampling Points in Plumbing that Serves Private Residences	Column 4 Number of Sampling Points in Plumbing that Does Not Serve Private Residences	Column 5 Number of Sampling Points in Distribution System
1.	1- 99	5	1	1
2.	100 - 499	10	1	2
3.	500 - 3,299	20	2	4
4.	3,300 - 9,999	40	4	8
5.	10,000 - 49,999	60	6	12
6.	50,000 - 99,999	80	8	16
7.	100,000 or more	100	10	20

Reduced sampling

15.1-5. (1) Section 15.1-4 ceases to apply to a drinking water system, and this section applies instead, if,

(a) in the case of a system that serves a population of less than 50,000,

(i) in each of two consecutive periods described in subsection 15.1-4 (2),

(A) not more than 10 per cent of all the samples taken from plumbing under section 15.1-4 and tested for lead exceeded half the standard prescribed for lead, according to the results of the tests conducted under section 15.1-7, and

(B) no sample taken from plumbing under section 15.1-4 and tested for lead exceeded the standard prescribed for lead, according to the results of the tests conducted under section 15.1-7, or

(ii) in each of four consecutive periods described in subsection 15.1-4 (2), not more than 10 per cent of all the samples taken from plumbing under section 15.1-4 and tested for lead exceeded the standard prescribed for lead, according to the results of the tests conducted under section 15.1-7;

(b) in the case of a system that serves a population of 50,000 or more, in each of four consecutive periods described in subsection 15.1-4 (2), not more than 10 per cent of all the samples taken from plumbing under section 15.1-4 and tested for lead exceeded the standard prescribed for lead, according to the results of the tests conducted under section 15.1-7.

(2) For the purpose of subsection (1), if two samples that are taken on the same day from a point in plumbing are tested for lead under section 15.1-7, the sample with the lower concentration of lead shall not be considered.

(3) If a drinking water system serves a population of less than 50,000 and, under subsection (1), section 15.1-4 does not apply to the system, the owner of the drinking water system and the operating authority for the system shall ensure that, in accordance with sections 15.1-6 and 15.1-7, samples are taken during the periods described in subsection (5) in every third 12-month period after samples were last taken under section 15.1-4 or this section,

(a) in plumbing that serves private residences, from at least the number of points set out in Column 3 of the Table to this section opposite the population served by the drinking water system;

(b) in plumbing that does not serve private residences, from at least the number of points set out in Column 4 of the Table to this section opposite the population served by the drinking water system; and

(c) in the drinking water system's distribution system, from at least the number of points set out in Column 5 of the Table to this section opposite the population served by the drinking water system.

(4) If a drinking water system serves a population of 50,000 or more and, under subsection (1), section 15.1-4 does not apply to the system, the owner of the drinking water system and the operating authority for the system shall ensure that, in accordance with sections 15.1-6 and 15.1-7, samples are taken during the periods described in subsection (5), in every 12-month period after samples were last taken under section 15.1-4 or this section,

(a) in plumbing that serves private residences, from at least the number of points set out in Column 3 of the Table to this section opposite the population served by the drinking water system;

(b) in plumbing that does not serve private residences, from at least the number of points set out in Column 4 of the Table to this section opposite the population served by the drinking water system; and

(c) in the drinking water system's distribution system, from at least the number of points set out in Column 5 of the Table to this section opposite the population served by the drinking water system.

(5) The samples required by subsections (3) and (4) must be taken during each of the following periods in the relevant 12-month period:

1. The period from December 15 to April 15.

2. The period from June 15 to October 15.

(6) This section ceases to apply to a drinking water system, and section 15.1-4 applies again, if in any period described in subsection (5), more than 10 per cent of all the samples taken from plumbing under that subsection and tested for lead exceeded the standard prescribed for lead, according to the results of the tests conducted under section 15.1-7.

(7) For the purpose of subsection (6), if two samples that are taken on the same day from a point in plumbing are tested for lead under section 15.1-7, the sample with the lower concentration of lead shall not be considered.

(8) Despite subsection (3), if the population served by the drinking water system is less than 100 and if the number of buildings served by the system is less than five, the sampling requirements set out in subsection (3) do not apply and instead, one sample per building must be taken from plumbing that serves a private residence within the building, during the periods described in subsection (2) and in accordance with subsection 15.1-6 (1), paragraphs 1 and 2 of subsection 15.1-6 (2) and subsections 15.1-7 (1), (3) and (4).

(9) The requirements for taking samples set out in clauses (3) (a) and (b) and subsection (8) cease to apply to a drinking water system if, in each of two consecutive periods described in subsection (5) not more than 10 per cent of all the samples from plumbing taken under clause (3) (a) or (b) or subsection (8), or taken in accordance with a condition imposed under subsection 38 (2), 46 (2) or 60 (2) of the Act with respect to a system that serves a population of less than 50,000, that were tested for lead exceed the standard prescribed for lead, according to the results of the tests conducted under clause 15.1-7 (3) (a) or under a condition imposed under subsection 38 (2), 46 (2) or 60 (2) of the Act.

(10) When the requirements for taking samples set out in clauses (3) (a) and (b) and subsection (8) cease to apply under subsection (9) to a drinking water system, the owner of the drinking water system and the operating authority for the system shall ensure that samples are taken as described in clause (3) (c), in accordance with subsection 15.1-7 (2),

(a) to test for total alkalinity and for pH during each of the periods described in subsection (5) in every 12-month period; and

(b) to test for lead during each of the periods described in subsection (5) in every third 12-month period.

(11) The requirements for taking samples set out in clauses (3) (a) and (b) and subsection (8) apply to a drinking water system again if the Director provides a written direction to the owner or operating authority of the system that the requirements apply to the system.

(12) The Director shall not provide a written direction under subsection (11) unless the Director has knowledge of water chemistry changes in the water of the drinking water system and in the Director's opinion the changes may increase levels of lead in the drinking

water supplied by plumbing that is connected to the drinking water system.

TABLE
REDUCED SAMPLING — NUMBER OF SAMPLING LOCATIONS

Column 1 Item	Column 2 Population Served by Drinking Water System	Column 3 Number of Sampling Points in Plumbing that Serves Private Residences	Column 4 Number of Sampling Points in Plumbing that Does Not Serve Private Residences	Column 5 Number of Sampling Points in Distribution System
1.	1- 99	3	0	1
2.	100 - 499	5	1	1
3.	500 - 3,299	10	1	2
4.	3,300 - 9,999	20	2	3
5.	10,000 - 49,999	30	3	4
6.	50,000 - 99,999	40	4	8
7.	100,000 or more	50	5	10

Selection of sampling points

15.1-6. (1) The owner of a drinking water system and the operating authority for the system shall ensure that a sample taken from plumbing under section 15.1-4 or 15.1-5 is taken only with the consent of the occupant of the premises served by the plumbing.

(2) In selecting points in plumbing from which samples are to be taken under section 15.1-4 or 15.1-5, the owner of the drinking water system and the operating authority for the system shall ensure that the samples comply with the following rules:

1. Subject to paragraph 2, samples must be taken from,
    i. plumbing that is connected or is suspected of being connected to lead service pipes, or
    ii. lead plumbing or plumbing that is suspected of being lead plumbing.
2. To the extent that it is not reasonably possible to take samples from plumbing described in paragraph 1, samples may be taken from,
    i. plumbing that is connected or is suspected of being connected to service pipes that are not lead service pipes but have lead solder, or
    ii. plumbing that is not lead plumbing but has or is suspected of having lead solder.
3. Samples must not be taken from more than one point in the same building, unless the number of buildings served by the drinking water system is less than the number of sampling points set out in Column 3 of the Table to section 15.1-4 opposite the population served by the drinking water system.
4. Subject to paragraphs 1 to 3, samples must be taken from plumbing that serves different kinds of premises, including,
    i. single-family homes and multi-unit residential buildings, in the case of samples taken under clause 15.1-4 (1) (a) or 15.1-5 (3) (a) or (4) (a), and
    ii. commercial properties, industrial properties, designated facilities and public facilities, in the case of samples taken under clause 15.1-4 (1) (b) or 15.1-5 (3) (b) or (4) (b).

