

Lakeshore Annual and Summary Report

For the 2021 Operating Year

PREPARED BY:

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1.0 EXECUTIVE SUMMARY

The purpose of this report is to provide information to system Owners and Stakeholders to satisfy the regulatory requirements of the following:

- Safe Drinking Water Act (SDWA)
- Drinking Water Quality Management Standard (DWQMS)
- Section 81 of the Clean Water Act (CWA)
- Reporting required under Ontario Regulation (O. Reg.) 170/03, Section 11
- Reporting required under O. Reg. 170/03, Schedule 22

The Operating Authority (Veolia), on behalf of the Owner (Township of Huron-Kinloss), has prepared this report as a compilation of information that demonstrates the ongoing provision of a safe, consistent supply of high quality drinking water to customers supplied by the Lakeshore Drinking Water System.

SAFE DRINKING WATER ACT

Following the Walkerton Tragedy in 2000, the Ontario Government developed a new, comprehensive legislative paradigm based on a source-to-tap, multi-barrier approach to the protection of drinking water. The *Safe Drinking Water Act (SDWA)*, 2002, and its Regulations, contain requirements for Municipalities that provide potable water to their residents.

Under Section 19 (Standard of Care of the SDWA), Owners of a Drinking Water System are required to:

- a) exercise the level of care, diligence and skill in respect of a Municipal Drinking Water System that a reasonably prudent person would be expected to exercise in a similar situation; and
- b) act honestly, competently and with integrity, with a view to ensuring the protection and safety of the users of the Municipal Drinking Water System.
 2002, c. 32, s. 19(1).

The following chart outlines key aspects of the *SDWA* that relate to the Lakeshore Drinking Water System:

Legislative Framework for the Lakeshore Drinking Water System



Figure 1

2.0 **REPORTING REQUIREMENTS:**

This report intends to provide relevant information to help the Township of Huron-Kinloss, its Council, as Owners of the Lakeshore Drinking Water System, meet the Standard of Care. Its contents are organized as follows, according to specific reporting requirements under the *SDWA*:

O. REG. 170/03, SECTION 11 - ANNUAL REPORT

- The Owner shall ensure an annual report is prepared as per O. Reg. 170/03, s. 11(1)
- The Owner of a Drinking Water System (DWS) that supplies water to another DWS shall provide a copy of the annual report to the system that receives the water (Courtney Subdivision Ashfield-Colborne-Wawanosh)
- The annual report must cover the period of January 1 to December 31 in a year and must be prepared not later than February 28 of the following year
- The annual report must:
 - Contain a brief description of the DWS, including a list of water treatment chemicals used
 - Summarize any reports made to the Ministry under s.s. 18(1) of the Act, or Sch. 16 (16-4)
 - Summarize the results of tests made under O. Reg. 170/03 and the Municipal Drinking Water Licence (MDWL)
 - Describe any corrective actions taken under Sch. 17
 - Describe any major expenses to install, repair or replace required equipment
 - Include a statement of where a report prepared as per Sch. 22 will be available for inspection under s.s. 12(4)
 - Specify the number of points sampled as per s.s. 15.1-4(2) or s.s. 15.1-5(5), the number of samples taken, and the number of points where a sample exceeded the prescribed standard for lead
- The Owner shall ensure that a copy of an annual report for a system is given, without charge, to every person who requests a copy
- If a DWS is connected to and receives all of its drinking water from another DWS, the Owner of the system that receives the water shall ensure that a copy of an annual report for the DWS that supplies water is given, without charge, to every person who requests a copy
- Every time that an annual report is prepared for a DWS, 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. 170/03, SCHEDULE 22 - SUMMARY REPORT FOR MUNICIPALITIES

- The Owner of a DWS shall ensure that, not later than March 31 of each year, a report is prepared as per s.s. (2) and (3) for the preceding year and is given to:
 - in the case of a DWS owned by a Municipality, the members of the Municipal Council;
 - in the case of a DWS owned by a Municipal Service Board established under s. 195 of the *Municipal Act, 2001*, the members of the Municipal Service Board; or
 - \circ in the case of a DWS owned by a Corporation, the Board of Directors of the Corporation
- The summary report must,
 - list the requirements of the Act, the Regulations, the system's approval, Drinking Water Works Permit (DWWP), MDWL, and any Orders applicable to the system that were not met at any time during the period covered by the report; and
 - for each requirement referred to above that was not met, specify the duration of the failure and the measures that were taken to correct the failure.
- The summary report must also include the following information for the purpose of enabling the Owner of the DWS to assess the capability of the system to meet existing and planned uses of the system:
 - 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;
 - A comparison of the summary referred to above to the rated capacity and flow rates approved in the system's approval, DWWP or MDWL, 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.
- If a report is prepared under s.s. (1) for a system that supplies water to a Municipality under the terms of the contract, the Owner of the DWS shall give a copy of the report to the Municipality by March 31.

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP) INSPECTION REPORT

• In 2006, the MECP introduced a comprehensive inspection program for Municipal Residential Drinking Water Systems. The objectives of this program are to determine compliance with the *SDWA* and associated regulations; to encourage the continuous improvement of the Drinking Water System; and to establish a process to measure these improvements.

MUNICIPAL DRINKING WATER MANAGEMENT REVIEW

• The *SDWA*, through the Municipal Drinking Water System Licensing Program, requires that the Township maintain an accredited Quality Management System (QMS) for its drinking water system. This review communicates to Council the key information related to the QMS and the Municipal Drinking Water Licencing Program.

QMS OPERATIONAL PLAN

• The *SDWA*, through the Municipal Drinking Water Licensing Program, requires that a Municipal Drinking Water System Owner (Council) endorse the most current version of the QMS Operational Plan. This document, once endorsed, is posted on the Township of Huron-Kinloss website and is available at the Operations Centre.

The Township of Huron-Kinloss is approved by the MECP to operate a Class 3 Distribution and Supply System through its MDWL # 087-102, and to alter the system through its DWWP # 087-202. The Township of Ashfield-Colborne-Wawanosh is approved by the MECP to operate a Class 1 Distribution System (Courtney Subdivision) through its MDWL # 080-101, and to alter the system through its DWWP # 080-201.

The MECP "Municipal Drinking Water Systems" web portal provides the most current version of the *Act* and its regulations and can be found:

https://www.ontario.ca/page/municipal-drinking-water-systems-licencing-registration-and-permits

3.0 DESCRIPTION OF WATER SYSTEM (O. Reg. 170/03, s. 11 (6) (a))

A summary of the Lakeshore Drinking Water System description is outlined below:

Drinking Water System Number:	220000425
Drinking Water System Name:	Lakeshore Well Water Distribution and Supply
Drinking Water System Owner:	Corporation of the Township of Huron-Kinloss
Drinking Water System Category:	Large Municipal Residential
Drinking Water System Classification:	Water Distribution and Supply Subsystem Class 3
Drinking Water System Certificate No.:	1808
Daily Maximum Water Supply Capacity:	11,636.26 m³
Disinfection Chemicals:	Sodium Hypochlorite, 12%
Iron Sequestering Chemicals:	Sodium Silicate (N), undiluted
Population (Stats Can):	4,270
Total Number of Service Connections:	2,441
Estimated Seasonal Population:	6,347 (based on Census data of 2.6 persons per household)
Average Day Demand:	2,112.46 m³
Peak Day Demand:	4,900.42 m³ (June 13, 2021)
Average Capacity:	18.15%
Peak Capacity:	42.11%
Distribution Network:	94.4 km
Fire Hydrants:	165
Blow-offs:	46

The Lakeshore Drinking Water Distribution and Supply Subsystem (Lakeshore DWS) is characterized as a "secure groundwater system". It consists of four sub-systems (well supplies), that deliver potable water to the Huron-Kinloss Lakeshore Community, extending from Point Clark in the south, to Huronville in the north, and to the Courtney/Amberley Beach subdivision in the Township of Ashfield-Colborne-Wawanosh. The Township of Huron-Kinloss has an agreement with The Township of Ashfield-Colborne-Wawanosh, where the Courtney/Amberley Beach Subdivision is treated as part of the Lakeshore Drinking Water System.

The four sub-systems are: Point Clark, Blairs Grove, Huronville South, and Murdoch Glen. All of these sites are located within the Township of Huron-Kinloss along Lake Huron. All sites are controlled, monitored, and alarmed through a Supervisory Control and Data Acquisition (SCADA) system which is connected to the main controller, autodialer, and server at the Ripley Municipal Office. The desktop computer used by the system's operators is located at the Ripley Township Shed and is connected remotely to the SCADA server. As a redundancy, each site is also equipped with an auto-dialer that is independent of the SCADA system, and is used to call out alarms in the event of communications/SCADA failure. This SCADA system provides the operator with the ability to monitor current operating status of the supply and treatment equipment throughout the water system at any given time via remote access by computer or Smartphone, and to have control over operations.

The Township of Huron-Kinloss also has an agreement with the Municipality of Kincardine, where Kincardine is the Operating Authority for a small area of Huron-Kinloss known as the Huronville Subdivision Distribution System (Plan M28). This subdivision received all their water from the Municipality of Kincardine Water System. There is an interconnecting valve between the Lakeshore DWS and Huronville Subdivision Distribution System, and the Town of Kincardine. This valve is normally closed and is used for emergency purposes only.

The four well supplies are detailed as follows:

Site: Point Clark - 603 Tuscarora Road

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 2 (Well # 2 1994; Well # 3 2015)
- Depth of Wells: 75.6 m; 82.3 m
- Well Pumps: 15 hp each (submersible)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (0.5 BF)
- Iron Sequestering: Sodium silicate (undiluted)
 - High Lift Pumps: 2 (25 hp each)
 - Reservoir: 65 m³
- Permit To Take Water: 1852-9YQMAY, expires November 1, 2024

Site: Blairs Grove - 28 Cathcart Street

- Water Source: Groundwater, Non-GUDI
 - Number of Production Wells: 1 (Well # 3 1994, flowing artesian)

69.5 m

10 hp (submersible)

Sodium hypochlorite (12%)

- Depth of Well:
- Well Pump:
- Disinfection:
- CT Requirement: 2-log, 5°C, baffled reservoir (0.5 BF)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pump: 1 (30 hp)
- Reservoir: 83 m³
- Permit To Take Water: 5776-BW6SKS, expires December 17, 2030

Site: Murdoch Glen - 815 Parkplace

•	Water Source:	Groundwater, Non-GUDI
•	Number of Production Wells:	1 (1992)
•	Depth of Well:	80.5 m
•	Well Pump:	25 hp (submersible)
•	Disinfection:	Sodium hypochlorite (12%)
•	CT Requirement:	2-log, 5°C, contact watermain (BF 1.0)
•	Iron Sequestering:	Sodium silicate (undiluted)
•	High Lift Pumps:	4 total; 2 (15 hp each), 2 (50 hp each)
•	Reservoir:	400 m ³
•	Standby Power:	130 kW Diesel Generator (1,100 L fuel storage)

• Permit To Take Water: 6123-A2UQBM, expires October 15, 2025

Site: Huronville South - 39 Penetangore Row South

- Water Source: Groundwater, Non-GUDI
- Number of Production Wells: 1 (1994)
- Depth of Well: 93.3 m
- Well Pump: 30 hp (submersible, soft-start)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (BF 0.5)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pumps: 2 (30 hp each)
- Reservoir: 65 m³
- Permit To Take Water: 3332-9N6H8L, expires November 1, 2024

The Lakeshore DWS currently (December 2021) has a distribution network with a combination of PVC and polyethylene water mains, in sizes varying between 1-inch and 10-inch diameter. The Lakeshore area has a large seasonal population of potentially 6,347 (based on Census data of 2.6 people per household connection x 2,441 connections), and therefore, the demands are significantly higher during the cottage season.

