Lakeshore Drinking Water System
2023 Operation and Maintenance Annual Report

PREPARED BY:

Veolia Water Canada
100 Cove Road, Box 185
Goderich, ON
N7A 3Z2

TO:

Township of Huron-Kinloss
Box 130
21 Queen Street
Ripley, ON
N0G 2R0

Resourcing the world VEOLIA

Table of Contents

List of Tables

1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2023 Annual Report is to document the operation and maintenance data for the Lakeshore Well Supply for review by the Ministry of the Environment, Conservation and Parks (MECP) in accordance withO. Reg. 170/03. This report covers January 1, 2023 to December 31, 2023. A copy of this report will be submitted to the owner to be displayed to the residents.

2.0 DESCRIPTION OF THE WATER SYSTEM

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 m^3
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:	1,253.45m^3
Peak Day Demand:	3,842.72 m^3
Average Capacity:	10.66%
Peak Capacity:	33.02%
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 m^3
- 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)
- Depth of Well: 69.5 m
- Well Pump: 10 hp (submersible)
- Disinfection: Sodium hypochlorite (12%)
- CT Requirement: 2-log, 5°C, baffled reservoir (0.5 BF)
- Iron Sequestering: Sodium silicate (undiluted)
- High Lift Pump: 1 (30 hp)
- Reservoir: 83 m^3
- 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 m^3
- Permit To Take Water: 3332-9N6H8L, ***expires November 1, 2024***

The Lakeshore DWS currently 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 m^3 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).

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 Water Treatment Equipment Operation and Monitoring as Per Schedule 7, O. Reg. 170/03

3.1.1 Point of Entry Free Chlorine Residuals

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 1** shows the grab samples monthly average of free chlorine residual values. **Table 2** shows the on-line continuous samples monthly average (as collected by SCADA) of the free chlorine residual values.

3.1.2 Distribution Free Chlorine Residuals

A total of 703 distribution residuals were collected: 365 daily grab residuals and an additional 338 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.

Table 1 - Average Treated and Distribution Free Chlorine Residuals

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark	Distribution
Jan	1.50	1.60	1.78	1.80	1.45
Feb	1.61	1.58	1.60	1.88	1.52
Mar	1.58	1.77	1.62	1.84	1.49
Apr	1.48	1.66	1.68	1.72	1.51
May	1.50	1.62	1.80	1.74	1.48
Jun	1.62	1.55	1.87	1.71	1.57
Jul	1.36	1.70	1.78	1.68	1.53
Aug	1.35	1.59	1.69	1.71	1.44
Sep	1.08	1.46	1.65	1.47	1.27
Oct	1.05	1.44	1.76	1.53	1.28
Nov	1.28	1.53	1.83	1.69	1.37
Dec	1.39	1.57	1.69	1.71	1.37
CT Requirement	**0.22**	**0.44**	**0.26**	**0.32**	**0.20**
Annual Min	0.89	1.01	1.24	1.29	0.53
Annual Max	2.05	1.88	2.08	2.06	2.20
Annual Avg	1.40	1.59	1.73	1.71	1.44
# Samples	364	359	363	364	365

Table 2 - Average Treated Free Chlorine Residuals (SCADA)

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
CT Requirement				
Annual Min	0.68	1.04	1.11	0.63
Annual Max	2.00	3.84	2.00	3.17
Annual Avg	1.43	1.62	1.76	1.72

3.1.3 Raw and Treated Water Turbidity

Raw water and treated water grab samples were collected and analyzed for turbidity using a portable turbidity analyzer. **Table 3** provides a summary of raw water turbidity results and **Table 4** 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.

Table 3 - Raw Water Turbidity Results

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark W2	Point Clark W3
Jan	–	0.24	0.21	0.21	0.22
Feb	0.35	0.22	0.19	0.20	0.22
Mar	0.35	0.20	0.22	0.23	0.22
Apr	0.69	0.22	0.25	0.23	0.23
May	0.37	0.20	0.24	0.19	0.22
Jun	0.33	0.19	0.21	0.22	0.24
Jul	0.33	0.20	0.21	0.19	0.17
Aug	0.33	0.21	0.17	0.22	0.20
Sep	0.37	0.19	0.25	0.20	0.19
Oct	0.33	0.15	0.20	0.17	0.22
Nov	0.35	0.29	0.21	0.19	0.17
Dec	0.94	0.41	0.24	0.28	0.33
Annual Min	0.33	0.15	0.17	0.17	0.17
Annual Max	0.94	0.41	0.25	0.28	0.33
Annual Avg	0.43	0.23	0.22	0.21	0.22
# Samples	14	19	19	19	19