5. Subject to paragraphs 1 to 3, samples must be taken from different geographical areas that are served by the drinking water system.

(3) The owner of a drinking water system and the operating authority for the system shall ensure that each sample taken from the system's distribution system under section 15.1-4 or 15.1-5 is taken,

(a) on the same day that samples are taken from points in plumbing under that section; and

(b) from a point in the distribution system that is as close as reasonably possible to the points in plumbing from which samples are taken.

Sampling protocol and testing

15.1-7. (1) The owner of a drinking water system and the operating authority for the system shall ensure that samples taken from a point in plumbing under section 15.1-4 or 15.1-5 are taken in accordance with the following rules:

1. Two one-litre samples and the sample described in paragraph 12 must be taken.
2. All three samples must be taken from the same tap.

2.1 The samples must be of cold water.

3. If the tap from which samples are to be taken has an aerator, the aerator must not be removed while the samples are being taken.
4. The samples must be taken from,

    i. a kitchen tap, if the sample is being taken from plumbing that serves premises that have a kitchen tap, or

    ii. the tap that is most commonly used to provide water for human consumption, in any other case.

5. If a filter or other water-treating device is installed on or near the tap specified in paragraph 4, the filter or other device must be bypassed without being removed, if it is reasonably possible to do so, while the samples are being taken.
6. If a filter or other water-treating device is installed on or near the tap specified in paragraph 4 and it is not reasonably possible to bypass the filter or other device without removing it, the samples must be taken from another tap that is commonly used to provide water for human consumption.
7. If a filter or other water-treating device is installed on or near every tap that provides water for human consumption and, in every case, it is not reasonably possible to bypass the filter or other device without removing it, the samples must be taken from the tap specified in paragraph 4, but the filter or other device must be removed before the step described in paragraph 8 is taken.
8. Before the first sample is taken in accordance with paragraph 9, the tap must be turned on for at least five minutes and then turned off for the period described in subparagraph 9 i.
9. The first sample to be taken must be taken in accordance with the following rules:

    i. The sample must be taken immediately after a period of not less than 30 minutes but not more than 35 minutes during which the plumbing is not used and must include the first water that comes out when the tap is turned on to take the sample.

    ii. The sample must be taken with water flowing at a rate that approximates normal use, without permitting water to splash out of the container in which the sample is being collected.

10. The second sample to be taken must be taken immediately after the first sample, without turning off the tap or altering the flow rate of the tap.
11. Unless the laboratory directions referred to in section 6-8 of Schedule 6 provide otherwise, two or more containers may be used to take the first sample and to take the second sample, but in that case the time taken to switch from one container to the next must be kept to a minimum.
12. The third sample to be taken must be taken immediately after the second sample, without turning off the tap or altering the flow

rate of the tap.

(2) The owner of a drinking water system and the operating authority for the system shall ensure that samples taken from a point in the system's distribution system under section 15.1-4 or 15.1-5 are taken in accordance with the following rules:

1. Before the samples are taken, the point in the distribution system must be flushed until the quality of the water at the point is representative of the quality of the water in that part of the distribution system.
2. Three samples must be taken.
3. If a sample cannot be taken from a point in the system's distribution system, a sample of cold water may be taken instead from a point in plumbing connected to the distribution system, provided that before the sample is taken the point is flushed until the quality of the water at the point is representative of the quality of water in the part of the distribution system that is connected to the plumbing.
4. Samples must not be taken from points in the distribution system where lead levels are likely to be elevated due to materials used in fixtures or appurtenances located at or near the sampling point.

(3) The owner of the drinking water system and the operating authority for the system shall ensure that,

(a) the samples taken under paragraphs 9 and 10 of subsection (1) and the first sample taken under subsection (2) are tested for lead;

(b) the second sample taken under subsection (2) is tested for total alkalinity; and

(c) the sample taken under paragraph 12 of subsection (1) and the third sample taken under subsection (2) are each tested for pH,

(i) immediately after the sample is taken, and

(ii) using a pH meter that measures pH to at least two significant digits.

(4) The owner of the drinking water system and the operating authority for the system shall ensure that samples are taken and pH tests are conducted under this section only by,

(a) a certified operator;

(b) a water quality analyst;

(c) a medical officer of health or public health inspector within the meaning of the *Health Protection and Promotion Act*;

(d) a trained person; or

(e) a person who,

(i) has been trained by a certified operator to take samples and conduct pH tests in accordance with this section,

(ii) works under the supervision of a certified operator, and

(iii) advises a certified operator of all pH test results within a reasonable period of time.

Drinking water tests

15.1-8. Every test of a sample taken from plumbing under section 15.1-4 or 15.1-5 is prescribed as a drinking water test for the purpose of the definition of "drinking water test" in section 2 of the Act.

Reporting requirements for samples taken from plumbing

15.1-9. (1) If the operating authority for a drinking water system or the owner of a drinking water system receives a report of a test result for a test conducted on any sample referred to in subsection (2.1), the operating authority or owner shall, within seven days after receiving the report, give the following to the occupant of the premises served by the tap from which the sample was taken and, if the sample was taken from a private residence within a multi-unit residential building, the owner of the building or their agent:

1. A copy of the report.
2. A statement of whether the report indicates a result that exceeds any Schedule 2 standard.

3. If the report indicates a result described in paragraph 2, any advice given by the medical officer of health to the operating authority or owner with respect to any steps that the occupant should take.

4. The telephone number of a person who is available to answer questions about the report.

(2) If a laboratory conducts a test of a sample referred to in subsection (2.1) and a result of the test exceeds any Schedule 2 standard, the laboratory shall, within 24 hours after the result is authorized pursuant to subsection 12 (1) or paragraph 4 of subsection 12.0.1 (3) of Ontario Regulation 248/03 (Drinking Water Testing Services) made under the Act, give a written report to,

(a) the operating authority for the drinking water system, if an operating authority is responsible for the system;

(b) the owner of the drinking water system, if no operating authority is responsible for the system;

(c) the medical officer of health; and

(d) the Ministry's Spills Action Centre.

(2.1) The requirements set out in subsections (1) and (2) apply in respect of any sample taken from plumbing under subsection 15.1-4 (1) or (3) or subsection 15.1-5 (3), (4) or (8), in accordance with sections 15.1-6 and 15.1-7, whether or not the sample is taken in a period specified in subsection 15.1-4 (2) or 15.1-5 (5).

(3) The report required by subsection (2) shall specify,

(a) the result that requires the report; and

(b) the particular Schedule 2 standard that the result exceeds.

(4) If a laboratory reports a test result to the operating authority for a drinking water system under subsection (2), the operating authority shall, within 24 hours after receiving the report, give a copy of the report to the owner of the system.

(5) If a laboratory reports a test result to the operating authority for a drinking water system or the owner of a drinking water system under subsection (2), the operating authority or owner shall, within 24 hours after receiving the report, give a copy of the report to the medical officer of health.

(6) If a copy of a report is given to the operator of a designated facility under subsection (1), the operator shall provide a copy of the report to the interested authority for the facility, as soon as reasonably possible and preferably within 24 hours after the operator receives the copy.

(6.1) REVOKED: O. Reg. 458/16, s. 13 (1).

(7) A written document that is given under subsection (2), (4), (5) or (6) may be delivered personally or sent by fax or by electronic mail.

(8) Despite subsection (7), the Ministry's Spills Action Centre may require that a report that is given to the Centre under subsection (2) be given in an electronic format specified by the Director.

(9) Section 18 of the Act and Schedule 16 to this Regulation do not apply to a test of a sample taken from plumbing under section 15.1-4 or 15.1-5.

Corrective action for adverse results

15.1-10. If a report is made under subsection 15.1-9 (2), the owner of the drinking water system and the operating authority for the system shall take such steps as are directed by the medical officer of health, including, if directed by the medical officer of health, providing information to occupants of the premises served by the plumbing from which the sample was taken that is in addition to the information provided under paragraph 3 of subsection 15.1-9 (1).