All the Lakeshore wells are secure, deep bedrock wells that penetrate limestone aquifers. Due to the depth and structure of the aquifers, the water temperature is relatively constant (< 10°C), turbidity is low, and the water is relatively hard. The raw water is also relatively **high in naturally-occurring sodium, fluoride and iron**, but the lead content of the raw water is well below the half-MAC (Maximum Allowable Concentration). Iron sequestering is achieved by means of treating the water with sodium silicate. Sequestering does not remove iron, but instead it prevents the dissolved iron from precipitating. When iron is precipitated, it can lead to stained plumbing fixtures and appear as discolouration in the water. Sodium silicate can leave a slight metallic taste in the water. Those who are supplied from the Lakeshore DWS are made aware of the various concentrations in their drinking water by numerous means of communication from the Township of Huron-Kinloss.

A 130 kW diesel generator, located at the Murdoch Glen pumphouse, includes a 1,100 L capacity fuel storage tank and is used for emergency power supply. A standpipe is situated in the Point Clark area at 3405 Concession 2, and is constructed of bolted steel (1996). The 31 m (102 ft) high and 9.45 m (31 ft) diameter standpipe has an effective storage of approximately 1,500 m³ to supply the entire Lakeshore System in emergency situations. Additionally, a standby generator connection is available at the Point Clark pumphouse. Periodic inspections of the standpipe (exterior and interior) are conducted. In 2021, the standpipe was inspected by the use of a Remotely Operated Vehicles (ROVs).

4.0 SUMMARY OF REPORTS MADE TO THE MINISTRY (O. Reg. 170/03, s. 11 (6) (b))

• There were four (4) Adverse Water Quality Indicators (AWQIs) in 2021, related to Sodium exceedances.

5.0 SUMMARY OF WATER QUALITY MONITORING (O. Reg. 170/03, s. 11 (6) (c))

The purpose of sampling and testing is to confirm that water is safe for human consumption and to provide a comprehensive track record.

Parameter	Parameter Description		Requirement Source
Chlorine Residual (grab)	For monitoring amount of residual in system, and confirming of water quality following maintenance	365/year (1 daily)	O. Reg. 170/03, Sch. 7
Chlorine Residual (continuous monitoring)	Continuous monitoring equipment used to sample and test treated water at the location where intended contact time has been completed	5 minute intervals, minimum	O. Reg. 170/03, Sch. 7
E. Coli (EC) Total Coliform (TC) Heterotrophic Plate Count (HPC)	For testing presence of microbiological activity	168/year (Dist) 260/year (Raw) 208/year (Treated)	O. Reg. 170/03, Sch. 10
Inorganics and Organics	For testing presence of metals, pesticides and herbicides	36 month interval	O. Reg. 170, Sch 13, s. 13-2 (Sch 23), and s. 13-4 (Sch 24)
Arsenic (POINT CLARK only)	For testing presence of arsenic in the treated water at Point-of-Entry	4/year (quarterly)	O. Reg. 170, Sch 13-5 (increased frequency)
Trihalomethanes (THMs)	For testing presence of disinfection by-products (DBPs)	4/year (quarterly)	O. Reg. 170/03, Sch. 13, s. 13-6
Lead (Pb)	For testing presence of lead in the distribution system only - not private side	36 month interval (pH and alkalinity annually)	O. Reg. 170/03, Sch. 15; MDWL #087-102, Sch. D
Haloacetic Acids (HAAs)	For monitoring the formation of disinfection by-products (DBPs)	4/year (quarterly)	O. Reg. 170/03, Sch. 13, s. 13-6.1
Nitrate and Nitrite	For testing presence of nitrates and nitrites in the treated water at Point-of-Entry	4/year (quarterly)	O. Reg. 170/03, Sch. 13, s. 13-7
Sodium For testing presence of sodium in the treated water at Point-of-Entry		60 month interval	O. Reg. 170/03, Sch. 13, s. 13-8
Fluoride	For testing presence of fluoride in the treated water at Point-of-Entry	60 month interval	O. Reg. 170/03, Sch. 13, s. 13-9

Table 1 Water Quality Monitoring Requirements:

COMMUNICATIONS WHEN ADVERSE WATER SAMPLES ARE IDENTIFIED

Requirement - Laboratory

A water sample that does not meet Provincial water quality standards is considered "adverse". When adverse water quality is detected, the accredited laboratory conducting the testing will immediately notify the Operating Authority, the Spills Action Centre (SAC), and the office of Grey Bruce Health Services, and occasionally the office of Huron-Perth Public Health (as necessary, if applicable). This notification is made by telephone through live communication to a person in authority. In addition to the phone calls, a fax of the sample results is sent to these agencies to verify the live communication made earlier.

Requirement - Drinking Water System Owner/Operating Authority

The *SDWA* also requires the Drinking Water System Owner/Operating Authority to immediately notify the MECP and the Grey Bruce Health Services office and the Huron-Perth Public Health office (if applicable), that the laboratory notice has been received and that "corrective actions" are being initiated. The method of contact is by telephone to a person of authority. The Operating Authority also faxes Form 2A - Notices of Adverse Test Results and Issue Resolution (Schedule 16) within 24 hours to both agencies first to verify previous live communication. Once the issue has been resolved and to confirm that corrective actions have been completed, the Operating Authority also faxes Form 2B - Notices of Adverse Test Results and Issue Resolution (Schedule 16) within 7 days to the agencies. This reporting system provides assurance that the DWS Owner is complying with the applicable regulations and that appropriate corrective actions are being taken and are being reported.

5.1 Water Treatment Equipment Operation and Monitoring

5.1.1 Treated Water (Point of Entry) Free Chlorine Residuals (Grab Samples)

In 2021, a total of 1,428 treated water grab samples were collected and analyzed for free chlorine residual at the point of entry (POE) using a Hach pocket chlorine colorimeter. **Table 2** shows the grab samples monthly average of free chlorine residual values. **Table 3** shows the on-line continuous samples monthly average (as collected by SCADA) of the free chlorine residual values.

5.1.2 Distribution Free Chlorine Residuals (Grab Samples)

In 2021, a total of 679 distribution residuals were collected: 365 daily grab residuals and an additional 314 weekly grab residuals were taken in conjunction with the required weekly microbiological sampling. A summary of all the residuals collected is presented in **Table 2**. Courtney Subdivision in ACW is included with the distribution residuals.

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark	Distribution
Jan	1.57	1.60	1.63	1.60	1.36
Feb	1.66	1.64	1.76	1.67	1.46
Mar	1.40	1.66	1.77	1.74	1.48
Apr	1.49	1.64	1.80	1.67	1.43
May	1.46	1.71	1.83	1.68	1.46
Jun	1.70	1.72	1.81	1.63	1.50
Jul	1.58	1.61	1.67	1.59	1.41
Aug	1.60	1.64	1.75	1.63	1.43
Sep	1.43	1.58	1.72	1.60	1.39
Oct	1.48	1.59	1.77	1.66	1.43
Nov	1.21	1.64	1.70	1.64	1.29
Dec	1.41	1.64	1.79	1.77	1.40
CT Requirement	0.22	0.40	0.26	0.32	0.20
Annual Min	1.04	1.44	1.54	1.37	0.85
Annual Max	2.14	1.85	2.04	1.91	1.89
Annual Avg	1.53	1.64	1.75	1.66	1.42
# Samples	338	365	365	360	679

 Table 2 Average Treated and Distribution Free Chlorine Residuals (Grab Samples)

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark	
Jan	1.42	1.61	1.65	1.61	
Feb	1.68	1.65	1.78	1.69	
Mar	1.42	1.67	1.79	1.75	
Apr	1.48	1.65	1.83	1.68	
Мау	1.50	1.70	1.85	1.70	
Jun	1.75	1.71	1.84	1.66	
Jul	1.61	1.61 1.68		1.61	
Aug	1.65	1.65	1.77	1.65	
Sep	1.44	1.58	1.76	1.62	
Oct	1.42	1.57	1.80	1.67	
Nov	1.23	1.64	1.72	1.68	
Dec	1.42	1.63	1.82	1.80	
CT Requirement	0.22	0.40	0.26	0.32	
Annual Min	0.56	1.17	1.58	1.52	
Annual Max	1.96	1.84	2.00	1.89	
Annual Avg	1.50	1.64	1.77	1.68	

Table 3 Average Treated Free Chlorine Residuals (On-Line Continuous from SCADA)

5.1.3 Raw and Treated Water Turbidity

Raw water and treated water grab samples were collected and analyzed for turbidity using a portable turbidity analyzer. **Table 4** provides a summary of raw water turbidity results and **Table 5** provides a summary of treated water turbidity results. O. Reg. 170/03 requires raw turbidity samples to be analyzed at least once per month from each well for groundwater systems.

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark W2	Point Clark W3
Jan	0.76	0.25	0.27	0.30	0.30
Feb	0.43	0.24	0.26	0.29	0.29
Mar	0.49	0.22	0.27	0.30	0.29
Apr	0.46	0.23	0.19	0.25	0.27
Мау	0.43	0.17	0.15	0.23	0.24
Jun	0.36	0.19	0.14	0.21	0.23
Jul	0.28	0.14	0.16	0.20	0.20
Aug	0.31	0.14	0.16	0.18	0.18
Sep	0.33	0.15	0.17	0.16	0.18
Oct	0.18	0.16	0.17	0.18	0.17
Nov	0.21	0.14	0.17	0.15	0.18
Dec	0.22	0.17	0.18	0.17	0.18
Annual Min	0.15	0.10	0.11	0.13	0.15
Annual Max	0.76	0.30	0.28	0.36	0.34
Annual Avg	0.37	0.18	0.19	0.22	0.23
# Samples	46	49	49	49	49

Table 4 Raw Water Turbidity Results

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
Jan		0.30	0.31	0.31
Feb	0.53	0.29	0.29	0.31
Mar	0.55	0.26	0.34	0.32
Apr	0.53	0.28	0.25	0.34
Мау	0.33	0.23	0.21	0.32
Jun	0.45	0.24	0.20	0.29
Jul	0.33	0.18	0.18	0.23
Aug	0.34	0.18	0.20	0.23
Sep	0.37	0.22	0.21	0.25
Oct	0.26	0.22	0.22	0.23
Nov	0.29	0.19	0.21	0.22
Dec	0.27	0.20	0.23	0.25
Annual Min	0.19	0.11	0.15	0.20
Annual Max	0.67	0.31	0.36	0.40
Annual Avg	0.38	0.23	0.24	0.28
# Samples	41	44	43	43

Table 5 - Treated Water Turbidity Results

5.2 Microbiological Sampling per Schedule 10, O. Reg. 170/03

5.2.1 Raw Water Samples

Raw water samples are collected every week. In 2021, a total of 258 samples were collected and analyzed for E. Coli and Total Coliform. **Tables 6, 7, 8, 9 and 10** provide summaries of microbiological results performed on the raw water.