Table 4 - Treated Water Turbidity Results

Month	Blairs Grove	Huronville South	Murdoch Glen	Point Clark
Jan	0.36	0.25	0.25	0.28
Feb	0.25	0.25	0.25	0.26
Mar	0.27	0.25	0.28	0.29
Apr	0.33	0.23	0.19	0.23
May	0.31	0.25	0.21	0.29
Jun	0.31	0.23	0.25	0.27
Jul	0.37	0.23	0.26	0.23
Aug	0.39	0.29	0.25	0.23
Sep	0.44	0.22	0.25	0.25
Oct	0.37	0.22	0.20	0.23
Nov	0.44	0.33	0.21	0.27
Dec	0.19	0.34	0.23	0.29
Annual Min	0.19	0.22	0.19	0.23
Annual Max	0.44	0.34	0.29	0.30
Annual Avg	0.32	0.26	0.24	0.26
# Samples	20	19	19	18

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

3.2.1 Raw Water Samples

Raw water samples are collected every week. In 2023, a total of 256 samples were collected and analyzed for E. Coli and Total Coliform. **Tables 5, 6, 7, 8 and 9** provide summaries of microbiological results performed on the raw water.

Microbiological Results for Raw Water

Table 5 - 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	3	3	0	3	3	0
Mar	4	4	0	4	4	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	4	4	0	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	4	0
Dec	4	4	0	4	4	0
TOTAL	**48**	**48**	**0**	**48**	**48**	**0**

Table 6 - HURONVILLE SOUTH - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	3	1	4	4	0
Sep	4	4	0	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	4	0
Dec	4	4	0	4	4	0
TOTAL	**52**	**51**	**1**	**52**	**52**	**0**

Microbiological Results for Raw Water Continued

Table 7 - MURDOCH GLEN - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	4	1	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	4	0	4	4	0
Jul	5	5	0	5	5	0
Aug	4	4	0	4	4	0
Sep	4	4	0	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	4	0
Dec	4	4	0	4	4	0
TOTAL	**52**	**51**	**1**	**52**	**52**	**0**

Table 8 - POINT CLARK WELL # 2 - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	0	5	5	0
Feb	4	4	0	4	4	0
Mar	4	4	0	4	4	0
Apr	4	4	0	4	4	0
May	5	5	0	5	5	0
Jun	4	3	1	4	4	0
Jul	5	4	1	5	5	0
Aug	4	3	1	4	4	0
Sep	4	3	1	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	4	0
Dec	4	4	0	4	4	0
TOTAL	**52**	**48**	**4**	**52**	**52**	**0**

Microbiological Results for Raw Water Continued

Table 9 - POINT CLARK WELL # 3 - RAW

Month	Total Coliform			E. Coli		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1
Jan	5	5	1	5	5	0
Feb	4	4	0	4	4	0
Mar	4	3	1	4	4	0
Apr	4	3	1	4	4	0
May	5	4	1	5	5	0
Jun	4	3	1	4	4	0
Jul	5	4	1	5	5	0
Aug	4	4	0	4	4	0
Sep	4	4	0	4	4	0
Oct	5	5	0	5	5	0
Nov	4	4	0	4	4	0
Dec	4	4	0	4	4	0
TOTAL	**52**	**46**	**6**	**52**	**52**	**0**

3.2.2 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 2023, a total of 210 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 - >2000 cfu/ 1 mL(two samples were NDOG). **Table 10, 11, 12, and 13** provide summaries of all microbiological results performed on treated water.

Microbiological Results for Treated Water (Point of Entry)

Table 10 - BLAIRS GROVE

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	#samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	3	3	0
Mar	4	4	0	4	4	0	4	4	0
Apr	4	4	0	4	4	0	4	4	0
May	5	5	0	5	5	0	5	5	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	4	4	0	4	4	0	4	4	0
Oct	5	5	0	5	5	0	5	5	0
Nov	4	4	0	4	4	0	4	4	0
Dec	4	4	0	4	4	0	4	4	0
TOTAL	**52**	**52**	**0**	**52**	**52**	**0**	**52**	**52**	**0**

Microbiological Results for Treated Water (Point of Entry) con't

Table 11 - HURONVILLE SOUTH

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	safe	# Samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	4	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	6	6	0	6	6	0	4	3	NDOG*
May	5	5	0	5	5	0	5	5	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	4	4	0	4	4	0	4	4	0
Oct	5	5	0	5	5	0	5	5	0
Nov	4	4	0	4	4	0	4	4	0
Dec	4	4	0	4	4	0	4	4	0
TOTAL	**52**	**52**	**0**	**52**	**52**	**0**	**52**	**52**	**1**