Corrosion control

15.1-11. (1) This section applies to a large municipal residential system if,

(a) in two of the three most recent periods described in section 15.1-4 or 15.1-5, more than 10 per cent of all the samples taken from plumbing under that section and tested for lead exceed the standard prescribed for lead, according to the results of the tests conducted under section 15.1-7; and

(b) in each of the two periods mentioned in clause (a), the number of samples that exceed the standard prescribed for lead is at least two.

(2) For the purpose of subsection (1), if two samples that are taken on the same day from a point in plumbing are tested for lead under section 15.1-7, the sample with the lower concentration of lead shall not be considered.

(3) Within one year after the last day of the period mentioned in subsection (1) during which the test results are such as to cause this section to apply, the owner of the system and the operating authority for the system shall ensure that a plan that complies with subsection (5) is prepared and submitted to a Director appointed by the Minister under section 6 of the Act in respect of section 32 of the Act.

(4) The plan shall be prepared and submitted in a form and manner approved by the Director.

(5) The plan shall,

(a) analyze the potential for lead leaching into water as a result of corrosion that occurs in the system's distribution system or in plumbing that is connected to the system's distribution system;

(b) list and analyze possible measures to reduce the potential for lead leaching;

(c) identify the preferred measure or measures;

(d) set out an implementation schedule; and

(e) include a program for monitoring the effectiveness of the preferred measure or measures.

(6) If subsection (3) applies to a drinking water system that obtains treated water from another drinking water system,

(a) subsection (3) also applies to the owner of the other system and to the operating authority for the other system;

(b) the plan mentioned in subsection (3) shall be a joint plan; and

(c) the owner and operating authority mentioned in clause (a) shall, jointly with the owner of the system that obtains the treated water and the operating authority for that system, ensure that the plan is prepared and submitted.

(7) If the drinking water system referred to in clause (6) (a) itself obtains treated water from another system, subsection (6) also applies to that other system.

(8) If the plan mentioned in subsection (3) requires the owner or the operating authority to do anything in connection with implementing measures under the plan or monitoring their effectiveness, the owner shall, at the same time as the plan is submitted to the Director, apply to the Director to amend the system's approval or municipal drinking water licence to reflect the requirements of the plan.

(9) If the Director has amended the system's approval or municipal drinking water licence under subsection (8) and the owner or operating authority is carrying out the monitoring program described by clause (5) (e), the requirements for taking samples set out in subsection 15.1-4 (1), subsection 15.1-4 (3), subsections 15.1-5 (3) and (4) and subsection 15.1-5 (8) cease to apply to the drinking water system.

Non-municipal year-round residential system: certified operators

15.1-12 If, pursuant to subsection 2-11 (1) or (2) of Schedule 2, the owner of a non-municipal year-round residential system is not required to comply with provisions of that Schedule, a reference in this Schedule to a certified operator shall be deemed, with respect to

that system, to be a reference to any person.

O. Reg. 399/07, s. 8; O. Reg. 418/09, s. 21; O. Reg. 458/16, s. 13.

SCHEDULE 15.2
LEAD

Municipal: Large Non-Residential
Small Non-Residential

Non-Municipal: Seasonal Residential
Large Non-Residential
Small Non-Residential

Application
15.2-1. This Schedule applies to the following drinking water systems:

1. Large municipal non-residential systems.
2. Small municipal non-residential systems.
3. Non-municipal seasonal residential systems.
4. Large non-municipal non-residential systems.
5. Small non-municipal non-residential systems.

Distribution samples
15.2-2. (1) The owner of a drinking water system and the operating authority for the system shall ensure that at least one distribution sample is taken every 12 months, from a point in the drinking water system's distribution system or in plumbing that is connected to the drinking water system that is likely to have an elevated concentration of lead.

(1.1) If none of the samples taken under subsection (1) in the most recent 24-month period and tested for lead exceed the prescribed standard for lead, then subsection (1) ceases to apply and instead the owner of the drinking water system and the operating authority for the system shall ensure that at least one distribution sample is taken every 36 months, from a point in the drinking water system's distribution system or in plumbing that is connected to the drinking water system that is likely to have an elevated concentration of lead.

(2) The owner of the drinking water system and the operating authority for the system shall ensure that each of the samples taken under subsection (1) or (1.1) is tested for lead.

Schools, private schools and child care centres
15.2-3. This Schedule does not apply to a drinking water system that serves only a school, private school or child care centre to which Ontario Regulation 243/07 (Schools, Private Schools and Child Care Centres) made under the Act applies.

O. Reg. 399/07, s. 8; O. Reg. 418/09, s. 22; O. Reg. 458/16, s. 14.

SCHEDULE 16
REPORTING ADVERSE TEST RESULTS AND OTHER PROBLEMS

Application
16-1. This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.
3. Large municipal non-residential systems.

4. Small municipal non-residential systems.
5. Non-municipal year-round residential systems.
6. Non-municipal seasonal residential systems.
7. Large non-municipal non-residential systems.
8. Small non-municipal non-residential systems.

Exemption

16-2. (1) Subsection 18 (1) of the Act does not apply to a drinking water test unless,

(a) the test is required by this Regulation, an approval, municipal drinking water licence or order, including an OWRA order;

(b) the test,

(i) is conducted by or pursuant to the direction of the owner of a drinking water system, the operating authority for a drinking water system or a certified operator or trained person employed by the owner or operating authority, and

(ii) does not relate to water that is supplied exclusively for,

(A) agricultural operations,

(B) landscaping operations,

(C) industrial or manufacturing operations, including food manufacturing or processing operations, or

(D) swimming pool or skating rink maintenance operations;

(c) the test is conducted pursuant to the direction of a provincial officer;

(d) the test is conducted pursuant to the direction of the medical officer of health or a member of the staff of the medical officer of health;

(e) the test is conducted pursuant to the direction of a person employed in the Ministry of Health and Long-Term Care or the Ministry of Labour; or

(f) the test is conducted by continuous monitoring equipment or microbiological in-line testing equipment.

(2) Despite subsection (1), subsection 18 (1) of the Act does not apply to the following drinking water tests:

1. A drinking water test that is conducted to ensure compliance with corrective action required by paragraph 1 of section 17-4 of Schedule 17 or paragraph 1 of section 18-4 of Schedule 18.
2. A drinking water test that is conducted on a sample that was taken from plumbing, if the test is conducted solely for the purpose of determining the quality of the water in the plumbing.

Duty to report under s. 18 of the Act

16-3. (1) The following are prescribed as adverse results of a drinking water test for the purpose of section 18 of the Act:

1. A result that exceeds any of the standards prescribed by Schedule 1, 2 or 3 to the Ontario Drinking Water Quality Standards, other than the standards for fluoride, haloacetic acids and trihalomethanes, if the result is from a sample of drinking water.
2. A result indicating the presence of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) in a sample of drinking water.
3. A result in a sample of drinking water indicating that the concentration of a pesticide not listed in Schedule 2 to the Ontario Drinking Water Quality Standards exceeds 100 nanograms per litre.
4. If the drinking water system is required to take free chlorine residual tests under clause 7 (2) (a) or to provide secondary disinfection in accordance with section 1-5 of Schedule 1 or section 2-5 of Schedule 2, the system provides chlorination, the system does not provide chloramination and a report under subsection 18 (1) of the Act has not been made in respect of free chlorine residual in the preceding 24 hours, a result indicating that the concentration of free chlorine residual is less than 0.05

milligrams per litre in,

i. a distribution sample that is a grab sample, or

ii. two distribution samples that are tested by continuous monitoring equipment, if the two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample.