Microbiological Results for Raw Water

Table 6 - BLAIRS GROVE - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	2	2	0	2	2	0
Feb	4	4	0	4	4	0
Mar	5	5	0	5	5	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	4	4	0	4	4	0
Aug	5	5	0	5	5	0
Sep	4	4	0	4	4	0
Oct	4	4	0	4	4	0
Nov	5	5	0	5	5	0
Dec	4	4	0	4	4	0
TOTAL	50	50	0	50	50	0

Microbiological Results for Raw Water Continued

Table 7 - HURONVILLE SOUTH - RAW

B a such		Total Coliform		E. Coli		
wonth	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	4	4	0	4	4	0
Feb	4	4	0	4	4	0
Mar	5	5	0	5	5	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	4	4	0	4	4	0
Aug	5	5	0	5	5	0
Sep	4	4	0	4	4	0
Oct	4	4	0	4	4	0
Nov	5	5	0	5	5	0
Dec	4	4	0	4	4	0
TOTAL	52	52	0	52	52	0

Table 8 - MURDOCH GLEN - RAW

B d a math		Total Coliform		E. Coli			
Ivionth	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	
Jan	4	4	0	4	4	0	
Feb	4	4	0	4	4	0	
Mar	5	5	0	5	5	0	
Apr	4	4	0	4	4	0	
May	5	5	0	5	5	0	
Jun	4	4	0	4	4	0	
Jul	4	4	0	4	4	0	
Aug	5	5	0	5	5	0	
Sep	4	4	0	4	4	0	
Oct	4	4	0	4	4	0	
Nov	5	5	0	5	5	0	
Dec	4	4	0	4	4	0	
TOTAL	52	52	0	52	52	0	

Microbiological Results for Raw Water Continued

Table 9 -POINT CLARK WELL # 2 - RAW

B a such		Total Coliform			E. Coli			
Ivionth	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1		
Jan	4	4	0	4	4	0		
Feb	4	4	0	4	4	0		
Mar	5	5	0	5	5	0		
Apr	4	4	0	4	4	0		
May	5	5	0	5	5	0		
Jun	4	4	0	4	4	0		
Jul	4	4	0	4	4	0		
Aug	5	5	0	5	5	0		
Sep	4	4	0	4	4	0		
Oct	4	4	0	4	4	0		
Nov	5	5	0	5	5	0		
Dec	4	4	0	4	4	0		
TOTAL	52	52	0	52	52	0		

Table 10 - POINT CLARK WELL # 3 - RAW

N A - m A h		Total Coliform		E. Coli			
Wonth	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	
Jan	4	4	0	4	4	0	
Feb	4	4	0	4	4	0	
Mar	5	5	0	5	5	0	
Apr	4	4	0	4	4	0	
May	5	5	0	5	5	0	
Jun	4	4	0	4	4	0	
Jul	4	4	0	4	4	0	
Aug	5	5	0	5	5	0	
Sep	4	4	0	4	4	0	
Oct	4	4	0	4	4	0	
Nov	5	5	0	5	5	0	
Dec	4	4	0	4	4	0	
TOTAL	52	52	0	52	52	0	

5.2.2 Treated Water (Point of Entry) Samples

One (1) treated water sample from each point of entry is taken every week and analyzed for E. Coli, Total Coliform, and Heterotrophic Plate Count (HPC). In 2021, a total of 204 treated water samples were collected and analyzed for the above parameters. Each EC and TC result from the treated water was 0 cfu/100 mL. The range of HPC results were 0 - 150 cfu/1 mL. **Table 11, 12, 13, and 14** provide summaries of all microbiological results performed on treated water.

Microbiological Results for Treated Water (Point of Entry)

Table 11 - BLAIRS GROVE

		Total Coliform	1		E. Coli		НРС			
Month	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≤10	
Jan	0	0	0	0	0	0	0	0	0	
Feb	4	4	0	4	4	0	4	0	3	
Mar	5	5	0	5	5	0	5	0	5	
Apr	4	4	0	4	4	0	4	0	4	
May	5	5	0	5	5	0	5	0	5	
Jun	4	4	0	4	4	0	4	0	4	
Jul	4	4	0	4	4	0	4	0	4	
Aug	5	5	0	5	5	0	5	0	5	
Sep	4	4	0	4	4	0	4	0	4	
Oct	4	4	0	4	4	0	4	0	4	
Nov	5	5	0	5	5	0	5	0	5	
Dec	4	4	0	4	4	0	4	0	4	
TOTAL	48	48	0	48	48	0	4	0	4	

Table 12 -HURONVILLE SOUTH

		Total Coliform	1		E. Coli		НРС			
Month	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≤10	
Jan	4	4	0	4	4	0	4	0	4	
Feb	4	4	0	4	4	0	4	0	4	
Mar	5	5	0	5	5	0	5	0	5	
Apr	4	4	0	4	4	0	4	0	4	
May	5	5	0	5	5	0	5	0	5	
Jun	4	4	0	4	4	0	4	0	4	
Jul	4	4	0	4	4	0	4	0	4	
Aug	5	5	0	5	5	0	5	0	5	
Sep	4	4	0	4	4	0	4	0	4	
Oct	4	4	0	4	4	0	4	0	4	
Nov	5	5	0	5	5	0	5	0	5	
Dec	4	4	0	4	4	0	4	0	4	
TOTAL	52	52	0	52	52	0	52	0	52	

Microbiological Results for Treated Water (Point of Entry)

Table 13 - MURDOCH GLEN

		Total Coliform	1		E. Coli		НРС			
Month	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≤150	
Jan	4	4	0	4	4	0	4	0	4	
Feb	4	4	0	4	4	0	4	0	4	
Mar	5	5	0	5	5	0	5	0	5	
Apr	4	4	0	4	4	0	4	0	4	
May	5	5	0	5	5	0	5	0	5	
Jun	4	4	0	4	4	0	4	0	4	
Jul	4	4	0	4	4	0	4	0	4	
Aug	5	5	0	5	5	0	5	0	5	
Sep	4	4	0	4	4	0	4	0	4	
Oct	4	4	0	4	4	0	4	0	4	
Nov	5	5	0	5	5	0	5	0	5	
Dec	4	4	0	4	4	0	4	0	4	
TOTAL	52	52	0	52	52	0	52	0	52	

Table 14 - POINT CLARK

		Total Coliform	1		E. Coli		НРС			
Month	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≤20	
Jan	4	4	0	4	4	0	4	0	4	
Feb	4	4	0	4	4	0	4	0	4	
Mar	5	5	0	5	5	0	5	0	5	
Apr	4	4	0	4	4	0	4	0	4	
May	5	5	0	5	5	0	5	0	5	
Jun	4	4	0	4	4	0	4	0	4	
Jul	4	4	0	4	4	0	4	0	4	
Aug	5	5	0	5	5	0	5	0	5	
Sep	4	4	0	4	4	0	4	0	4	
Oct	4	4	0	4	4	0	4	0	4	
Nov	5	5	0	5	5	0	5	0	5	
Dec	4	4	0	4	4	0	4	0	4	
TOTAL	52	52	0	52	52	0	52	0	52	

5.2.3 Distribution Samples

Distribution samples are collected every week and tested for E. Coli, Total Coliform, and 25% of the samples are also analyzed for Heterotrophic Plate Count (HPC). Ontario Regulation 170/03 requires 8 distribution samples plus one additional sample for every 1,000 people served by the system. In 2021, a total of 364 distribution samples were collected and analyzed for TC and EC, which is above the required number of samples (n=168, based on 6,347 potential residents). A total of 209 distribution samples were analyzed for HPC (n=42, 25% of 168). A sample was collected each week from the Courtney Subdivision distribution system and the results are included in this section. Each TC and EC result from the distribution water was 0 cfu/100 mL. The range of HPC results were 0 - 40 cfu/1 mL. **Table 15** provides a summary of all microbiological samples taken in the distribution system.

		Total Coliform	1		E. Coli		НРС			
Month	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "<10"	# Samples 10 - 40	
Jan	28	28	0	28	28	0	16	16	0	
Feb	28	28	0	28	28	0	17	17	0	
Mar	35	35	0	35	35	0	20	20	0	
Apr	28	28	0	28	28	0	16	16	0	
May	35	35	0	35	35	0	20	20	0	
Jun	28	28	0	28	28	0	16	14	2	
Jul	28	28	0	28	28	0	16	16	0	
Aug	35	35	0	35	35	0	20	19	1	
Sep	28	28	0	28	28	0	16	11	5	
Oct	28	28	0	28	28	0	16	15	1	
Nov	35	35	0	35	35	0	20	20	0	
Dec	28	28	0	28	28	0	16	16	0	
TOTAL	364	364	0	364	364	0	209	200	9	

Table 15 Microbiological Results for Distribution System

5.3 Chemical Sampling and Testing as per Schedule 13, O. Reg. 170/03

5.3.1 Inorganics (Schedule 13, s. 13-2; Schedule 23)

Treated water samples are collected every 36 months and analyzed for inorganics. The most recent samples for the Lakeshore Drinking Water System were collected on June 28, 2021 and submitted to the laboratory for analysis of inorganics as listed in Schedule 23 (see **Table 16**). All parameters were found to be within compliance, however, the Arsenic level at Point Clark exceeded the Half-Maximum Allowable Concentration (half-MAC). Any half-MAC exceedance must be sampled on a quarterly basis to comply with O. Reg. 170/03, Schedule 13-5(1) - Increased frequency under s.s 13-2 and 13-4. Inorganics will be sampled and analyzed again in June 2024.