**NDOG - Non Determined Overgrowth*

Table 12 - MURDOCH GLEN

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	# Samples Deteriorating
Jan	5	5	0	5	5	0	5	5	0
Feb	4	4	0	4	4	0	3	4	0
Mar	4	4	0	4	4	0	4	4	0
Apr	4	4	0	4	4	0	4	4	0
May	5	5	0	5	5	0	5	5	0
Jun	4	4	0	4	4	0	4	4	0
Jul	5	5	0	5	5	0	5	5	0
Aug	4	4	0	4	4	0	4	4	0
Sep	4	4	0	4	4	0	4	4	0
Oct	5	5	0	5	5	0	5	5	0
Nov	4	3	0	4	4	0	4	3	NDOG*
Dec	4	4	0	4	4	0	4	4	0
TOTAL	**52**	**52**	**0**	**52**	**52**	**0**	**52**	**52**	**1**

**NDOG - Non Determined Overgrowth*

Microbiological Results for Treated Water (Point of Entry) con't

Table 13 - POINT CLARK

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

NDOG - Non Determined Overgrowth

3.2.3 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 2023, a total of 337 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 193 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 EC result from the distribution water was 0 cfu/100 mL and one sample for Total Coliforms was 1 cfu/100ml (see AWQI #161785). The range of HPC results were 0 - 480 cfu/1 mL(one sample NDOG). **Table 14** provides a summary of all microbiological samples taken in the distribution system.

Table 14 - Microbiological Results for Distribution System

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	# Samples Deteriorating
Jan	35	35	0	35	35	0	23	23	0
Feb	27	27	0	27	27	0	15	15	0
Mar	28	28	0	28	28	0	16	16	0
Apr	35	34	1	35	35	0	20	20	0
May	35	35	0	35	35	0	20	20	0
Jun	28	28	0	28	28	0	15	15	0
Jul	36	36	0	36	36	0	11	11	0
Aug	28	28	0	28	28	0	16	16	0
Sep	27	27	0	27	27	0	17	17	0
Oct	26	26	0	26	26	0	16	16	0
Nov	16	16	0	16	16	0	16	15	NDOG
Dec	16	16	**0**	16	16	**0**	16	9	0
TOTAL	**337**	**336**	**1**	**337**	**337**	**0**	**193**	**192**	**1**

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

3.3.1 Inorganics

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 15**). 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.

Table 15 - Inorganics Results

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)
Antimony	0.9 < MDL	0.9 < MDL	0.9 < MDL	0.9 < MDL	6
Arsenic	3.1	0.4	1.6	**5.4**	10
Barium	4.4	26.8	26.7	25.5	1000
Boron	161	180	157	72	5000
Cadmium	0.003 < MDL	0.003 < MDL	0.01	0.003 < MDL	5
Chromium	0.15	0.26	0.20	0.14	50
Mercury	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	1
Selenium	0.04 < MDL	0.01 < MDL	0.04 < MDL	0.04 < MDL	50
Uranium	0.47	0.313	1.43	0.548	20

*MDL = Laboratory Minimum Detection Limit

3.3.2 Organics

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 16 and 17**.

Table 16 - Organics Results

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)
Benzene	0.32 < MDL	0.32 < MDL	0.32 < MDL	0.32 < MDL	1
Carbon Tetrachloride	0.17 < MDL	0.17 < MDL	0.17 < MDL	0.17 < MDL	2
1,2-Dichlorobenzene	0.41 < MDL	0.41 < MDL	0.41 < MDL	0.41 < MDL	200
1,4-Dichlorobenzene	0.36 < MDL	0.36 < MDL	0.36 < MDL	0.36 < MDL	5
1,1-Dichloroethylene	0.33 < MDL	0.33 < MDL	0.33 < MDL	0.33 < MDL	14
1,2-Dichloroethane	0.35 < MDL	0.35 < MDL	0.35 < MDL	0.35 < MDL	5
Dichloromethane	0.35 < MDL	0.35 < MDL	0.35 < MDL	0.35 < MDL	50
Monochlorobenzene	0.3 < MDL	0.3 < MDL	0.3 < MDL	0.3 < MDL	80
Tetrachloroethylene	0.35 < MDL	0.35 < MDL	0.35 < MDL	0.35 < MDL	10
Trichloroethylene	0.44 < MDL	0.44 < MDL	0.44 < MDL	0.44 < MDL	5
Vinyl Chloride	0.17 < MDL	0.17 < MDL	0.17 < MDL	0.17 < MDL	1
Diquat	1 < MDL	1 < MDL	1 < MDL	1 < MDL	70
Paraquat	1 < MDL	1 < MDL	1 < MDL	1 < MDL	10
Glyphosate	1 < MDL	1 < MDL	1 < MDL	1 < MDL	280
Polychlorinated Biphenyls	0.04 < MDL	0.04 < MDL	0.04 < MDL	0.04 < MDL	3
Benzo(a)pyrene	0.004 < MDL	0.004 < MDL	0.004 < MDL	0.004 < MDL	0.01