5. If the drinking water system is required to take combined chlorine residual tests under clause 7 (2) (b) or to provide secondary disinfection in accordance with section 1-5 of Schedule 1 or section 2-5 of Schedule 2, the system provides chloramination and a report under subsection 18 (1) of the Act has not been made in respect of combined chlorine residual in the preceding 24 hours, a result indicating that the concentration of combined chlorine residual is less than 0.25 milligrams per litre and the concentration of free chlorine residual is less than 0.05 milligrams per litre in,

i. a distribution sample that is a grab sample, or

ii. two distribution samples that are tested by continuous monitoring equipment, if the two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample.

6. If the drinking water system is required to provide filtration and a report under subsection 18 (1) of the Act has not been made in respect of turbidity in the preceding 24 hours, a result indicating that turbidity exceeds 1.0 Nephelometric Turbidity Units (NTU) in,

i. a grab sample of water taken from a filter effluent line, or

ii. two samples of water from a filter effluent line that are tested by continuous monitoring equipment, if,

A. two samples were taken 15 minutes or more apart and the later of the two samples was the first sample that was taken 15 minutes or more after the earlier sample, and

B. the filter effluent line is directing water to the next stage of the treatment process.

7. If an approval, municipal drinking water licence or order, including an OWRA order, identifies a parameter as a health-related parameter and establishes a maximum concentration for the parameter, a result indicating that the parameter exceeds the maximum concentration in a sample of drinking water.

8. A result indicating that the concentration of sodium exceeds 20 milligrams per litre in a sample of drinking water, if a report under subsection 18 (1) of the Act has not been made in respect of sodium in the preceding 57 months.

9. A result indicating that the concentration of fluoride exceeds 1.5 milligrams per litre in a sample of drinking water, if,

i. the drinking water system provides fluoridation and a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 24 hours, or

ii. the drinking water system does not provide fluoridation and a report under subsection 18 (1) of the Act has not been made in respect of fluoride in the preceding 57 months.

10. A result indicating that the running annual average of quarterly results with respect to samples tested for trihalomethanes under subsection 13-6 (2) of Schedule 13 and calculated in accordance with subsection 13-6 (3) of Schedule 13 exceeds 0.100 milligrams per litre.

11. A result indicating that the running annual average of quarterly results with respect to samples tested for haloacetic acids under subsection 13-6.1 (2) of Schedule 13 and calculated in accordance with subsection 13-6.1 (3) of Schedule 13 exceeds 0.080

milligrams per litre.

(2) Despite subsection (1), a result is not an adverse test result of a drinking water test for the purpose of section 18 of the Act if,

(a) the result indicates compliance with a condition in an approval or licence that was imposed under clause 38 (2) (b), 46 (2) (b) or 60 (2) (b) of the Act; and

(b) the test was conducted at the drinking water system or the owner or operating authority for the system gave written notice of the condition referred to in clause (a) to the laboratory that conducted the test.

Duty to report other observations

16-4. If an observation other than an adverse test result prescribed by section 16-3 indicates that a drinking water system that provides or is required to provide disinfection is directing water to users of water from the system that has not been disinfected in accordance with the Ministry's *Procedure for Disinfection of Drinking Water in Ontario*,

(a) the owner of the system shall report to the Ministry and the medical officer of health immediately after the observation is made; or

(b) if an operating authority is responsible for the operation of the system, the operating authority shall report to the Ministry, the medical officer of health and the owner of the system immediately after the observation is made.

Report to designated facilities

16-5. (1) An owner of a drinking water system who is required to report under subsection 18 (1) of the Act or clause 16-4 (a) or who receives a report under clause 16-4 (b) shall report to the operator of each designated facility served by the system immediately after making the report under subsection 18 (1) of the Act or clause 16-4 (a) or receiving the report under clause 16-4 (b).

(2) Subsection (1) does not apply to the owner of a large municipal residential system.

(3) Subsection (1) does not apply if the owner of the drinking water system is also the operator of the designated facility.

Manner of making immediate report

16-6. (1) A person who is required to report immediately under section 16-4 or 16-5 or under section 18 of the Act shall do so in accordance with this section and section 16-8.

(2) An immediate report required under section 16-4 or 16-5 or under subsection 18 (1) of the Act, except for an immediate report that relates to an adverse test result prescribed by paragraph 10 or 11 of subsection 16-3 (1), must be given by speaking in person or by telephone with a person referred to in subsection (3).

(3) For the purpose of subsection (2), the immediate report must be given,

(a) to a medical officer of health, by speaking with a person at the office of the medical officer of health or, if the office is closed, by speaking with a person at the on-call system of the health unit;

(b) to the Ministry, by speaking with a person at the Ministry's Spills Action Centre; and

(c) if the report is required under section 16-5, by speaking with a responsible individual at the designated facility.

(3.1) Subject to subsection (3.2), an immediate report required under section 16-5 or under section 18 of the Act that relates to an adverse test result prescribed by paragraph 10 or 11 of subsection 16-3 (1) must be given by providing a written notice in accordance with sections 16-7 and 16-8.

(3.2) Subsection (3.1) does not apply to a person referred to in paragraph 2 of subsection 18 (1) of the Act who operates a laboratory and is required to report immediately under subsection 18 (1) of the Act an adverse test result prescribed by paragraph 10 or 11 of subsection 16-3 (1) if the person complies with the requirements set out in subsections 12 (2) and (3) of Ontario Regulation 248/03 (Drinking Water Testing Services) made under the Act within 48 hours after the reporting of the individual test result is authorized pursuant to subsection 12 (1) of that regulation.

(4) An immediate report required under subsection 18 (3) of the Act must be given by speaking in person or by telephone with a person designated for that purpose by the owner of the drinking water system.

(5) An immediate notice required under subsection 18 (4) of the Act must be given by speaking in person or by telephone with a person designated for that purpose by,

(a) the owner of the system and the operating authority for the system, if an operating authority is responsible for the system; or

(b) the owner of the system, if no operating authority is responsible for the system.

(6) If an immediate report is required to be given under section 16-5 to the operator of a designated facility that is not open, the report must be given not later than the time the designated facility re-opens.

Written notice

16-7. (1) A person who is required to report immediately in accordance with subsection 16-6 (2) shall, in addition to speaking in person or by telephone with a person referred to in subsection 16-6 (3), provide a written notice in accordance with this section and section 16-8 within 24 hours after the immediate report is given under section 16-4 or 16-5 or under subsection 18 (1) of the Act.

(2) A person who is required to report immediately by written notice in accordance with subsection 16-6 (3.1) shall give the written notice in accordance with this section and section 16-8 no later than seven days after the last day of the calendar quarter in which the test that produced the adverse test result was conducted.

(3) A written notice required by subsections (1) and (2) must be given to,

(a) the medical officer of health, by delivering the written notice to the office of the medical officer of health;

(b) the Ministry, by delivering the written notice to the Ministry's Spills Action Centre; and

(c) the operator of a designated facility, by delivering the written notice to the facility.

(4) A person who is required to give a written notice to a designated facility under subsection (1) shall also give a copy of the notice to,

(a) the minister responsible for the ministry or a person designated by the minister, if the interested authority is a ministry; or

(b) the head of the interested authority, if the interested authority is not a ministry.

(5) Subsection (4) does not apply to a designated facility that is,

(a) a private school;

(b) a children's camp; or

(c) a residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy.

Content of report and notice

16-8. (1) An immediate report given under section 16-4 or 16-5 or under section 18 of the Act must specify the adverse test result or observation that requires the report.

(1.1) Subsection (1) does not apply to an immediate report given by the owner of a drinking water system if the report relates to an adverse test result from a test that was not conducted at the system.

(1.2) If the person operating a laboratory gives an immediate report under section 18 of the Act in respect of a result that exceeds any of the standards prescribed by Schedule 1 to the Ontario Drinking Water Quality Standards for a water sample that was required, by this Regulation or an approval, municipal drinking water licence or order, including an OWRA approval or OWRA order, to be tested for a microbiological parameter, and the laboratory received notice of the test result for the other sample that, under section 6-3 of

Schedule 6, was required to be taken and tested for free chlorine residual or combined chlorine residual, the immediate report must also specify that test result.