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (μg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
Antimony	0.9 <mdl< th=""><th>0.9 <mdl< th=""><th>0.9 <mdl< th=""><th>0.9 <mdl< th=""><th>6</th><th>No</th></mdl<></th></mdl<></th></mdl<></th></mdl<>	0.9 <mdl< th=""><th>0.9 <mdl< th=""><th>0.9 <mdl< th=""><th>6</th><th>No</th></mdl<></th></mdl<></th></mdl<>	0.9 <mdl< th=""><th>0.9 <mdl< th=""><th>6</th><th>No</th></mdl<></th></mdl<>	0.9 <mdl< th=""><th>6</th><th>No</th></mdl<>	6	No
Arsenic	3.1	0.4	1.6	5.4	10	No
Barium	4.4	26.8	26.7	25.5	1000	No
Boron	161	180	157	72	5000	No
Cadmium	0.003 <mdl< th=""><th>0.003 <mdl< th=""><th>0.01</th><th>0.003 <mdl< th=""><th>5</th><th>No</th></mdl<></th></mdl<></th></mdl<>	0.003 <mdl< th=""><th>0.01</th><th>0.003 <mdl< th=""><th>5</th><th>No</th></mdl<></th></mdl<>	0.01	0.003 <mdl< th=""><th>5</th><th>No</th></mdl<>	5	No
Chromium	0.15	0.26	0.20	0.14	50	No
Mercury	0.01 <mdl< th=""><th>0.01 <mdl< th=""><th>0.01 <mdl< th=""><th>0.01 <mdl< th=""><th>1</th><th>No</th></mdl<></th></mdl<></th></mdl<></th></mdl<>	0.01 <mdl< th=""><th>0.01 <mdl< th=""><th>0.01 <mdl< th=""><th>1</th><th>No</th></mdl<></th></mdl<></th></mdl<>	0.01 <mdl< th=""><th>0.01 <mdl< th=""><th>1</th><th>No</th></mdl<></th></mdl<>	0.01 <mdl< th=""><th>1</th><th>No</th></mdl<>	1	No
Selenium	0.04 <mdl< th=""><th>0.04 <mdl< th=""><th>0.04 <mdl< th=""><th>0.04 <mdl< th=""><th>50</th><th>No</th></mdl<></th></mdl<></th></mdl<></th></mdl<>	0.04 <mdl< th=""><th>0.04 <mdl< th=""><th>0.04 <mdl< th=""><th>50</th><th>No</th></mdl<></th></mdl<></th></mdl<>	0.04 <mdl< th=""><th>0.04 <mdl< th=""><th>50</th><th>No</th></mdl<></th></mdl<>	0.04 <mdl< th=""><th>50</th><th>No</th></mdl<>	50	No
Uranium	0.47	0.313	1.43	0.548	20	No

Table 16 -Inorganics (Schedule 13, s. 13-2; Schedule 23) Results

*MDL = Laboratory Minimum Detection Limit

5.3.2 Organics (Schedule 13, s. 13-4; Schedule 24)

Treated water samples are collected every 36 months and tested for Schedule 24 organic parameters. The most recent samples were collected on June 28, 2021. All parameters were found to be within compliance. Organics will be sampled and analyzed again in June 2024. Samples results can be found in **Table 17**.

Parameter	Blairs Grove (μg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
Benzene	0.32 <mdl< td=""><td>0.32 <mdl< td=""><td>0.32 <mdl< td=""><td>0.32 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.32 <mdl< td=""><td>0.32 <mdl< td=""><td>0.32 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.32 <mdl< td=""><td>0.32 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<>	0.32 <mdl< td=""><td>1</td><td>No</td></mdl<>	1	No
Carbon Tetrachloride	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>2</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>2</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>2</td><td>No</td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>2</td><td>No</td></mdl<>	2	No
1,2-Dichlorobenzene	0.41 <mdl< td=""><td>0.41 <mdl< td=""><td>0.41 <mdl< td=""><td>0.41 <mdl< td=""><td>200</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.41 <mdl< td=""><td>0.41 <mdl< td=""><td>0.41 <mdl< td=""><td>200</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.41 <mdl< td=""><td>0.41 <mdl< td=""><td>200</td><td>No</td></mdl<></td></mdl<>	0.41 <mdl< td=""><td>200</td><td>No</td></mdl<>	200	No
1,4-Dichlorobenzene	0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.36 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
1,1-Dichloroethylene	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>14</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>14</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>14</td><td>No</td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>14</td><td>No</td></mdl<>	14	No
1,2-Dichloroethane	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
Dichloromethane	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>50</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>50</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>50</td><td>No</td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>50</td><td>No</td></mdl<>	50	No
Monochlorobenzene	0.3 <mdl< td=""><td>0.3 <mdl< td=""><td>0.3 <mdl< td=""><td>0.3 <mdl< td=""><td>80</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.3 <mdl< td=""><td>0.3 <mdl< td=""><td>0.3 <mdl< td=""><td>80</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.3 <mdl< td=""><td>0.3 <mdl< td=""><td>80</td><td>No</td></mdl<></td></mdl<>	0.3 <mdl< td=""><td>80</td><td>No</td></mdl<>	80	No
Tetrachloroethylene	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>0.35 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<>	0.35 <mdl< td=""><td>10</td><td>No</td></mdl<>	10	No
Trichloroethylene	0.44 <mdl< td=""><td>0.44 <mdl< td=""><td>0.44 <mdl< td=""><td>0.44 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.44 <mdl< td=""><td>0.44 <mdl< td=""><td>0.44 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.44 <mdl< td=""><td>0.44 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.44 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
Vinyl Chloride	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>1</td><td>No</td></mdl<>	1	No
Diquat	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>70</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>70</td><td>No</td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>70</td><td>No</td></mdl<></td></mdl<>	1 <mdl< td=""><td>70</td><td>No</td></mdl<>	70	No
Paraquat	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<>	1 <mdl< td=""><td>10</td><td>No</td></mdl<>	10	No
Glyphosate	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>280</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>280</td><td>No</td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>280</td><td>No</td></mdl<></td></mdl<>	1 <mdl< td=""><td>280</td><td>No</td></mdl<>	280	No
Polychlorinated Biphenyls	0.04 <mdl< td=""><td>0.04 <mdl< td=""><td>0.04 <mdl< td=""><td>0.04 <mdl< td=""><td>3</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.04 <mdl< td=""><td>0.04 <mdl< td=""><td>0.04 <mdl< td=""><td>3</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.04 <mdl< td=""><td>0.04 <mdl< td=""><td>3</td><td>No</td></mdl<></td></mdl<>	0.04 <mdl< td=""><td>3</td><td>No</td></mdl<>	3	No
Benzo(a)pyrene	0.004 <mdl< td=""><td>0.004 <mdl< td=""><td>0.004 <mdl< td=""><td>0.004 <mdl< td=""><td>0.01</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.004 <mdl< td=""><td>0.004 <mdl< td=""><td>0.004 <mdl< td=""><td>0.01</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.004 <mdl< td=""><td>0.004 <mdl< td=""><td>0.01</td><td>No</td></mdl<></td></mdl<>	0.004 <mdl< td=""><td>0.01</td><td>No</td></mdl<>	0.01	No

Table 17 Organics (Schedule 13, s. 13-4; Schedule 24) Results

*MDL = Laboratory Minimum Detection Limit

Parameter	Blairs Grove (μg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)	Exceedance
Alachlor	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
Atrazine+N-dealkylated metabolites	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
Atrazine	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td></td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td></td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td></td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td></td><td>No</td></mdl<>		No
Desethyl Atrazine	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td></td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td></td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td></td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td></td><td>No</td></mdl<>		No
Azinphos-methyl	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>20</td><td>No</td></mdl<>	20	No
Carbaryl	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>90</td><td>No</td></mdl<>	90	No
Carbofuran	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>90</td><td>No</td></mdl<>	90	No
Chlorpyrifos	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>90</td><td>No</td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>90</td><td>No</td></mdl<>	90	No
Diazinon	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>20</td><td>No</td></mdl<>	20	No
Dimethoate	0.06 <mdl< td=""><td>0.06 <mdl< td=""><td>0.06 <mdl< td=""><td>0.06 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.06 <mdl< td=""><td>0.06 <mdl< td=""><td>0.06 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.06 <mdl< td=""><td>0.06 <mdl< td=""><td>20</td><td>No</td></mdl<></td></mdl<>	0.06 <mdl< td=""><td>20</td><td>No</td></mdl<>	20	No
Diuron	0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>150</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>150</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>150</td><td>No</td></mdl<></td></mdl<>	0.03 <mdl< td=""><td>150</td><td>No</td></mdl<>	150	No
Malathion	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>190</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>190</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>190</td><td>No</td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>190</td><td>No</td></mdl<>	190	No
Metolachlor	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>50</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>50</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>50</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>50</td><td>No</td></mdl<>	50	No
Metribuzin	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>80</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>80</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>80</td><td>No</td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>80</td><td>No</td></mdl<>	80	No
Phorate	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>2</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>2</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>2</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>2</td><td>No</td></mdl<>	2	No
Prometryne	0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.03 <mdl< td=""><td>0.03 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<>	0.03 <mdl< td=""><td>1</td><td>No</td></mdl<>	1	No
Simazine	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>10</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>10</td><td>No</td></mdl<>	10	No
Terbufos	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>1</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>1</td><td>No</td></mdl<>	1	No
Triallate	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>230</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>230</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>0.01 <mdl< td=""><td>230</td><td>No</td></mdl<></td></mdl<>	0.01 <mdl< td=""><td>230</td><td>No</td></mdl<>	230	No
Trifluralin	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>45</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>45</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>45</td><td>No</td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>45</td><td>No</td></mdl<>	45	No
2,4-Dichlorophenoxyacetic acid	0.19 <mdl< td=""><td>0.19 <mdl< td=""><td>0.19 <mdl< td=""><td>0.19 <mdl< td=""><td>100</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.19 <mdl< td=""><td>0.19 <mdl< td=""><td>0.19 <mdl< td=""><td>100</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.19 <mdl< td=""><td>0.19 <mdl< td=""><td>100</td><td>No</td></mdl<></td></mdl<>	0.19 <mdl< td=""><td>100</td><td>No</td></mdl<>	100	No
Bromoxynil	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
Dicamba	0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>120</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>120</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>120</td><td>No</td></mdl<></td></mdl<>	0.20 <mdl< td=""><td>120</td><td>No</td></mdl<>	120	No
Diclofop-methyl	0.40 <mdl< td=""><td>0.40 <mdl< td=""><td>0.40 <mdl< td=""><td>0.40 <mdl< td=""><td>9</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.40 <mdl< td=""><td>0.40 <mdl< td=""><td>0.40 <mdl< td=""><td>9</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.40 <mdl< td=""><td>0.40 <mdl< td=""><td>9</td><td>No</td></mdl<></td></mdl<>	0.40 <mdl< td=""><td>9</td><td>No</td></mdl<>	9	No
МСРА	0.00012 <mdl< td=""><td>0.00012 <mdl< td=""><td>0.00012 <mdl< td=""><td>0.00012 <mdl< td=""><td>0.1</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.00012 <mdl< td=""><td>0.00012 <mdl< td=""><td>0.00012 <mdl< td=""><td>0.1</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.00012 <mdl< td=""><td>0.00012 <mdl< td=""><td>0.1</td><td>No</td></mdl<></td></mdl<>	0.00012 <mdl< td=""><td>0.1</td><td>No</td></mdl<>	0.1	No
Picloram	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>190</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>190</td><td>No</td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>190</td><td>No</td></mdl<></td></mdl<>	1 <mdl< td=""><td>190</td><td>No</td></mdl<>	190	No
2,4-Dichlorophenol	0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>900</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>900</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>900</td><td>No</td></mdl<></td></mdl<>	0.15 <mdl< td=""><td>900</td><td>No</td></mdl<>	900	No
2,4,6-Trichlorophenol	0.25 <mdl< td=""><td>0.25 <mdl< td=""><td>0.25 <mdl< td=""><td>0.25 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.25 <mdl< td=""><td>0.25 <mdl< td=""><td>0.25 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.25 <mdl< td=""><td>0.25 <mdl< td=""><td>5</td><td>No</td></mdl<></td></mdl<>	0.25 <mdl< td=""><td>5</td><td>No</td></mdl<>	5	No
2,3,4,6-Tetrachlorophenol	0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>100</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>100</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.20 <mdl< td=""><td>0.20 <mdl< td=""><td>100</td><td>No</td></mdl<></td></mdl<>	0.20 <mdl< td=""><td>100</td><td>No</td></mdl<>	100	No
Pentachlorophenol	0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>60</td><td>No</td></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>60</td><td>No</td></mdl<></td></mdl<></td></mdl<>	0.15 <mdl< td=""><td>0.15 <mdl< td=""><td>60</td><td>No</td></mdl<></td></mdl<>	0.15 <mdl< td=""><td>60</td><td>No</td></mdl<>	60	No

*MDL = Laboratory Minimum Detection Limit

5.3.3 Trihalomethanes (Schedule 13, s. 13-6)

Distribution samples are taken every three months from representative points in the distribution system and tested for Trihalomethanes (THMs). In 2021, samples were collected during the months of February, May, August, and November. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Allowable Concentration (MAC) of 100 μ g/L for this parameter and it is expressed as a running annual average (RAA). Refer to **Tables 18, 19, 20, 21, and 22** for the summary of Trihalomethane results and **Table 27** for the RAA.