Table 17 - Organics Results - Continued

Parameter	Blairs Grove (µg/L)	Huronville South (µg/L)	Murdoch Glen (µg/L)	Point Clark (µg/L)	Maximum Allowable Concentration (µg/L)
Alachlor	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	5
Atrazine+N-dealkylated metabolites	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	5
Atrazine	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	/
Desethyl Atrazine	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	/
Azinphos-methyl	0.05 < MDL	0.05 < MDL	0.05 < MDL	0.05 < MDL	20
Carbaryl	0.05 < MDL	0.05 < MDL	0.05 < MDL	0.05 < MDL	90
Carbofuran	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	90
Chlorpyrifos	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	90
Diazinon	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	20
Dimethoate	0.06 < MDL	0.06 < MDL	0.06 < MDL	0.06 < MDL	20
Diuron	0.03 < MDL	0.03 < MDL	0.03 < MDL	0.03 < MDL	1510
Malathion	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	190
Metolachlor	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	50
Metribuzin	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	80
Phorate	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	2
Prometryne	0.03 < MDL	0.03 < MDL	0.03 < MDL	0.03 < MDL	1
Simazine	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	10
Terbufos	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	1
Triallate	0.01 < MDL	0.01 < MDL	0.01 < MDL	0.01 < MDL	230
Trifluralin	0.02 < MDL	0.02 < MDL	0.02 < MDL	0.02 < MDL	45
2,4-Dichlorophenoxyacetic acid	0.19 < MDL	0.19 < MDL	0.19 < MDL	0.19 < MDL	100
Bromoxynil	0.33 < MDL	0.33 < MDL	0.33 < MDL	0.33 < MDL	5
Dicamba	0.20 < MDL	0.20 < MDL	0.20 < MDL	0.20 < MDL	120
Diclofop-methyl	0.40 < MDL	0.40 < MDL	0.40 < MDL	0.40 < MDL	9
MCPA	0.00012 < MDL	0.00012 < MDL	0.00012 < MDL	0.00012 < MDL	0.1
Picloram	1 < MDL	1 < MDL	1 < MDL	1 < MDL	190
2,4-Dichlorophenol	0.15 < MDL	0.15 < MDL	0.15 < MDL	0.15 < MDL	900
2,4,6-Trichlorophenol	0.25 < MDL	0.25 < MDL	0.25 < MDL	0.25 < MDL	5
2,3,4,6-Tetrachlorophenol	0.20 < MDL	0.20 < MDL	0.20 < MDL	0.20 < MDL	100
Pentachlorophenol	0.15 < MDL	0.15 < MDL	0.15 < MDL	0.15 < MDL	60

*MDL = Laboratory Minimum Detection Limit

3.3.3 Trihalomethanes

Distribution samples are taken every three months from representative points in the distribution system and tested for Trihalomethanes (THMs). In 2023, 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 µg/L for this parameter and it is expressed as a running annual average (RAA).

Refer to **Tables 18, 19, 20 and 21** for the summary of Trihalomethane results.

3.3.4 Haloacetic Acids

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 2023, samples were collected during the months of February, May, and August and results are expressed as a running annual average (RAA). HAAs do not apply to the Courtney Subdivision distribution system.

Refer to **table 18, 19, 20 and 21** for the summary of HAA results.

3.3.5 Nitrate and Nitrite

Four treated water samples are taken every three months and tested for nitrate and nitrite. In 2023, samples were collected during the months of February, May, and August. 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 19, 20, 21 and 22**.

Nitrate, Nitrite, Trihalomethanes and HAA Acids Results

Table 18 - BLAIRS GROVE

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	0.008	< 0.006	9.9	< 5.3
May	< 0.003	0.026	16.0	< 5.3
Aug	< 0.003	< 0.006	12.0	< 5.3
Nov	< 0.003	< 0.006	25	<5.3
Average	0.004	<0.011	15.7	< 5.3
Maximum	0.008	<0.026	25.0	< 5.3
MAC	**1.0**	**10**	**100**	**80**

Table 19 - HURONVILLE SOUTH

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	0.008	< 0.006	8.3	< 5.3
May	0.005	< 0.006	8.9	< 5.3
Aug	< 0.003	< 0.006	14.0	< 5.3
Nov	< 0.003	< 0.006	9.2	<5.3
Average	< 0.005	< 0.006	10.1	< 5.3
Maximum	0.008	<0.006	14.0	< 5.3
MAC	**1.0**	**10**	**100**	**80**