(2) An immediate report given under section 16-4 or 16-5 or under subsection 18 (1) of the Act must indicate,

(a) what actions are being taken in response to the adverse test result or observation that requires the report; and

(b) if Schedule 17 or 18 requires that a corrective action be taken in respect of the adverse test result or observation, whether the corrective action is being taken.

(3) Subsection (2) does not apply to a report given under paragraph 2 of subsection 18 (1) of the Act by a person operating a laboratory.

(4) Subject to subsection (3), subsections (1) to (2) also apply, with necessary modifications, to the written notice given under section 16-7.

Notice of issue resolution

16-9. (1) If an immediate report or a written notice is given under this Schedule and the issue that gave rise to the notice is resolved, the owner of the drinking water system shall, within seven days after the issue is resolved, give a written notice summarizing the action taken and the results achieved to,

(a) the medical officer of health, by delivering the written notice to the office of the medical officer of health; and

(b) the Ministry, by delivering the written notice to the Ministry's Spills Action Centre.

(2) If an immediate report or a written notice is given under this Schedule to the interested authority for a designated facility and the issue that gave rise to the notice is resolved, the owner of the drinking water system shall, within 30 days after the issue is resolved, give a written notice summarizing the action taken and the results achieved to the interested authority.

Operating authorities

16-10. An operating authority that has agreed with the owner of a drinking water system to give reports or notices on behalf of the owner under section 18 of the Act or this Schedule shall comply with the agreement.

O. Reg. 170/03, Sched. 16; O. Reg. 249/03, s. 21; O. Reg. 269/03, s. 16; O. Reg. 165/04, s. 5; O. Reg. 253/05, s. 17; O. Reg. 247/06, s. 27; O. Reg. 399/07, s. 9; O. Reg. 326/08, s. 11; O. Reg. 418/09, s. 23; O. Reg. 374/15, s. 5-7; O. Reg. 458/16, s. 15.

SCHEDULE 17
CORRECTIVE ACTION

Large Municipal Residential

Application

17-1. This Schedule applies to large municipal residential systems.

Improper disinfection

17-2. If a report is required to be made under section 16-4 of Schedule 16 in respect of water that has not been properly disinfected, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately restore the proper disinfection.
2. Take such other steps as are directed by the medical officer of health.

Turbidity

17-3. If a report is required to be made under section 18 of the Act in respect of turbidity, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately check all the drinking water system's filters and turbidity monitoring equipment.
2. Review upstream operational processes and correct any faulty processes that are identified.
3. Take such other steps as are directed by the medical officer of health.

Chlorine residual

17-4. If a report is required to be made under section 18 of the Act in respect of free chlorine residual or combined chlorine residual, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately flush the watermains and restore secondary disinfection to ensure that,
    i. a free chlorine residual of at least 0.05 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 0.25 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chloramination.

2. Take such other steps as are directed by the medical officer of health.

***Escherichia coli* (E. coli)**

17-5. If a report is required to be made under section 18 of the Act in respect of *Escherichia coli* (E. coli), the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately resample and test.
2. Immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chloramination.

3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until *Escherichia coli* (E. coli) is not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Total coliforms

17-6. If a report is required to be made under section 18 of the Act in respect of total coliforms, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If total coliforms are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chloramination.

3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until total coliforms are not detected in any of the samples from two

consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.

4. Take such other steps as are directed by the medical officer of health.

17-7., 17-8. REVOKED: O. Reg. 247/06, s. 28 (5).

***Aeromonas* spp., etc.**

17-9. If a report is required to be made under section 18 of the Act in respect of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*), the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are detected under paragraph 1, immediately increase the chlorine or chloramine dose and flush the watermains to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system, if the drinking water system provides chloramination.
3. Maintain the free chlorine residual or combined chlorine residual concentration referred to in paragraph 2 in the affected parts of the distribution system, and continue to resample and test, until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. Take such other steps as are directed by the medical officer of health.

Chemical and radiological parameters in O. Reg. 169/03

17-10. (1) If a report is required to be made under section 18 of the Act in respect of a chemical or radiological parameter set out in Schedule 2 or 3 to the Ontario Drinking Water Quality Standards, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Subject to subsection (2), resample and test as soon as reasonably possible.
2. If a concentration that exceeds the standard prescribed for the parameter by Schedule 2 or 3 to the Ontario Drinking Water Quality Standards is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

(2) Paragraph 1 of subsection (1) does not apply to a report that is required to be made in respect of trihalomethanes or haloacetic acids.

Pesticide not listed in Schedule 2 to O. Reg. 169/03

17-11. If a report is required to be made under section 18 of the Act in respect of a pesticide not listed in Schedule 2 to the Ontario Drinking Water Quality Standards, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If the pesticide is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Health-related parameters in an approval or order

17-12. If an approval, municipal drinking water licence or order identifies a parameter as a health-related parameter and a report is required to be made under section 18 of the Act in respect of the parameter, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If a concentration that exceeds the maximum concentration established for the parameter by the approval or order is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Sodium

17-13. If a report is required to be made under section 18 of the Act in respect of sodium, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If a concentration of sodium that exceeds 20 milligrams per litre is detected under paragraph 1, take such steps as are directed by the medical officer of health.

Corrective action that requires report under s. 18 of the Act

17-14. If a report is required to be made under section 18 of the Act as a result of a drinking water test that is a component of corrective action taken with respect to a parameter in accordance with this Schedule, it is not necessary to start the corrective action with respect to that parameter over again, but the owner of the drinking water system and the operating authority for the system shall ensure that any remaining components of the corrective action are completed.

O. Reg. 170/03, Sched. 17; O. Reg. 165/04, s. 6; O. Reg. 247/06, s. 28; O. Reg. 418/09, s. 24; O. Reg. 374/15, s. 8.

SCHEDULE 18
CORRECTIVE ACTION

Municipal: Small Residential
Large Non-Residential
Small Non-Residential

Non-Municipal: Year-Round Residential
Seasonal Residential
Large Non-Residential
Small Non-Residential

Application

18-1. This Schedule applies to the following drinking water systems:

1. Small municipal residential systems.
2. Large municipal non-residential systems.
3. Small municipal non-residential systems.
4. Non-municipal year-round residential systems.
5. Non-municipal seasonal residential systems.
6. Large non-municipal non-residential systems.
7. Small non-municipal non-residential systems.

Improper disinfection

18-2. If a report is required to be made under section 16-4 of Schedule 16 in respect of water that has not been properly disinfected, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately restore the disinfection.
2. If the disinfection cannot be quickly restored, immediately take all reasonable steps to notify all users of water from the system to use an alternate source of drinking water or, if no alternate source is available, to bring water to a rapid rolling boil for at least one minute before use.

3. Take such other steps as are directed by the medical officer of health.

Turbidity

18-3. If a report is required to be made under section 18 of the Act in respect of turbidity, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately check the drinking water system's turbidity monitoring equipment and correct any problems that are identified.
2. If no problems are identified under paragraph 1,
    i. immediately backwash the nearest filter upstream of the location where the sample that gave rise to the report under section 18 of the Act was taken or immediately replace the filter cartridges or filter elements of the nearest filtration equipment upstream of that location, and

    ii. immediately review other upstream operational processes and correct any faulty processes that are identified.

3. Immediately after taking the steps required by paragraphs 1 and 2, resample and test.
4. If turbidity that exceeds 1.0 Nephelometric Turbidity Units (NTU) is detected under paragraph 3,
    i. immediately take all reasonable steps to notify all users of water from the system to use an alternate source of drinking water or, if no alternate source is available, to bring water to a rapid rolling boil for at least one minute before use,

    ii. follow the manufacturer's recommendations for servicing the filtration equipment upstream of the location where the sample that gave rise to the report under section 18 of the Act was taken, and

    iii. flush the distribution system and any plumbing owned by the owner of the drinking water system.