Trihalomethane (Schedule 13, s. 13-6) Results

Table 18 - BLAIRS GROVE

Month	THMs (μg/L)	Bromodichloro methane (µg/L)	Bromoform (µg/L)	Chloroform (µg/L)	Dibromochloro methane (µg/L)
Feb	14.0	4.8	0.48	5.2	3.6
May	19.0	6.3	0.42	8.5	3.8
Aug	20.0	6.8	0.70	6.9	5.1
Nov	28.0	8.6	0.35	15.0	4.6
RAA	20.3	6.6	0.49	8.9	4.3
Maximum	28.0	8.6	0.7	15.0	5.1
MAC (µg/L)	100				
Exceedance	No				

Table 19 - HURONVILLE SOUTH

Month	THMs (μg/L)	Bromodichloro methane (µg/L)	Bromoform (µg/L)	Chloroform (µg/L)	Dibromochloro methane (µg/L)
Feb	8.4	2.8	<0.34	3.6	2.1
May	7.7	2.5	<0.34	3.3	1.9
Aug	7.6	2.5	<0.34	3.0	2.0
Nov	13.0	4.5	<0.34	5.3	3.2
RAA	9.2	3.1	<0.34	3.8	2.3
Maximum	13.0	4.5	<0.34	5.3	3.2
MAC (µg/L)	100				
Exceedance	No				

Table 20 - MURDOCH GLEN

Month	THMs (μg/L)	Bromodichloro methane (µg/L)	Bromoform (µg/L)	Chloroform (µg/L)	Dibromochloro methane (µg/L)
Feb	15.0	5.1	0.74	4.6	4.3
Мау	15.0	5.2	0.78	4.5	4.5
Aug	12.0	4.2	0.39	3.6	3.6
Nov	17.0	6.0	0.73	5.4	5.2
RAA	14.8	5.1	0.66	4.5	4.4
Maximum	17.0	6.0	0.78	5.4	5.2
MAC (µg/L)	100				
Exceedance	No				

Trihalomethane (Schedule 13, s. 13-6) Results Continued

Table 21 - POINT CLARK

Month	THMs (μg/L)	Bromodichloro methane (µg/L)	Bromoform (µg/L)	Chloroform (µg/L)	Dibromochloro methane (µg/L)
Feb	7.7	2.6	<0.34	3.2	1.9
May	7.9	2.6	<0.34	3.4	1.8
Aug	11.0	3.9	<0.34	4.4	2.7
Nov	12.0	4.0	<0.34	4.9	2.7
RAA	9.7	3.3	<0.34	4.0	2.3
Maximum	12.0	4.0	<0.34	4.9	2.7
MAC (µg/L)	100				
Exceedance	No				

Table 22 - COURTNEY SUBDIVISION

Month	THMs (μg/L)	Bromodichloro methane (µg/L)	Bromoform (µg/L)	Chloroform (µg/L)	Dibromochloro methane (µg/L)
Feb	12.0	4.1	0.45	3.8	3.4
May	5.8	1.9	<0.34	2.5	1.4
Aug	6.3	2.1	<0.34	2.8	1.4
Nov	8.7	2.9	<0.34	3.7	2.1
RAA	8.2	2.8	0.37	3.2	2.1
Maximum	12.0	4.1	0.45	3.8	3.4
MAC (µg/L)	100				
Exceedance	No				

5.3.4 Haloacetic Acids (Schedule 13, s. 13-6.1)

Ontario Regulation 170/03 has been amended to include quarterly testing for Haloacetic Acids (HAAs). Four (4) distribution samples are taken every three months from representative points in the distribution system and tested for Haloacetic Acids (HAAs). In 2021, samples were collected during the months of February, May, August, and November and results are expressed as a running annual average (RAA). Results are summarized in **Tables 23, 24, 25** and 26 and the RAA can be found in **Table 27**. HAAs do not apply to the Courtney Subdivision distribution system.

Haloacetic Acid (Schedule 13, s. 13-6.1) Results

Table 23 -	BLAIRS GROVE

Month	Total HAAs (μg/L)	Bromoacetic acid (μg/L)	Chloroacetic acid (µg/L)	Dichloroacetic acid (μg/L)	Dibromoacetic acid (μg/L)	Trichloroacetic acid (μg/L)
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Мау	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Nov	<5.3	<2.9	<4.7	3.4	<2.0	<5.3
RAA	<5.3	<2.9	<4.7	2.8	<2.0	<5.3
Max	<5.3	<2.9	<4.7	3.4	<2.0	<5.3
MAC (µg/L)	80					
Exceedance	No					

Table 24 - HURONVILLE SOUTH

Month	Total HAAs (μg/L)	Bromoacetic acid (μg/L)	Chloroacetic acid (μg/L)	Dichloroacetic acid (µg/L)	Dibromoacetic acid (µg/L)	Trichloroacetic acid (μg/L)
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Nov	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
RAA	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Max	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
MAC (µg/L)	80					
Exceedance	No					

Table 25 - MURDOCH GLEN

Month	Total HAAs (μg/L)	Bromoacetic acid (μg/L)	Chloroacetic acid (µg/L)	Dichloroacetic acid (μg/L)	Dibromoacetic acid (μg/L)	Trichloroacetic acid (μg/L)
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Nov	9.8	<2.9	<4.7	9.8	<2.0	<5.3
RAA	6.4	<2.9	<4.7	4.4	<2.0	<5.3
Max	9.8	<2.9	<4.7	9.8	<2.0	<5.3
MAC (µg/L)	80					
Exceedance	No					

Haloacetic Acid (Schedule 13, s. 13-6.1) Results Continued

Table 26 - POINT CLARK

Month	Total HAAs (µg/L)	Bromoacetic acid (μg/L)	Chloroacetic acid (µg/L)	Dichloroacetic acid (μg/L)	Dibromoacetic acid (μg/L)	Trichloroacetic acid (μg/L)
Feb	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
May	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Aug	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Nov	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
RAA	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
Max	<5.3	<2.9	<4.7	<2.6	<2.0	<5.3
MAC (µg/L)	80					
Exceedance	No					

Table 27 THMs and HAAs - Rolling Annual Average Summary

Location	Sample Date	RAA - THMs (µg/L)	RAA - HAAs (µg/L)
	Feb	16.0	<5.3
	May	17.0	<5.3
BLAIRS GROVE	Aug	18.3	<5.3
	Nov	20.3	<5.3
	Feb	6.6	<5.3
	May	6.9	<5.3
HORONVILLE SOUTH	Aug	7.6	<5.3
	Nov	9.2	<5.3
	Feb	13.8	<5.3
	May	14.0	<5.3
MORDOCH GLEN	Aug	14.3	<5.3
	Nov	14.8	6.4
	Feb	7.2	<5.3
	May	7.6	<5.3
POINT CLARK	Aug	9.2	<5.3
	Nov	9.7	<5.3
	Feb	7.5	n/a
	May	7.4	n/a
COURTNEY SUBDIVISION	Aug	7.8	n/a
	Nov	8.2	n/a
F	AA	12.41	5.6
Ν	ЛАС	100 (RAA)	80 (RAA)

5.3.5 Nitrate and Nitrite (Schedule 12, s. 13-7)

Four treated water samples are taken every three months and tested for nitrate and nitrite. In 2021, samples were collected during the months of February, May, August, and November. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Allowable Concentration (MAC) of 10 mg/L for nitrates and 1 mg/L for nitrites. The results were found to be within compliance. Refer to **Tables 28, 29, 30 and 31**.

Nitrate and Nitrite (Schedule 13, s. 13-7) Results

Table 28 - BLAIRS GROVE

Month	Nitrite (mg/L)	Nitrate (mg/L)
Feb	<0.003	<0.006
Мау	0.009	<0.006
Aug	<0.003	<0.006
Νον	<0.003	<0.006
Average	0.005	<0.006
Maximum	0.009	<0.006
MAC	1	10
Exceedance	No	No

Table 29 -HURONVILLE SOUTH

Month	Nitrite (mg/L)	Nitrate (mg/L)
Feb	<0.003	0.006
Мау	<0.003	<0.006
Aug	<0.003	<0.006
Nov	<0.003	<0.006
Average	<0.003	0.006
Maximum	<0.003	0.006
MAC	1	10
Exceedance	No	No

Table 30 - MURDOCH GLEN

Month	Nitrite (mg/L)	Nitrate (mg/L)
Feb	<0.003	<0.006
Мау	<0.003	0.007
Aug	<0.003	<0.006
Νον	<0.003	<0.006
Average	<0.003	0.006
Maximum	<0.003	0.007
MAC	1	10
Exceedance	No	No

Nitrate and Nitrite (Schedule 13, s. 13-7) Results Continued

Table 31 - POINT CLARK

Month	Nitrite (mg/L)	Nitrate (mg/L)
Feb	<0.003	<0.006
Мау	0.003	<0.006
Aug	<0.003	<0.006
Νον	<0.003	<0.006
Average	0.003	<0.006
Maximum	0.003	<0.006
MAC	1	10
Exceedance	No	No

5.3.6 Sodium (Schedule 13, s. 13-8)

One (1) water sample is collected from each of the four (4) Points of Entry (treated water) every 60 months and analyzed for Sodium. The *Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, PIBS 4449e01, June 2006*, states: "The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets." These samples were collected on July 27, 2021. All four (4) POE (TW) samples exceeded 20 mg/L and were reported to the Grey Bruce Health Unit and the Ministry's Spills Action Centre (AWQI # 154967-154970). Results can be found in **Table 32**. The next sampling date for Sodium will be on or before July 27, 2026.

5.3.7 Fluoride (Schedule 13, s. 13-9)

One (1) water sample is collected from each of the four (4) Points of Entry (treated water) every 60 months and analyzed for Fluoride. The Ontario Drinking Water Quality Standards (ODWQS) have set a Maximum Allowable Concentration (MAC) of 1.5 mg/L. On August 15, 2017, samples were collected for this analysis. All four samples exceeded the MAC due to naturally occurring fluoride in the aquifers. These exceedances were reported to the Grey Bruce Health Unit and the Ministry's Spills Action Centre (AWQI # 135640). The results are summarized in **Table 32**. The next sampling date for Fluoride will be on or before August 15, 2022.