Table 20 -MURDOCH GLEN

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	0.009	< 0.006	13.0	< 5.3
May	0.004	< 0.006	14.0	< 5.3
Aug	< 0.003	< 0.006	13.0	< 5.3
Nov	< 0.003	< 0.006	18	<5.3
Average	< 0.005	<0.006	14.5	<5.3
Maximum	0.009	<0.006	18.0	<5.3
MAC	**1.0**	**10**	**100**	**80**

Table 21 - POINT CLARK

Month	Nitrite (mg/L)	Nitrate (mg/L)	THMs (µg/L)	HAAs (µg/L)
Feb	0.008	< 0.006	9.0	< 5.3
May	< 0.003	< 0.006	11.0	< 5.3
Aug	< 0.003	< 0.006	10.0	< 5.3
Nov	< 0.003	< 0.006	19.0	<5.3
Average	0.004	< 0.006	12.3	< 5.3
Maximum	0.008	< 0.006	19.0	< 5.3
MAC	**1.0**	**10**	**100**	**80**

3.3.6 Sodium

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 23**. The next sampling date for Sodium will be in July, 2026.

3.3.7 Fluoride

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 September 6, 2022, 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 # 159912, 159913, 159914 and 159915). The results are summarized in **Table 22**. The next sampling date for Fluoride is due in Sept 2027

Table 22 - Sodium and Fluoride Results

Location	Sodium		Fluoride
	Sample Date: July 27, 2021		Sample Date: September 6, 2022
	Result (mg/L)	Resample Result (mg/L)	Result (mg/L)
Blairs Grove	100	96.9	1.87
Huronville South	54.3	54.2	2.28
Murdoch Glen	63.2	62.6	2.05
Point Clark	21.8	25.3	2.19
MAC (mg/L)	**20**	**20**	**1.5**

3.3.8 Lead

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. The Lakeshore Drinking Water System was sampled for lead, pH and alkalinity. Samples were collected on January 9, 2023 and on July 17, 2023. Results for 2023 can be found in **Table 23**.

Table 23 - Lead Sampling Program Results

Season	Location	Alkalinity (mg/L)	pH	Lead (µg/L)
Dec-Apr (Jan 11)	Blairs Grove	185	8.13	0.2
	Huronville South	178	8.18	0.07
	Murdoch Glen	204	8.17	0.14
	Point Clark	187	8.11	0.08
Jun-Oct (Jul 12)	Blairs Grove	200	8.18	1.17
	Huronville South	159	8.20	0.04
	Murdoch Glen	174	8.28	0.43
	Point Clark	182	8.16	0.11
MAC (µg/L)		–	–	**10**

4.0 WATER AND CHEMICAL USE

4.1 Chemical Usage

In 2023, 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 24** with the average chlorine dosage. During the same period, the total amount of undiluted sodium silicate (Na_2SiO_3) for iron sequestering is tabulated in **Table 25** with the average silicate dosage.

Table 24 - Sodium Hypochlorite Usage

Month	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCH GLEN		POINT CLARK	
	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	0	0	0.56	8.01	36.02	3.52	49.06	3.46
Feb	0	0	12.19	3.18	11.91	3.79	46.81	3.36
Mar	0	0	25.09	3.83	5.33	4.31	50.88	3.31
Apr	0	0	26.21	3.31	6.87	3.92	52.98	3.13
May	0	0	44.43	3.24	16.54	2.20	89.70	3.04
Jun	20.32	2.64	45.69	3.25	84.80	3.50	121.66	3.29
Jul	1.40	5.72	93.91	3.33	41.77	3.53	118.44	3.09
Aug	0.56	7.58	86.90	3.36	16.96	3.59	105.54	3.20
Sep	0	0	74.85	3.33	14.02	3.81	93.35	2.97
Oct	4.06	36.95	33.50	3.19	12.89	4.05	68.54	3.30
Nov	0	0	11.63	3.23	18.92	4.08	44.71	3.20
Dec	0	0	25.09	3.36	8.83	4.17	48.64	3.33
TOTAL	26.35		480.05		274.85		890.30	
Average		5.88		3.72		3.70		3.19

Sodium Hypochlorite Grand Total Usage: **1,671.55kg**
Sodium Hypochlorite Average Dosage: **4.12mg/L**