5. Take such other steps as are directed by the medical officer of health.

Chlorine residual

18-4. If a report is required to be made under section 18 of the Act in respect of free chlorine residual, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately flush the distribution system and any plumbing owned by the owner of the drinking water system, and restore secondary disinfection to ensure that,
    i. a free chlorine residual of at least 0.05 milligrams per litre is quickly achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 0.25 milligrams per litre is quickly achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chloramination.

2. If the drinking water system provides chlorination, the system does not provide chloramination and a free chlorine residual of at least 0.05 milligrams per litre cannot be quickly achieved at all points in the affected parts of the distribution system and plumbing, immediately take all reasonable steps to notify all users of water from the system to use an alternate source of drinking water or, if no alternate source is available, to bring water to a rapid rolling boil for at least one minute before use.

2.1 If the drinking water system provides chloramination and a combined chlorine residual of at least 0.25 milligrams per litre cannot be quickly achieved at all points in the affected parts of the distribution system and plumbing, immediately take all reasonable steps to notify all users of water from the system to use an alternate source of drinking water or, if no alternate source is available, to bring water to a rapid rolling boil for at least one minute before use.

3. Take such other steps as are directed by the medical officer of health.

***Escherichia coli* (E. coli)**

18-5. If a report is required to be made under section 18 of the Act in respect of *Escherichia coli* (E. coli), the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Immediately take all reasonable steps to notify all users of water from the system to use an alternate source of drinking water or, if no alternate source is available, to bring water to a rapid rolling boil for at least one minute before use.
2. Immediately resample and test.
3. Immediately increase the chlorine dose and flush the distribution system and any plumbing owned by the owner of the drinking water system to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chloramination.
4. If the drinking water system provides chlorination or chloramination, maintain the free chlorine residual or combined chlorine concentration referred to in paragraph 3 in the affected parts of the distribution system and plumbing, and continue to resample and test, until *Escherichia coli* (E. coli) is not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
5. If the drinking water system does not provide chlorination or chloramination, immediately take the relevant corrective action steps described in the Ministry's *Procedure for Corrective Action for Systems Not Currently Using Chlorine*.
6. Take such other steps as are directed by the medical officer of health.

Total coliforms

18-6. If a report is required to be made under section 18 of the Act in respect of total coliforms, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If total coliforms are detected under paragraph 1, immediately increase the chlorine dose and flush the distribution system and any plumbing owned by the owner of the drinking water system to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chloramination.
3. If total coliforms are detected under paragraph 1 and the drinking water system provides chlorination or chloramination, maintain the free chlorine residual or combined chlorine concentration referred to in paragraph 2 in the affected parts of the distribution system and plumbing, and continue to resample and test, until total coliforms are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. If total coliforms are detected under paragraph 1 and the drinking water system does not provide chlorination or chloramination, immediately take the relevant corrective action steps described in the Ministry's *Procedure for Corrective Action for Systems Not Currently Using Chlorine*.
5. Take such other steps as are directed by the medical officer of health.

18-7., **18-8.** REVOKED: O. Reg. 247/06, s. 29 (5).

***Aeromonas* spp., etc.**

18-9. If a report is required to be made under section 18 of the Act in respect of *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*), the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are detected under paragraph 1, immediately increase the chlorine dose and flush the distribution system and any plumbing owned by the owner of the drinking water system to ensure that,
    i. a free chlorine residual of at least 0.2 milligrams per litre is achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chlorination and does not provide chloramination, or

    ii. a combined chlorine residual of at least 1.0 milligrams per litre is achieved at all points in the affected parts of the distribution system and plumbing, if the drinking water system provides chloramination.
3. If *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are detected under paragraph 1 and the drinking water system provides chlorination or chloramination, maintain the free chlorine residual or combined chlorine concentration referred to in paragraph 2 in the affected parts of the distribution system and plumbing, and continue to resample and test, until *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are not detected in any of the samples from two consecutive sets of samples taken 24 to 48 hours apart or as otherwise directed by the medical officer of health.
4. If *Aeromonas* spp., *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Clostridium* spp. or fecal *streptococci* (Group D *streptococci*) are detected under paragraph 1 and the drinking water system does not provide chlorination or chloramination, immediately take the relevant corrective action steps described in the Ministry's *Procedure for Corrective Action for Systems Not Currently Using Chlorine*.
5. Take such other steps as are directed by the medical officer of health.

Chemical and radiological parameters in O. Reg. 169/03

18-10. (1) If a report is required to be made under section 18 of the Act in respect of a chemical or radiological parameter set out in Schedule 2 or 3 to the Ontario Drinking Water Quality Standards, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Subject to subsection (2), resample and test as soon as reasonably possible.
2. If a concentration that exceeds the standard prescribed for the parameter by Schedule 2 or 3 to the Ontario Drinking Water Quality Standards is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

(2) Paragraph 1 of subsection (1) does not apply to a report that is required to be made in respect of trihalomethanes or haloacetic acids.

Pesticide not listed in Schedule 2 to O. Reg. 169/03

18-11. If a report is required to be made under section 18 of the Act in respect of a pesticide not listed in Schedule 2 to the Ontario Drinking Water Quality Standards, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If the pesticide is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Health-related parameters in an approval or order

18-12. If an approval, municipal drinking water licence or order identifies a parameter as a health-related parameter and a report is required to be made under section 18 of the Act in respect of the parameter, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If a concentration that exceeds the maximum concentration established for the parameter by the approval or order is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Sodium

18-13. If a report is required to be made under section 18 of the Act in respect of sodium, the owner of the drinking water system and the operating authority for the system shall ensure that the following corrective action is taken:

1. Resample and test as soon as reasonably possible.
2. If a concentration of sodium that exceeds 20 milligrams per litre is detected under paragraph 1, take such other steps as are directed by the medical officer of health.

Corrective action that requires report under s. 18 of the Act

18-14. If a report is required to be made under section 18 of the Act as a result of a drinking water test that is a component of corrective action taken with respect to a parameter in accordance with this Schedule, it is not necessary to start the corrective action with respect to that parameter over again, but the owner of the drinking water system and the operating authority for the system shall ensure that any remaining components of the corrective action are completed.

O. Reg. 170/03, Sched. 18; O. Reg. 165/04, s. 7; O. Reg. 247/06, s. 29; O. Reg. 326/08, s. 12; O. Reg. 418/09, s. 25; O. Reg. 374/15, s. 9.

SCHEDULE 19
WARNING NOTICE OF POTENTIAL PROBLEMS

Municipal: Small Residential
Large Non-Residential
Small Non-Residential

Non-Municipal: Year-Round Residential
Seasonal Residential
Large Non-Residential
Small Non-Residential

Application

19-1. This Schedule applies to the following drinking water systems:

1. Small municipal residential systems.
2. Large municipal non-residential systems.
3. Small municipal non-residential systems.
4. Non-municipal year-round residential systems.
5. Non-municipal seasonal residential systems.
6. Large non-municipal non-residential systems.
7. Small non-municipal non-residential systems.

Warning notice to be posted

19-2. (1) The owner of a drinking water system and the operating authority for the system shall ensure that warning notices are posted in accordance with this section if,

(a) the owner or operating authority is required under Schedule 18 to take all reasonable steps to ensure that all users of water from the system are notified to use an alternate source of drinking water or, if no alternate source is available, to bring water to a rapid rolling boil for at least one minute before use; or

(b) the owner or operating authority is not complying with Schedule 11, 12 or 18.

(2) The warning notices required by subsection (1) must be posted in prominent locations where they are likely to come to the attention of users of water from the system.

(3) As part of complying with subsection (2), if the drinking water system serves a designated facility, the warning notices required by subsection (1) must be posted,

(a) at every entrance to every building and every structure that is part of the designated facility; or

(b) if the designated facility does not have any building or structure, at a location where the warning notices are likely to come to the attention of all persons who enter the facility.

(4) If the drinking water system serves a designated facility that is not owned by the owner of the drinking water system, the owner of the system and the operating authority for the system shall be deemed to have ensured that warning notices are posted in accordance with subsection (3) if the operator of the facility is provided with,

(a) sufficient copies of the warning notices required by subsection (3); and

(b) instructions to post the warning notices in accordance with subsection (3).