Table 32 -	Sodium (Schedule 13, s. 13-8) and Fluoride (Schedule 13, s. 13-9) Results
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	Sod	ium	Fluoride
Loostion	Sample Date:	June 28, 2021	Sample Date: August 15, 2017
Location	Result (mg/L)	Resample Result (mg/L)	Result (mg/L)
Blairs Grove	100	96.9	2.20
Huronville South	54.3	54.2	2.24
Murdoch Glen	63.2	62.6	2.14
Point Clark	21.8	25.3	2.20
MAC (mg/L)	20 20		1.50
Exceedance	Yes	Yes	Yes

5.3.8 Lead (Schedule 15.1) - (O. Reg. 170/03, s. 11 (6) (g)

Schedule 15.1 of Ontario Regulation 170/03 requires that samples be taken during two seasons: once between December 15 and April 15, and once between June 15 and October 15. In 2021, the Lakeshore Drinking Water System was sampled for lead, pH and alkalinity. Three (3) samples were collected on January 11, 2021 and five (5) were collected on July 12, 2021. The next sampling seasons are reduced, with only pH and alkalinity parameters required between December 2021 and April 2022, and again between June and October 2022. Results for 2021 can be found in **Table 33**.

Season	Location	Alkalinity (mg/L)	рН	Lead (µg/L)
Doc Apr	Lakeshore	172	7.38	0.22
(lon 11)	Lakeshore	179	7.48	0.09
(Jan 11)	Courtney Subdivision	191	7.10	0.19
	Lakeshore	158	7.97	0.02
lun Ont	Lakeshore	174	7.98	0.16
Jun-Oct	Lakeshore	176	7.52	<0.01
(JUI 12)	Lakeshore	181	7.74	0.03
	Courtney Subdivision	183	7.83	0.20
MAC (µg/L)				10
Exceedance				No

Table 33 Lead Sampling Program (Schedule 15.1) Results

5.3.9 Non-Regulatory Testing - Aesthetic Objectives and Operational Guidelines (AO/OG)

Samples were collected from each of the four (4) Points of Entry (treated water) on November 21, 2016 and tested for parameters listed in the *MOECC Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines, June 2006, PIBS 4449e01.* These results are included in **Table 34** for information purposes.

Table 34 -	Aesthetic Objectives and Operational Guideline Results
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Parameter	AO/OG	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
рН	6.5 - 8.5	7.89	8.10	8.17	8.07
Alkalinity (mg/L as CaCO₃)	30 - 500	174	156	171	190
Conductivity (µS/cm)		1,720	694	771	709
Colour (TCU)	5	3 <mdl< td=""><td>3 <mdl< td=""><td>3 <mdl< td=""><td>7</td></mdl<></td></mdl<></td></mdl<>	3 <mdl< td=""><td>3 <mdl< td=""><td>7</td></mdl<></td></mdl<>	3 <mdl< td=""><td>7</td></mdl<>	7
Total Dissolved Solids (mg/L)	500	1,350	494	511	534
Organic Nitrogen (mg/L)	0.15	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.05 <mdl< td=""><td>0.05 <mdl< td=""></mdl<></td></mdl<>	0.05 <mdl< td=""></mdl<>
Total Kjeldahl Nitrogen (mg/L)		0.05 <mdl< td=""><td>0.07</td><td>0.05 <mdl< td=""><td>0.05 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.07	0.05 <mdl< td=""><td>0.05 <mdl< td=""></mdl<></td></mdl<>	0.05 <mdl< td=""></mdl<>
Ammonia + Ammonium (mg/L)		0.04 <mdl< td=""><td>0.04</td><td>0.07</td><td>0.05</td></mdl<>	0.04	0.07	0.05
Hydrogen Sulphide (mg/L)	0.05	<0.006	<0.006	<0.006	<0.006
Sulphide (mg/L)	0.05	0.006 <mdl< td=""><td>0.006 <mdl< td=""><td>0.006 <mdl< td=""><td>0.006 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.006 <mdl< td=""><td>0.006 <mdl< td=""><td>0.006 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.006 <mdl< td=""><td>0.006 <mdl< td=""></mdl<></td></mdl<>	0.006 <mdl< td=""></mdl<>
Chloride (mg/L)	250	150	18	37	13
Sulphate (mg/L)	500	620	170	170	170
Hardness (mg/L as CaCO₃)	80 - 100	765	237	246	308
Aluminum (μg/L)	100	25.5	1.0	2.8	3.3

Parameter	AO/OG	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
Copper (µg/L)	1000	0.08	0.12	5.80	0.22
Iron (μg/L)	300	581	150	102	311
Manganese (µg/L)	50	3.70	2.02	3.07	4.11
Zinc (μg/L)	5000	2	4	20	4
Dissolved Organic Carbon (mg/L)	5	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""><td>1 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	1 <mdl< td=""><td>1 <mdl< td=""></mdl<></td></mdl<>	1 <mdl< td=""></mdl<>
Methane (L/m³)	3	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""><td>0.02 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.02 <mdl< td=""><td>0.02 <mdl< td=""></mdl<></td></mdl<>	0.02 <mdl< td=""></mdl<>
Ethylbenzene (µg/L)	2.4	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>0.33 <mdl< td=""><td>0.33 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.33 <mdl< td=""><td>0.33 <mdl< td=""></mdl<></td></mdl<>	0.33 <mdl< td=""></mdl<>
Toluene (μg/L)	24	0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>0.36 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.36 <mdl< td=""><td>0.36 <mdl< td=""><td>0.36 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.36 <mdl< td=""><td>0.36 <mdl< td=""></mdl<></td></mdl<>	0.36 <mdl< td=""></mdl<>
Xylene (µg/L)	300	0.43 <mdl< td=""><td>0.43 <mdl< td=""><td>0.43 <mdl< td=""><td>0.43 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.43 <mdl< td=""><td>0.43 <mdl< td=""><td>0.43 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.43 <mdl< td=""><td>0.43 <mdl< td=""></mdl<></td></mdl<>	0.43 <mdl< td=""></mdl<>
m/p-xylene (µg/L)		0.43 <mdl< td=""><td>0.43 <mdl< td=""><td>0.43 <mdl< td=""><td>0.43 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.43 <mdl< td=""><td>0.43 <mdl< td=""><td>0.43 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.43 <mdl< td=""><td>0.43 <mdl< td=""></mdl<></td></mdl<>	0.43 <mdl< td=""></mdl<>
o-xylene (µg/L)		0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""></mdl<></td></mdl<></td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>0.17 <mdl< td=""><td>0.17 <mdl< td=""></mdl<></td></mdl<></td></mdl<>	0.17 <mdl< td=""><td>0.17 <mdl< td=""></mdl<></td></mdl<>	0.17 <mdl< td=""></mdl<>

Table 34 Aesthetic Objectives and Operational Guideline Results - Continued

*MDL = Laboratory Minimum Detection Limit

6.0 WATER AND CHEMICAL USE (O. Reg. 170/03, s. 11 (6) (a); Schedule 22-2 (3))

6.1 Chemical Usage (O. Reg. 170/03, s. 11 (6) (a))

In 2021, the total amount of 12% sodium hypochlorite (NaOCl) used to treat the water supplied by the five wells in the Lakeshore Drinking Water System is tabulated in **Table 35** with the average chlorine dosage. During the same period, the total amount of undiluted sodium silicate (Na₂SiO₃) for iron sequestering is tabulated in **Table 36** with the average silicate dosage.

	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCH GLEN		POINT CLARK	
Month	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)
Jan	3.08	1.80	34.62	3.35	7.01	3.61	100.21	2.94
Feb	79.89	3.71	24.95	3.45	12.61	3.55	33.36	2.87
Mar	1.96	5.22	34.48	3.37	8.27	3.43	131.33	3.26
Apr	11.21	3.60	29.15	3.31	19.06	3.63	128.53	3.19
May	20.88	3.54	78.91	3.29	15.7	3.69	163.57	3.21
Jun	69.24	3.70	128.39	3.41	32.66	3.67	163.43	3.20
Jul	38.12	3.75	97.41	3.37	19.48	3.56	169.17	3.22
Aug	55.64	3.79	115.49	3.47	25.79	3.62	174.36	3.28
Sep	29.29	3.70	79.19	3.45	20.60	3.53	144.65	3.30
Oct	16.12	3.80	46.39	3.41	17.38	3.55	139.60	3.11
Nov	0.98	4.67	35.74	3.43	11.21	3.84	134.13	3.37
Dec	3.92	3.77	33.78	3.44	13.18	3.50	106.24	3.43
TOTAL	330.36		738.50		202.95		1,588.57	
Average		3.75		3.40		3.60		3.20

Table 35 - Sodium Hypochlorite Usage

Sodium Hypochlorite Grand Total Usage: Sodium Hypochlorite Average Dosage: 2,860.39 kg 3.49 mg/L

	BLAIRS GROVE		BLAIRS GROVE HURONVILLE SOUTH		MURDO	CH GLEN	POINT CLARK	
Month	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)	Usage (kg)	Average Dosage (mg/L)
Jan	23.52	13.76	21.53	2.08	9.17	4.73	79.74	2.34
Feb	83.72	3.89	7.18	0.99	16.74	4.71	26.71	2.30
Mar	1.20	3.18	20.73	2.03	11.56	4.80	117.21	2.91
Apr	12.36	3.97	17.54	1.99	25.12	4.78	11.63	2.77
May	23.52	3.98	47.04	1.96	19.54	4.59	138.34	2.72
Jun	80.14	4.28	63.79	1.69	42.26	4.75	139.14	2.72
Jul	42.66	4.20	58.21	2.01	25.12	4.59	146.72	2.79
Aug	63.39	4.32	66.98	2.01	34.69	4.87	150.30	2.83
Sep	33.89	4.29	39.47	1.72	28.71	4.92	121.60	2.77
Oct	17.14	4.04	26.31	1.94	24.32	4.97	127.18	2.84
Nov	0.80	3.80	16.35	1.57	13.95	4.78	120.40	3.02
Dec	3.99	3.83	17.14	1.75	18.34	4.88	89.70	2.90
TOTAL	386.32		402.27		269.51		1,368.68	
Average		4.79		1.81		4.78		2.74

Table 36 - Sodium Silicate Usage

Sodium Silicate Grand Total Usage:	2,426.79 kg
Sodium Silicate Average Dosage:	3.53 mg/L

6.2 Summary of Flow Rates, Annual Volumes and Capacities (O. Reg. 170/03, Schedule 22-2 (3))

A summary of the water supplied to the distribution system in 2021 from each well supply is provided in **Tables 37**, **38**, **39** and **40**. The volumes reported for each well supply are taken from the SCADA continuous monitoring system. The flow meters were calibrated on the following dates:

Blairs Grove:	Raw water flow meter	June 10, 2021
Huronville South:	Treated water flow meter	June 10, 2021
Murdoch Glen:	Raw water flow meter	June 10, 2021
Murdoch Glen:	Treated water flow meter - Zone 2	June 10, 2021
Murdoch Glen:	Treated water flow meter - Zone 3	June 10, 2021
Point Clark:	Raw water flow meter	June 10, 2021

Water is supplied to the users of the Courtney Subdivision, Cameron Place, and the Amberley General Store in Ashfield-Colborne-Wawanosh (ACW). A flow meter located at the Township border is viewed quarterly, as well as a flow meter located at the Amberley General Store. A summary of these volumes used is provided in **Table 41**.