Table 25 - Sodium Silicate Usage

Month	BLAIRS GROVE		HURONVILLE SOUTH		MURDOCH GLEN		POINT CLARK	
	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	0	0	1.59	0	45.45	4.44	41.86	2.95
Feb	0	0	9.57	2.39	15.95	5.08	38.67	2.77
Mar	0	0	11.56	1.71	7.97	6.46	38.27	2.49
Apr	0	0	11.56	1.46	8.77	5.01	48.64	2.87
May	0	0	16.74	1.22	37.08	4.93	88.91	3.01
Jun	31.89	4.14	18.34	1.31	107.25	4.42	115.22	3.12
Jul	1.99	8.14	33.09	1.17	53.42	4.51	118.41	3.09
Aug	0.80	10.78	27.91	1.08	23.52	4.98	106.85	3.24
Sep	0	0	24.32	1.08	17.94	4.87	91.30	2.91
Oct	0	0	11.96	1.14	17.54	5.50	59.80	2.88
Nov	0	0	7.97	2.21	26.71	5.75	42.26	3.02
Dec	0	0	8.77	1.17	13.56	6.40	40.27	2.75
TOTAL	34.69		181.00		375.16		830.46	
Average		2.56		1.33		5.20		2.98

Sodium Silicate Grand Total Usage: **1,421.31 kg**
Sodium Silicate Average Dosage: **3.01 mg/L**

4.2 Summary of Flow Rates, Annual Volumes and Capacities

A summary of the water supplied to the distribution system in 2023 from each well supply is provided in **Tables 26, 27, 28 and 29**. 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	July 6, 2023
Huronville South:	Treated water flow meter	June 7, 2023
Murdoch Glen:	Raw water flow meter	July 6, 2023
Murdoch Glen:	Treated water flow meter - Zone 2	July 6, 2023
Murdoch Glen:	Treated water flow meter - Zone 3	July 6, 2023
Point Clark:	Raw water flow meter	July 6, 2023

Flow Rates, Annual Volumes, and Capacities

Table 26 - BLAIRS GROVE

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Max (%)
Jan	**0**	0	0	**0**	0	
Feb	0	0	0	0	0	
Mar	0	0	0	0	0	
Apr	29.22	1.86	22.36	20.18	0.42	
May	29.33	4.85	286.68	276.68	6.25	
Jun	28.89	12.46	7,452.08	1,519.44	248.40	
Jul	80.00	9.61	254.25	77.47	8.20	
Aug	28.53	4.87	66.88	20.88	2.16	
Sep	28.07	1.64	33.82	24.56	1.13	
Oct	28.51	2.45	88.07	30.10	2.84	
Nov	28.60	1.25	22.71	14.92	0.76	
Dec	28.76	1.25	36.21	18.31	1.17	
PTTW Max	**30.33**	**30.33**	**79,722.08**	**2621.00**	–	–
Annual Max	**80.00**			1,519.44		57.97%
Annual Avg		3.37			22.64	0.86%
Annual Total			**8,263.06**			

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

Table 27 - HURONVILLE SOUTH

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Max (%)
Jan	3.58	0.15	38.11	34.58	1.23	
Feb	37.52	3.18	3,055.76	198.28	160.83	
Mar	7.67	3.14	5,090.32	203.96	164.20	
Apr	17.18	3.74	6,995.14	302.01	233.17	
May	20.00	6.69	14,077.19	687.96	454.10	
Jun	21.91	6.81	13,325.06	725.98	444.17	
Jul	37.05	10.98	28,191.80	1,233.80	909.41	
Aug	26.98	9.43	5,331.46	220.54	171.98	
Sep	26.64	8.59	19,090.21	1,031.87	621.37	
Oct	31.17	4.36	8,109.71	729.14	261.60	
Nov	15.84	1.96	2,273.97	206.63	75.80	
Dec	25.43	3.46	6,169.04	252.88	199.00	
PTTW Max	**45.47**	**45.47**	**119468.76**	**3927.74**	–	–
Annual Max	37.52		28,191.80	1,233.80		31.41%
Annual Avg		5.26	9,326.67		313.50	7.81%
Annual Total			**111,747.77**			

Flow Rates, Annual Volumes and Capacities Continued

Table 28 - MURDOCH GLEN

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Max (%)
Jan	20.16	19.15	10,129.16	465.98	326.75	
Feb	20.20	19.28	3,359.43	288.92	119.98	
Mar	19.91	18.99	1,643.64	95.29	53.02	
Apr	19.91	19.03	1,990.69	97.91	66.36	
May	19.79	18.81	7,820.03	1150.09	252.26	
Jun	19.74	18.68	24,451.61	1272.38	815.05	
Jul	19.80	18.69	11,164.61	1278.14	360.14	
Aug	19.50	18.41	46,13.54	232.49	148.82	
Sep	19.37	17.67	3,190.19	178.74	106.34	
Oct	19.27	17.04	3,004.83	213.52	96.93	
Nov	19.07	17.08	5,030.19	355.55	167.67	
Dec	19.01	16.38	2,615.15	344.90	84.36	
PTTW Max	**21.00**	**21.00**	**55,188.00**	**1,814.40**	–	–
Annual Max	20.20		24,451.61	1,278.14		70.44%
Annual Avg		18.26	6,584.41		216.47	11.93%
Annual Total			**79,012.87**			