Posting by others

19-3. (1) If warning notices are not posted in accordance with section 19-2, the warning notices may be posted by,

(a) a provincial officer; or

(b) a public health inspector under the *Health Protection and Promotion Act*, or a person acting under the supervision of a public health inspector.

(2) If warning notices are not posted in accordance with section 19-2 at a designated facility, the warning notices may also be posted by an officer or agent of the interested authority for the designated facility.

(3) Subsection (2) does not apply to the following designated facilities:

1. A private school.
2. A children's camp.
3. A residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy.

O. Reg. 170/03, Sched. 19; O. Reg. 249/03, s. 22; O. Reg. 247/06, s. 30.

SCHEDULE 20 REVOKED: O. REG. 247/06, S. 31.

SCHEDULE 21
ENGINEERING EVALUATION REPORTS

Municipal: Large Non-Residential
Small Non-Residential

Non-Municipal: Year-Round Residential
Seasonal Residential
Large Non-Residential
Small Non-Residential

Application

21-1. (1) This Schedule applies to the following drinking water systems:

1. Large municipal non-residential systems.
2. Small municipal non-residential systems.
3. Non-municipal year-round residential systems.
4. Non-municipal seasonal residential systems.
5. Large non-municipal non-residential systems.
6. Small non-municipal non-residential systems.

(2) This Schedule does not apply to a drinking water system if the system has an approval with a condition that provides relief from compliance with all of the requirements of the following provisions:

1. Paragraph 2 of subsection 2-2 (1) of Schedule 2.
2. Subsection 2-2 (2) of Schedule 2.
3. Sections 2-3 to 2-6 of Schedule 2.

Systems that commenced operation before this Regulation

21-2. (1) The owner of a drinking water system that commenced operation before this Regulation came into force shall ensure that a licensed engineering practitioner who has experience in sanitary engineering related to drinking water systems prepares a report that complies with section 21-5 not later than 30 days after paragraph 2 of subsection 2-2 (1) begins to apply to the system.

(2) If, before this Regulation came into force, a report on a drinking water system was prepared and given to the Director in accordance with section 5 of Ontario Regulation 505/01 (Drinking Water Protection — Smaller Water Works Serving Designated Facilities), the owner of the system shall be deemed to have complied with subsection (1) and with the owner's first obligation to give a notice to the Director under section 21-7, and, for the purpose of this Schedule, the report required by subsection (1) shall be deemed to have been required to be prepared not later than the date it was required to be prepared and given under Ontario Regulation 505/01.

(3) If an OWRA approval was granted after August 1, 2000 in respect of the system and the owner of the system gives the Director a written statement by a licensed engineering practitioner who has experience in sanitary engineering related to drinking water systems stating that,

(a) the licensed engineering practitioner or a person under his or her supervision has visited the system; and

(b) in the licensed engineering practitioner's opinion,

(i) all equipment required in order to ensure compliance with Schedule 2 is being provided, and

(ii) all equipment required in order to ensure compliance with Schedules 6, 8 and 9 is being provided,

the owner of the system shall be deemed to have complied with subsection (1) and with the owner's first obligation to give a notice to the Director under section 21-7, and, for the purpose of this Schedule, the report required by subsection (1) shall be deemed to have been required to be prepared not later than the date the OWRA approval was granted.

(4) Subsection (1) does not apply if, before the date the report is required to be prepared under that subsection, a report is prepared under section 21-3 in respect of the drinking water system.

New and altered systems

21-3. (1) If, after this Regulation comes into force, a drinking water system commences operation or an alteration is made to a drinking water system, the owner of the system shall ensure that, not later than 30 days after the system commences operation or the alteration is completed, a licensed engineering practitioner who has experience in sanitary engineering related to drinking water systems prepares a report that complies with section 21-5.

(2) Subsection (1) does not apply to,

(a) the establishment or alteration of or a change to a service pipe;

(b) the establishment or alteration of or a change in an appurtenance of a watermain, if the appurtenance does not disrupt the operation of the drinking water system that the watermain is part of;

(c) the relining of a watermain, if the new lining does not disrupt the operation of the drinking water system that the watermain is part of;

(d) the replacement of an existing watermain with a new watermain that has similar dimensions and performance criteria and that is in the same or approximately the same location, if,

(i) the existing watermain was established or previously altered in accordance with an approval, or

(ii) after the existing watermain was established or previously altered,

(A) a report was prepared in accordance with this section and a notice was given to the Director in accordance with section 21-7 with respect to the establishment or alteration, or

(B) a report was prepared and given to the Director in accordance with section 5 of Ontario Regulation 505/01 (Drinking Water Protection — Smaller Water Works Serving Designated Facilities) with respect to the establishment or alteration.

(3) Subsection (1) does not apply to a non-municipal year-round residential system if, pursuant to subsection 2-11 (2) of Schedule 2, paragraph 2 of section 2-2 of Schedule 2 does not apply to the system immediately after it commences operation, but, if that paragraph later applies to the system, the owner of the system shall ensure that, not later than 30 days after the date that paragraph begins to apply, a licensed engineering practitioner who has experience in sanitary engineering related to drinking water systems prepares a report that complies with section 21-5.

21-4. REVOKED: O. Reg. 247/06, s. 32 (4).

Contents of engineer's report

21-5. For the purposes of this Schedule, a report complies with this section if,

(a) the report specifies which type of drinking water system listed in subsection 21-1 (1) the report deals with;

(b) the licensed engineering practitioner who prepares the report states in the report that the licensed engineering practitioner or a person under his or her supervision has visited the drinking water system and that, in the licensed engineering practitioner's opinion,

(i) all equipment required in order to ensure compliance with Schedule 2 is being provided, and

(ii) all equipment required in order to ensure compliance with Schedules 6, 8 and 9 is being provided;

(c) the report sets out the licensed engineering practitioner's reasons for the opinion referred to in clause (b), along with the technical and other information he or she relied on in reaching that opinion; and

(d) the report includes a maintenance schedule that sets out requirements relating to the frequency with which the following equipment must be inspected, tested and replaced:

(i) the water treatment equipment that is provided by the drinking water system, and

(ii) the equipment that is provided by the drinking water system in order to ensure compliance with Schedules 6, 8 and 9.

Report to be delivered to owner

21-6. The licensed engineering practitioner who prepares a report under section 21-2 or 21-3 shall immediately deliver the report to the owner of the system.

Notice to Director

21-7. (1) The owner of the drinking water system shall, within seven days after a report is required to be prepared under this Schedule, give a notice to the Director and to the interested authority for each designated facility served by the system that specifies which type of drinking water system listed in subsection 21-1 (1) the report deals with and includes a copy of the opinion referred to in clause 21-5 (b).

(2) The owner of a drinking water system shall promptly give a notice to the Director that describes any changes that occur with respect to information that was given in an earlier notice under subsection (1) or this subsection.

(3) The obligation to ensure that a notice be given to the interested authority for a designated facility under subsection (1) does not apply to the following designated facilities:

1. A private school.
2. A children's camp.
3. A residence for seniors or retired persons, or any other similar residence, where attainment of a mature age is a factor in being accepted for occupancy.

O. Reg. 170/03, Sched. 21; O. Reg. 249/03, s. 23; O. Reg. 247/06, s. 32; O. Reg. 418/09, s. 1 (5).

SCHEDULE 22
SUMMARY REPORTS FOR MUNICIPALITIES

Municipal: Large Residential
Small Residential

Application

22-1. This Schedule applies to the following drinking water systems:

1. Large municipal residential systems.
2. Small municipal residential systems.

Report

22-2. (1) The owner of a drinking water system shall ensure that, not later than March 31 of each year after 2003, a report is prepared in accordance with subsections (2) and (3) for the preceding calendar year and is given to,

(a) in the case of a drinking water system owned by a municipality, the members of the municipal council;

(b) in the case of a drinking water system owned by a municipal service board established under section 195 of the *Municipal Act, 2001*, the members of the municipal service board; or

(c) in the case of a drinking water system owned by a corporation, the board of directors of the corporation.