Flow Rates, Annual Volumes, and Capacities

Table 37 - BLAIRS GROVE

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m³)	Raw Volume Daily Max (m³)	Raw Volume Monthly Avg (m³)	Capacity Monthly Max (%)
Jan	32.56*	27.51	2,188.57	915.19	70.60	34.9%
Feb	29.29	26.96	21,185.13	1,258.44	756.61	48.0%
Mar	29.57	27.38	376.03	64.90	12.13	2.5%
Apr	29.71	27.64	3,133.75	497.51	104.46	19.0%
Мау	29.43	27.04	6,127.70	891.60	197.67	34.0%
Jun	29.27	26.92	18,657.96	1,457.40	621.93	55.6%
Jul	29.57	27.09	10,483.52	929.80	338.18	35.5%
Aug	29.17	26.94	14,810.66	1,057.51	477.76	40.3%
Sep	29.01	26.77	7,742.23	845.12	258.07	32.2%
Oct	29.20	27.10	4,205.31	623.49	135.66	23.8%
Nov	29.28	27.52	228.75	41.66	7.63	1.6%
Dec	29.54	27.28	1,028.13	634.36	33.17	24.2%
PTTW Max	30.33	30.33	79,722.08	2,621.00		
Annual Max	32.56		21,185.13	1,457.40		55.60%
Annual Avg		27.18	7,513.71		247.03	9.42%
Annual Total			90,164.56			

*Exceedance was due to the set up of the new well pump (site was not in service).

Table 38 -HURONVILLE SOUTH

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m³)	Raw Volume Daily Max (m³)	Raw Volume Monthly Avg (m³)	Capacity Monthly Max (%)
Jan	18.77	2.32	6,195.98	315.30	199.87	8.0%
Feb	33.88	2.07	4,101.55	275.78	146.48	7.0%
Mar	16.25	2.31	6,100.18	295.55	196.78	7.5%
Apr	21.18	3.03	5,809.83	337.88	193.66	8.6%
Мау	21.18	6.89	18,139.71	1,021.58	585.15	26.0%
Jun	19.67	11.34	29,058.99	1,275.01	968.63	32.5%
Jul	19.00	8.29	22,182.20	1,069.81	715.55	27.2%
Aug	24.36	9.60	25,694.39	1,117.04	828.85	28.4%
Sep	19.38	7.13	17,456.71	989.19	581.89	25.2%
Oct	20.68	3.90	9,538.12	498.77	307.68	12.7%
Nov	12.64	2.46	6,369.79	274.71	212.33	7.0%
Dec	13.40	2.41	6,256.04	247.61	201.81	6.3%
PTTW Max	45.47	45.47	119,468.76	3,927.74		
Annual Max	33.88		29,058.99	1,275.01		32.46%
Annual Avg		5.15	13,075.54		429.88	10.94%
Annual Total			156,906.49			

Flow Rates, Annual Volumes and Capacities Continued

Table 39 - MURDOCH GLEN

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m³)	Raw Volume Daily Max (m³)	Raw Volume Monthly Avg (m³)	Capacity Monthly Max (%)
Jan	19.16	17.69	2,012.73	124.33	64.93	6.9%
Feb	19.09	17.71	3,575.00	416.45	127.68	23.0%
Mar	19.56	17.82	2,601.01	326.71	83.90	18.0%
Apr	19.22	17.23	5,194.80	437.25	173.16	24.1%
May	18.97	17.74	4,335.87	313.41	139.87	17.3%
Jun	19.04	17.70	8,926.81	506.29	297.56	27.9%
Jul	20.06	17.69	5,516.83	321.27	177.96	17.7%
Aug	20.97	17.47	7,097.94	372.37	228.97	20.5%
Sep	21.59*	17.38	5,848.09	608.58	194.94	33.5%
Oct	18.94	17.18	4,970.73	640.90	160.35	35.3%
Nov	18.95	17.17	2,888.54	136.16	96.28	7.5%
Dec	18.20	16.71	3,825.09	462.24	123.39	25.5%
PTTW Max	21.00	21.00	55,188.00	1,814.40		
Annual Max	21.59		8,927.43	640.90		35.32%
Annual Avg		17.46	4,725.14		155.35	8.56%
Annual Total			56,701.63			

*Exceedance was a start up spike (1 minute duration) following a power outage.

Table 40 - POINT CLARK

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m³)	Raw Volume Daily Max (m³)	Raw Volume Monthly Avg (m³)	Capacity Monthly Max (%)
Jan	21.32	19.99	31,946.73	1,250.39	1,030.54	38.2%
Feb	30.69	19.17	11,592.21	1,257.90	414.01	38.4%
Mar	34.64	19.55	37,701.31	1,342.73	1,216.17	41.0%
Apr	34.51	19.50	38,581.16	1,490.03	1,286.04	45.5%
Мау	34.60	19.33	48,098.27	1,708.55	1,551.56	52.1%
Jun	34.60	19.09	48,674.27	1,701.53	1,622.48	52.0%
Jul	34.00	18.78	50,101.72	1,630.32	1,616.18	49.8%
Aug	33.86	18.83	50,081.14	1,630.95	1,615.52	49.8%
Sep	33.84	18.78	41,420.81	1,634.80	1,380.69	49.9%
Oct	33.91	18.84	42,733.23	1,539.37	1,378.49	47.0%
Nov	33.78	18.98	37,380.40	1,357.25	1,246.01	41.5%
Dec	33.85	27.86	29,094.29	1,412.54	938.53	43.2%
PTTW Max	37.88	37.88	99,557.40	3,273.12		
Annual Max	34.64		50,081.14	1,706.70		52.14%
Annual Avg		19.89	38,939.54		1280.20	39.11%
Annual Total			467,274.43			

Table 41 - COURTNEY SUBDIVISION FLOW METER

Reading	ACW Boundary Meter	Amberley General Store	
Previous Quarter	853327.5	1274.339	
1st Quarter	855000.5	1412.470	
2nd Quarter	936025.1	1630.176	
3rd Quarter	12816.3 (meter rollover)	1870.054	
4th Quarter	91814.3	2043.776	
TOTAL USED	238,486.8 m³	769.437 m ³	
GRAND TOTAL USED	239,256.237 m ³		

6.3 System Capacity (O. Reg. 170/03, Schedule 22-2 (3) Continued)

The following is a comparison of the annual volumes to the rated capacity and flow rates approved in the systems' PTTW, DWWP and MDWL. The total system capacity represents the percentage capacity of the sum of all the water produced in relation to the total system volume permitted. A summary of the totals for all the well supplies is presented in **Table 42**. The visual representations of each well and the Lakeshore total capacity are presented in Figures 2 through 6.

Table 42 - Total Volumes of All Well Supplies

Location (Well Supply)	Total Volume for 2021 (m ³)
Blairs Grove	90,164.56
Huronville South	156,906.49
Murdoch Glen	56,701.63
Point Clark	467.274.43
Total Rated Capacity, PTTW (m ³)	4,247,234.90
Grand Total (all well supplies), Actual (m ³)	771,047.11
Overall Operating Capacity, Actual %	18.15%



Figure 2













7.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE (s. 11 (6) (e))

The following summarizes water system improvements and routine and preventative maintenance for the Lakeshore Drinking Water System Supply:

All Sites:

Routine and preventative maintenance performed as per Jobs Plus schedule. Flow meter calibrations completed. Georgian Bay Fire and Safety inspections completed. Semi-annual flushing completed. Backflow preventer testing completed. Monthly safety inspections of each facility.

Blairs Grove:

January:	Installed new raw water line to Well 3.
	Reservoir cleaned and inspected.
	Site is brought on-line with the new well pump.
February:	Installed air relief valve.
April:	Repaired Singer valve, needle valve and auxiliary contact.
September:	Replaced hour meter.

Huronville South:

February:	Replaced Pressure Relief Valve on supply line to chlorine analyzer.	
	Well pump drive faulted and the pump failed. Well pump and high lift pump settings were changed.	
March:	CosPhi and Hydro One investigated power fluctuations.	
April:	Reservoir cleaned and inspected.	
May:	Leak at well pump raw water line at pitless adapter was repaired by Hopper Well Drillers.	
September:	Eramosa downloaded a program change to PLC.	
December:	Contactor wiring was repaired to restore HLP and chlorine run status.	
	Pressure relief valve malfunctioned. Waiting for parts.	

Murdoch Glen:

January:	Replaced flow sensor indicator.
March:	Reservoir cleaned and inspected.
August:	Replaced chlorine flow sensor block.
	Replaced chlorine pump 1 pressure relief valve, replaced o-ring on chlorine board.
	Replaced flow sensor indicator.
September:	Stantec onsite for hoist inspection.
November:	Exercised CV6 for function; cleaned screen in CV6.

Point Clark:

February:	Input/Output testing with Eramosa and Belwood Electric was completed.
	Reservoir cleaned and inspected.
March:	CosPhi onsite to install hydro monitoring equipment, which was later removed.
April:	Replaced back pressure valve on chlorine board.
August:	Sepoy Electric onsite to facilitate generator/transfer switch connection.
September:	Replaced chlorine flow sensor block.
November:	ASCO control module for HLP2 was replaced.
	Eramosa downloaded a program change.
December:	Eramosa onsite to update program.

Courtney Subdivision:

December: A leak detection agency was retained to investigate high water consumption. A significant leak was discovered and repaired. Flows have noticeably decreased since the repair was completed.

8.0 MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS INSPECTIONS AND REGULATORY ISSUES (Schedule 22-2 (2))

- MECP Drinking Water Inspection was conducted on November 3, 2021 and awarded a rating of % (previous rating was 98.80%).
- A list of Capital Items for 2022 was submitted to the Township of Huron-Kinloss on October 29, 2021.
- DWQMS Management Review was conducted on June 24, 2021.
- DWQMS Internal Audit was conducted between November 25 December 3, 2021.
- DWQMS External Audit (Re-accreditation) was conducted on July 12-13, 2021.
- DWQMS Complete Risk Assessment was conducted on November 25 December 10, 2021.
- Emergency Response Exercise was conducted by the Township in September 2021 but Veolia was not asked to participate. Veolia utilized a break-in and theft event to conduct a tabletop After Action Report in November 2021.

9.0 **REGULATORY CHANGES**

- Proposed amendments to drinking water operator and water quality analyst certification regulations have been issued to address the impacts of emergencies. These include:
 - $\circ~$ allowing the Ministry to act quickly to ensure the Province's drinking water is protected during an emergency
 - extending Operator certificates and allowing certain qualified but non-certified staff to temporarily maintain system operations, and would only be enacted during an emergency
 - allowing temporary relief from training and certification requirements

This proposal has been registered with the Environmental Registry of Ontario and the consultation process was closed on July 2, 2021. The outcome of this proposal is expected to be published in 2022.