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

Table 29 - POINT CLARK

Month	Raw Flow Daily Max (L/s)	Raw Flow Monthly Avg (L/s)	Raw Volume Monthly Total (m^3)	Raw Volume Daily Max (m^3)	Raw Volume Monthly Avg (m^3)	Capacity Monthly Max (%)
Jan	41.24	29.57	13,263.42	567.94	427.85	
Feb	36.35	24.74	13,048.78	567.20	466.03	
Mar	36.57	19.41	14,616.98	632.17	471.52	
Apr	33.59	18.22	16,348.01	868.12	544.93	
May	32.97	17.52	28,344.03	1,540.12	914.32	
Jun	35.65	28.23	35,230.12	1,752.37	1,174.34	
Jul	75.00	32.10	35,693.16	1,901.54	1,151.39	
Aug	32.42	29.99	30,466.08	1,349.15	982.78	
Sep	37.33	33.19	23,523.12	1,403.23	784.10	
Oct	37.64	33.86	17,190.74	930.62	5,554.54	
Nov	37.94	32.60	12,335.23	535.72	411.17	
Dec	38.33	33.33	13,644.54	539.59	440.15	
PTTW Max	**37.88**	**37.88**	**99,557.40**	**3,273.12**	–	–
Annual Max	75.00		35,693.16	1,901.54		58.10%
Annual Avg		27.75	21,142.02		693.59	21.24%
Annual Total			253,704.21			

4.3 System Capacity

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 31**.

Table 31 - Total Volumes of All Well Supplies

Location (Well Supply)	Total Volume for 2023 (m^3)
Blairs Grove	8,263.06
Huronville South	111,920.02
Murdoch Glen	76,328.23
Point Clark	253,704.21
Total Rated Capacity, PTTW (m^3)	
Grand Total (all well supplies), Actual (m^3)	**452,727.91**
Overall Operating Capacity, Actual %	10.66%

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE AND PREVENTATIVE MAINTENANCE

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.
Safety inspections of each facility.
UPS batteries were replaced at all the sites

Blairs Grove:

March:	Motor bearings were replaced
May:	HLP motor was replaced
June:	The old well casing has been removed

Huronville South:

March:	SCADA upgrades were completed
	Level sensor was replaced
July:	Motor drive was replaced
	Pump motor was replaced
November:	Fuel tanks have been repaired
	HLP#1 was repaired
	MCC upgrades were completed

Murdoch Glen:

March:	Seals were repaired on the pumps
	A new drive on HLP #4 was installed.
April:	Analyzer upgrades were completed
July:	System upgrades to assist Huronville with high flows
November:	Flow meters were replaced
December:	HLP#5 was repaired

Point Clark:

March:	Level sensor was repaired.
April:	System testing and programing for the Standpipe was completed
	Well #2 was Inspected
May:	The automatic valve was replaced
June:	HLP was replaced

Courtney Subdivision:

Nothing to report

6.0 MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS INSPECTIONS AND REGULATORY ISSUES

- MECP Drinking Water Inspection was conducted on December 7, 2023 and received a 98.46% rating (previous rating was 100%). The Courtney Subdivision was inspected November 30, 2023 and received a 100% rating
- A list of Capital Items for 2024 was submitted to the Township of Huron-Kinloss in December 2023.
- DWQMS Management Review was conducted in June, 2023.
- DWQMS Internal Audit was conducted July 23, 2023.
- DWQMS External Audit (Re-accreditation) was conducted on August 17, 2023.
- DWQMS Complete Risk Assessment was not completed in 2023.
- Emergency Response Exercise was conducted by the Township in September 2023 and Veolia participated.

There was instance of Adverse Water Quality in 2023:

- AWQI # 161785 - April 20th, Sample results had a Total Coliform in the Distribution. -System was flushed and resamples came back all clear of bacteriologicals

There were 3 Instances of non-conformance:

The owner/operating authority was not in compliance with the requirement to prepare Form 1 documents as required by their Drinking Water Works Permit during the inspection period.

- By December 22, 2023, the operating authority shall provide the author of this report proof of staff training regarding compliance to the Lakeshore Drinking Water Works Permit 087-202, Issue 3, Schedule B condition 3.3. - *completed*

The owner/operating authority was not in compliance with the requirement to prepare Form 2 documents as required by their Drinking Water Works Permit during the inspection period.

- By December 22, 2023, the operating authority shall provide the author of this report proof of staff training regarding compliance to the Lakeshore Drinking Water Works Permit 087-202, Issue 3, Schedule B condition 4.6.