(2) The report must,

(a) list the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and

(b) for each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

(3) The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

1. A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement pursuant to subsection 5 (4), to the flow rates specified in the written agreement.

(4) If a report is prepared under subsection (1) for a system that supplies water to a municipality under the terms of a contract, the owner of the system shall give a copy of the report to the municipality by March 31.

(5) REVOKED: O. Reg. 253/05, s. 18.

OWRA approvals

22-3. A provision of an OWRA approval that requires the completion and presentation of a compliance report does not apply to a drinking water system if the owner of the system complies with section 22-2.

O. Reg. 170/03, Sched. 22; O. Reg. 249/03, s. 24; O. Reg. 253/05, s. 18; O. Reg. 418/09, s. 26.

SCHEDULE 23
INORGANIC PARAMETERS

Item	Parameter
1.	Antimony
2.	Arsenic
3.	Barium
4.	Boron
5.	Cadmium
6.	Chromium
7.	Mercury
8.	Selenium
9.	Uranium

O. Reg. 170/03, Sched. 23.

SCHEDULE 24
ORGANIC PARAMETERS

Item	Parameter
1.	Alachlor
2.	Atrazine + N-dealkylated metabolites
3.	Azinphos-methyl
4.	Benzene
5.	Benzo(a)pyrene
6.	Bromoxynil
7.	Carbaryl
8.	Carbofuran
9.	Carbon Tetrachloride
10.	Chlorpyrifos
11.	Diazinon
12.	Dicamba
13.	1,2-Dichlorobenzene
14.	1,4-Dichlorobenzene
15.	1,2-Dichloroethane
16.	1,1-Dichloroethylene (vinylidene chloride)
17.	Dichloromethane

18.	2,4-Dichlorophenol
19.	2,4-Dichlorophenoxy acetic acid (2,4-D)
20.	Diclofop-methyl
21.	Dimethoate
22.	Diquat
23.	Diuron
24.	Glyphosate
25.	Malathion
26.	2-Methyl-4-chlorophenoxyacetic acid
27.	Metolachlor
28.	Metribuzin
29.	Monochlorobenzene
30.	Paraquat
31.	Pentachlorophenol
32.	Phorate
33.	Picloram
34.	Polychlorinated Biphenyls (PCB)
35.	Prometryne
36.	Simazine
37.	Terbufos
38.	Tetrachloroethylene (perchloroethylene)
39.	2,3,4,6-Tetrachlorophenol
40.	Triallate
41.	Trichloroethylene
42.	2,4,6-Trichlorophenol
43.	Trifluralin
44.	Vinyl Chloride

O. Reg. 374/15, s. 10.

Français

APPENDIX F

Engineer's Declaration

Ontario

Ministry of the Environment, Conservation and Parks

Declaration of Licensed Engineering Practitioner and Notice of Completion

Drinking Water Systems Regulation (O. Reg. 170/03)

Fields marked with an asterisk (*) are mandatory.

Please complete this form and fax/email directly to:

Ministry of the Environment, Conservation and Parks

Email: water.forms@ontario.ca

Fax: 416-314-8716

Mail: 40 St. Clair Ave. W. 3rd Floor
Toronto ON M4V 1M2

This form must also be provided to the interested authority for each designated facility served by the DWS (if applicable).

The signature included in the Licensed Engineering Practitioner's seal affixed to the engineering evaluation report is of: *

Jacqueline Coughlin

The date the report was sealed (yyyy/mm/dd) *

2020/06/02

Name of the Licensed Engineering Practitioner who makes this declaration (please add credentials e.g. P.Eng, LEL, LET) *

Jacqueline Coughlin, P.Eng.

Company Name
Azimuth Environmental Consulting, Inc.,

Mailing Address

Unit/Apt/Suite Number	Street Number *	Street Name *	PO Box/Rural Route no.
	642	Welham Road	

City/Town *	Province/State *	Postal Code/Zip Code *
Barrie	ON	L4M 9A1

Telephone Number (include area code) *	Fax Number (include area code)
705-721-8451 ext. 215	705-721-8926

Date of this Declaration of Licensed Engineering Practitioner (yyyy/mm/dd) *

2020/10/07

Collection of information on this Notice is done so in accordance with the *Safe Drinking Water Act*, 2002 and O. Reg. 170/03. Personal information gathered herein is governed by the *Freedom of Information and Protection of Privacy Act*. For questions and concerns, please contact the Ministry of the Environment, Conservation and Parks at 1-866-793-2588.

Select one of the following that applies :

☑ This submission is for a new drinking water system

☐ This submission is for an altered drinking water system

Name of the Drinking Water System (DWS) *	DWS Number (If assigned)
Calabogie Peaks Resort DWS	260097058

Drinking Water System Owner Name (Full Legal Name, if a Corporation) *

Calabogie Peaks ULC

DWS Category *

Non-Municipal Year–Round Residential (NMYRR)

Part A - Declaration of Licensed Engineering Practitioner

To be completed by the Licensed Engineering Practitioner that completed the engineering evaluation report for the above named drinking water system

I hereby state: (Please check all boxes that apply)

☑ The DWS has been visited by myself or a person under my supervision.

☑ I have prepared an engineering evaluation report on this DWS according to the requirements of section 21-5 of O. Reg. 170/03.

☑ I am a Licensed Engineering Practitioner with experience in sanitary engineering relating to drinking water supplies.

Opinion under clause 21-5(b) that is to be part of Notice to Director under s. 21-7(1) In my opinion: (Please check all boxes that apply)

☑ The DWS is providing all equipment required in order to ensure compliance with the provisions of Schedule 2 of O. Reg. 170/03.

☑ The DWS is providing all equipment required to ensure compliance with the operational checks, sampling and testing provisions of O. Reg. 170/03 as provided in Schedules 6, 8 or 9 of O. Reg. 170/03 that apply to this DWS.

☑ My report contains the reasons for this opinion as well as the technical and other information I relied on in reaching it.

☑ My report includes a maintenance schedule that sets out the requirements relating to the frequency with which equipment referred to in Schedule 21, section 21-5 clause (d) (i) and (ii) must be inspected, tested and replaced.

Please check only if the DWS in question is a Non-Municipal Year-Round Residential or Non-Municipal Seasonal Residential System that relies on point of entry treatment in accordance with Schedule 3 of the regulation:

☐ Point of entry treatment units required to ensure compliance with the provisions of Schedule 3 of O. Reg. 170/03 have been installed on the plumbing of every building and other structure that is part of a private residence, designated facility, or public facility served by the system.

Licensed Engineering Practitioner's seal is to be affixed in space below and signed by the Licensed Engineering Practitioner who prepared the engineering evaluation report

Part B - Notice of Completion of an Engineering Evaluation Report

To be completed by the owner of the drinking water system

Owner Certification

Drinking Water System Owner Name *	Date (yyyy/mm/dd) *
Calabogie Peaks ULC	2020/10/07

If this is a Non-Municipal Residential DWS serving 6 or more residences within the geographic area of a municipality for which construction or an extension commenced after June 1, 2003, municipal consent was granted by

Municipality Name	Date (yyyy/mm/dd) *
THE CORPORATION OF THE TOWNSHIP OF GREATER MADAWASKA	2020/01/07

I confirm that: (Please check all boxes that apply)

☑ An engineering evaluation report on this DWS prepared under subsection 21-3 (1) by a Licensed Engineering Practitioner has been delivered to me and the Licensed Engineering Practitioner who prepared the report or a person under his or her supervision has visited the DWS.

The Licensed Engineering Practitioner's report included their opinion indicating that:

☑ The DWS is providing all equipment required in order to ensure compliance with the provisions of Schedule 2 of O. Reg. 170/03, and providing all equipment required to ensure compliance with the operational checks, sampling and testing provisions of O. Reg. 170/03 as provided in Schedule 6, Schedule 8 or 9 that applies to this category of DWS.