- Proposed updates to the Director's Directions Minimum Requirements for Operational Plans May 2021. The Director's Directions have updated the following:
 - Content Requirements all referenced documents will be considered part of the Operational Plan.
 - Procedures for version control version number and revision date is to be embedded in every electronic copy, and recorded on every page of any physical copy
 - Completed copy of Subject System Description Form in Schedule "C" of the Director's Directions
 - Operational Plans are to be submitted to the Director electronically
 - Retention of Operational Plans Operational Plans that were the subject of an audit by an auditor for the accreditation body shall be retained for a minimum of 10 years
 - Public Disclosure of Operational Plans shall be made available for viewing by the public either electronically (website) or at the principal place of business, but not in a manner that would threaten the safety, health or quality of the drinking water, or create significant prejudice with the contractual obligations of the Operating Authority or other organization.
 - Operational Plans shall be updated to meet the requirements of the Director's Directions no later than April 1, 2022.

9.1 Arsenic Sampling

In January 2018, O. Reg. 169/03 - Ontario Drinking Water Quality Standard for Arsenic was changed to 0.010 mg/L from 0.025 mg/L, making the new Half-MAC (Maximum Allowable Concentration) 0.005 mg/L. Point Clark is the only Lakeshore well supply that has an Arsenic level in exceedance of the Half-MAC and therefore must be sampled on a quarterly basis to satisfy O. Reg. 170/03, Schedule 13-5(1) - Increased frequency under s.s 13-2 and 13-4. See **Table 43** for Point Clark Arsenic results.

Table 43 -Arsenic Results

Sample Date	Arsenic Concentration (µg/L)
Feb 22, 2021	6.3
May 3, 2021	5.3
Aug 9, 2021	5.5
Nov 8, 2021	5.4
MAC (µg/L)	10
Exceedance	No

NOTE:

O. Reg. 170/03, Schedule 13: Increased frequency under s.s 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 Water Quality Standards, the frequency of sampling and testing for that parameter under that section shall be **increased** so that at least one sample is taken and tested **every three months.**

10.0 WELL LEVELS (PTTW)

Each of the four sub-systems have a Permit To Take Water (PTTW), which dictates the capacity that each well is permitted to supply, as well as specific monitoring parameters. In addition to flow, static well levels are taken on a monthly basis to monitor the performance of the aquifer. **Table 44** provides a summary of the static well levels recorded in 2020. It should be noted that four (4) of the wells have static levels that are below grade. One of the wells, Blairs Grove, is a flowing artesian well that has a well level that is above grade and the well level is a calculation based on its corresponding pressure reading.

Month	Blairs Grove (above grade, m)	Huronville South (m)	Murdoch Glen (m)	Point Clark Well 2 (m)	Point Clark Well 3 (m)
Jan	off-line (new well)	10.36	9.10	4.27	7.31
Feb	2.11	10.05	10.20	4.26	7.31
Mar	2.46	10.05	9.15	4.26	7.31
Apr	2.46	10.36	8.79	4.87	7.31
Мау	2.46	10.05	9.3	4.87	7.62
Jun	1.76	10.36	10.25	4.87	7.92
Jul	1.76	10.67	9.8	4.87	8.22
Aug	2.03	11.58	10.31	5.79	13.1
Sep	1.93	11.27	10.33	5.79	11.88
Oct	1.01	10.97	10.13	4.87	7.92
Nov	0.35	10.97	9.78	5.48	12.49
Dec	2.64	10.05	9.25	5.79	12.19
Min	0.35	10.05	8.79	4.26	7.31
Max	2.64	11.58	10.33	5.79	13.10
Avg	1.91	10.56	9.70	5.00	9.22

Table 44 - Static Well Levels (PTTW)

11.0 SOURCE WATER PROTECTION (*Clean Water Act, 2006*)

A Drinking Water Source Protection Assessment (DWSPA) Report was generated for the Saugeen Valley Source Protection Area by the Conservation Authority Source Protection Office. This report identifies vulnerable areas, recharge areas, and potential threats to help protect existing and future sources of drinking water from contamination and overuse. This report can be found on-line at:

http://home.waterprotection.ca/source-protection-plan/assessment-reports/saugeen-valley/

The Well Head Protection Areas (WHPAs) within the Lakeshore Drinking Water System have 4 designations:

- WHPA-A: 100 m radius around the well head
- WHPA-B: 2-year time-of-travel capture zone
- WHPA-C: 5-year time-of-travel capture zone

WHPA-D: 25-year time-of-travel capture zone

The Lakeshore wells are NOT classified as groundwater under direct influence of surface water (GUDI).

The DWSPA report states: "The WHPAs within the Township of Huron-Kinloss vary significantly in their vulnerability to contamination. A large percentage of the total area within the Blairs Grove, Murdoch Glen and Point Clark WHPAs has a low intrinsic vulnerability to contamination. Blairs Grove and Point Clark have low vulnerability in over 94% of their area. Huronville South has a slightly higher vulnerability to contamination and a larger portion of moderate vulnerability." **Table 45** shows a summary of significant drinking water threats within the Lakeshore Drinking Water System.

WHPA	Number of "are or would be significant" threats			Number of properties with "are or would be significant" threats			e significant"	
A-D	Chemical	DNAPL	Pathogen	Total	Agricultural	Residential	Others	Total
Blairs Grove	32	0	22	54	0	22	0	22
Huronville South	84*	0	2*	86	0	82	2**	84
Murdoch Glen	12	4	10	26	1	10	0	11
Point Clark	22	4	15	41	0	14	1	15

Table 45 - Lakeshore WHPA: Summary of Significant Drinking Water Threats

* One threat of the stated threat count is found in the Municipality of Kincardine.

** One property of the stated property count is found in the Municipality of Kincardine.

In conclusion, as stated in the DWSPA Report: "Based on available data and knowledge on raw water quality, no drinking water quality issues were identified for this water system that would result from ongoing or past activities. Also, no conditions resulting from past activities were identified within the WHPA."

12.0 OBSERVATIONS AND HISTORICAL TRENDS

Raw Water Quality

• Microbiological: There were no positive microbiological test results in 2021.

Table 46 -10-Year Historical Results:

Year	Well Source	Positive microbiological Result
2013	Point Clark Well # 2	1 Total Coliform
2015	Huronville South	4 Total Coliforms
2015	Point Clark Well # 2	1 Total Coliform
2017	Huronville South	1 Total Coliform
2018	Blairs Grove	1 Total Coliform

Due to the infrequent historical results, there are no concerns at this time.

• Chemical Parameters: There were no exceedances for any of the chemical parameters tested in 2021. Sodium and Fluoride are tested every 60 months. Sodium was required in 2021. Fluoride will be sampled again in 2022, and sodium will be sampled again in 2026.

Table 47 -	10-Year Historical Results:

Year	Blairs Grove		Huronvi	lle South	Murdoch Glen		Point Clark	
	Sodium	Fluoride	Sodium	Fluoride	Sodium	Fluoride	Sodium	Fluoride
2006	98.0	2.01	43.9	2.07	43.7	2.06	17.9	2.12
2011	86.4	1.83	46.6	2.32	49.7	2.15	16.0	2.22
2016	101.0	1.71	52.7	2.19	68.4	2.12	19.8	2.04
2021	100	_	54.3	_	63.2	NR	25.3	_

<u>Arsenic: Point Clark</u>

Arsenic is being monitored at Point Clark quarterly, since it is just above half of the maximum allowable concentration (MAC).

Year	Arsenic (μg/L)
2008	5.2
2009	6.7
2010	5.6, 5.6
2011	5.5, 5.7
2012	5.2, 5.8
2013	5.5, 5.1
2014	5.9, 6.0
2015	5.5
2018	5.6, 5.3
2019	5.8, 5.6, 5.6, 5.0
2020	5.9, 5.6, 4.9, 4.7
2021	6.3, 5.3, 5.5, 5.4

Table 48 -10-Year Historical Results:



Figure 7

• Raw Turbidity:

Table 49 -	10-Year	Historical	Results:
	TO-leal	instorical	nesuits.

Well Source	10-Year Historical Average (2011 to 2020) (NTU)	2021 Average (NTU)	Comments
Blairs Grove	n/a	0.36	This is a new well so historical data is not available before 2021.
Huronville South	0.22	0.18	The raw turbidity has remained consistent based on the 10-year historical average. There is no concern at this time.
Murdoch Glen	0.24	0.19	The raw turbidity has remained consistent based on the 10-year historical average. There is no concern at this time.
Point Clark Well # 2	0.22	0.22	The raw turbidity is slightly elevated from the 10-year historical average, but is still relatively low There is no concern at this time.
Point Clark Well # 3	0.19	0.23	The raw turbidity has remained consistent based on the 10-year historical average. There is no concern at this time. (PC 3 was new in 2015).



Figure 8

• Well Levels:

Table 50 -10-Year Historical Results:

Well Source	10-Year Historical Average (2011 to 2020) (m)	2021 Average (m)	Comments
Blairs Grove	n/a	1.91 m above grade	This is a new well so historical data is not available before 2021.
Huronville South	10.67 m below grade	10.56 m below grade	The well level has remained consistent based on the 10-year historical average. There is no concern at this time.
Murdoch Glen	9.33 m below grade	9.70 m below grade	The well level has remained consistent based on the 10-year historical average. There is no concern at this time.
Point Clark Well # 2	6.70 m below grade	5.00 m below grade	The well level has remained consistent based on the 10-year historical average. There is no concern at this time.
Point Clark Well # 3	8.69 m below grade	9.22 m below grade	The well level has remained consistent based on the 10-year historical average. There is no concern at this time.



Figure 9

• Well Flows and Pump Performance:

Table 51 -5-Year Historical Results:

Well Source	5-Year Historical Average (2015 to 2019)	2021 Average	Comments
Blairs Grove	n/a	Avg flow: 27.18 L/s Capacity: 9.42%	This is a new well so historical data is not available before 2021.
Huronville South	Avg flow: 5.86 L/s Capacity: 12.85%	Avg flow: 5.15L/s Capacity: 10.94%	Flows are consistent based on the 5-year historical average. There are no concerns at this time.
Murdoch Glen	Avg flow: 17.93 L/s Capacity: 6.09%	Avg flow: 17.46 L/s Capacity: 8.56%	Flows are consistent based on the 5-year historical average. There are no concerns at this time.
Point Clark Wells	Avg flow: 20.14 L/s Capacity: 31.66%	Avg flow: 19.89 L/s Capacity: 39.11%	Flows are consistent based on the 5-year historical average, however, the total volumes pumped from 2015 until 2021 have been increasing each year. In 2015, the capacity was 18.63% and has increased by an average of 3.7% each year, with 2021 being 39.11% capacity. This trend illuminates an increasing demand in Zone 1 , due to a significant leak in the distribution system, which was investigated and repaired in December 2021.



Figure 10

Huronville South - Historical Flows (L/s)



Figure 11



Figure 12