The ministry recommends that operating authority staff document response to all alarm events, including short duration events that do not impact disinfection requirements, as well as nuisance alarms e.g., in the SCADA logbook during the 72-hour data review process. - *“No” response required, but operators will follow the recommendation.*

7.0 WELL LEVELS

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 32** provides a summary of the static well levels recorded in 2023. 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.

Table 32 - Static Well Levels (PTTW)

	Blairs Grove (above grade, m)	Huronville South (m)	Murdoch Glen (m)	Point Clark Well 2 (m)	Point Clark Well 3 (m)
Min	2.11	9.14	9.25	4.26	5.48
Max	5.09	11.58	10.68	8.53	7.31
Avg	2.81	10.21	9.89	7.11	6.68

8.0 COURTNEY SUBDIVISION - SUMMARY OF DATA

8.1 Water Treatment Equipment, Operation and Monitoring

8.1.1 Distribution Free Chlorine Residuals (Grab Samples)

A total of 92 distribution residuals were collected in conjunction with the weekly microbiological sampling. A summary of all the residuals collected is presented in **Table 33.**

Table 33 Average Distribution Free Chlorine Residuals -Courtney Subdivision (ACW)

Month	Residual (mg/L)
Jan	1.58
Feb	1.70
Mar	1.47
Apr	1.52
May	1.54
Jun	1.59
Jul	1.53
Aug	1.57
Sep	1.29
Oct	1.34
Nov	1.55
Dec	1.60
CT REQUIREMENT	**0.20**
Annual Min	1.11
Annual Max	1.83
Annual Average	1.52

8.1.2 Microbiological Results for the Distribution System

Distribution samples are collected every week and tested for E.Coli, Total Coliform (TC) and at least 25% of the samples are also analyzed for Heterotrophic Plate Count (HPC). Courtney Subdivision is regarded as part of the Lakeshore Drinking Water System as outlined in ACW Municipal By-Law 61-2014. Results are shown in **Table 34**

Table 34 - Microbiological Results for Distribution System

Month	Total Coliform			E. Coli			HPC		
	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples "0"	# Samples ≥1	# Samples	# Samples safe	# Samples Deteriorating
Jan	10	10	0	10	10	0	5	5	0
Feb	8	8	0	8	8	0	4	4	0
Mar	8	8	0	8	8	0	4	4	0
Apr	8	8	0	8	8	0	4	4	0
May	10	10	0	10	10	0	5	5	0
Jun	8	8	0	8	8	0	4	4	0
Jul	9	9	0	9	9	0	3	3	0
Aug	8	8	0	8	8	0	4	4	0
Sep	7	7	0	7	7	0	3	3	0
Oct	8	8	0	8	8	0	5	5	0
Nov	4	4	0	4	4	0	3	3	0
Dec	4	4	0	4	4	0	4	4	0
TOTAL	**92**	**92**	**0**	**92**	**92**	**0**	**48**	**48**	**0**

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

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

Distribution samples are taken quarterly(every 3 months) from representative points in the distribution system and tested for Trihalomethanes (THMs). In 2023, 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 (µg/L) for this parameter and it is expressed as a Running Annual Average (RAA). Refer to **Table 35** for the summary of the THM results and RAA for the Courtney Subdivision samples.

Table 35 - THMs

Month	THMs (µg/L)	RAA
Feb	9.0	7.7
May	5.9	7.5
Aug	5.5	7.3
Nov	9.0	7.4
RAA		**7.4**
MAC	**1.0**	**10**

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. By-Law 60-2014 was amended in November 2015 to ensure that this lead sampling requirement is included in the Agreement between Ashfield-Colborne-Wawanosh and Huron-Kinloss. In 2023, samples were collected from Courtney Subdivision and analyzed for lead, pH, and alkalinity. These results are presented in **Table 36**.

Table 36

Month	Location	Alkalinity	pH	Lead (µg/L)
January	**Amberley Beach (ACW)**	187	8.11	0.15
July	**Amberley Beach (ACW**	182	8.10	0.34
MAC (µg/L)		**1.0**		**10**

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

Water supplied to Courtney Subdivision is monitored by a flow meter located in an underground vault at the municipal boundary on Ashfield-Huron Road. There are approximately 141 properties supplied by this line. Another flow meter is located at the Amberley Store. These meters are viewed quarterly. A summary of the volumes is provided in **Table 37**.

Table 37 - FLOW METER READINGS (ACW) - COURTNEY SUBDIVISION AND AMBERLEY STORE

Reading	ACW Boundary Meter	Amberley Store
st Quarter	–	2971.70
2nd Quarter	–	3193.10
3rd Quarter	–	3431.80
4th Quarter	–	3623.80
TOTAL USED	**–**	**652.10**
GRAND TOTAL USED	**652.10**	

The Boundary Meter was unable to read due to it being a confined space