



The Corporation of the Municipality of  
**Central Elgin**

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# *Belmont Water System*

*Water Works # 260002468*

## *2023 Summary Report*

*For the Period  
January 1, 2023 to December 31, 2023*



Belmont Water System Summary Report for 2023

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## **Belmont Water System Summary Report for 2023**

### **INTRODUCTION**

Located in the Village of Belmont, the Belmont Water System is owned and operated by the Municipality of Central Elgin. The system has two ground water artesian wells, well pumps, a chlorine contact pipe, chemical feed equipment, distribution pipes, flow meters, valves, fire hydrants, one elevated water tower with 896 water services, serving a population of approximately 2,330 people.

The Belmont Water Treatment facility was upgraded in 2007 to bring the plant into compliance with all regulations. This upgrade included re-lining of the two wells, new well pumps, new chemical feed systems, additional online water quality monitors, new internal plant piping and valves, new chemical pumps and control systems, building upgrades and other mechanical and electrical upgrades.

The Belmont Water System operates under the Safe Drinking Water Act (S.D.W.A.), Regulation 170/03, Drinking Water Works Permit 046-202, Municipal Drinking Water License 046-102 and Permit to Take Water (P.T.T.W.) number 4026-A82QSJ. These documents outline how the water system is to be operated, how water samples are to be taken, and how much water can be produced.

Regulation 170/03 requires an annual Summary Report to be completed for the Belmont Water System. This Summary Report includes a description of the measures to comply with the regulations, any noncompliance with the regulations, any Ministry of the Environment, Conservation and Parks Orders, summary of water supplied to the system, summary of water sampling results and a summary of process chemicals used in the production of potable water.

A detailed summary of the microbiological test results and the chemical test results for the year can be found in a separate report called the Annual Report for the Belmont Water System located in the appendices of this report. The appendices includes a detailed summary of the raw and treated water supplied and process chemicals used in the production of potable water.

The following is the Summary Report for 2023.

## **WATER SYSTEM CLASSIFICATION**

The Ministry of the Environment Conservation and Parks rates and classifies each water system based on the complexity of the system based on population served, size and nature of the equipment in use and the source of water. The classification numbering ranges from Class 1, being the simplest to operate and maintain to Class 4, being the most complex to operate and maintain. The class of the facility determines the level of operator certificate that must be obtained for an operator to work in that facility. The Belmont Water System was classified in 2005 as a Class 3 Distribution & Supply Water System.

## **REGULATORY COMPLIANCE**

The Municipality of Central Elgin complies with the terms and conditions of the Safe Drinking Water Act (S.D.W.A.), Regulation 170/03, Regulation 128/04, Drinking Water Works Permit 046-202, Municipal Drinking Water License 046-102 and Permit to Take Water (P.T.T.W.) 4026-A82QSJ. The following is a description of the measures that the Municipality of Central Elgin takes to ensure compliance.

### **Chlorine Contact Pipe**

In 2003, the Municipality of Central Elgin constructed a 136 meter 750 mm diameter chlorine contact pipe at the Belmont Water Treatment Facility. The pipe is located underground to the east of the water treatment building. Process water is dosed with chlorine entering at one end of the pipe and forces treated water out the opposite end once disinfection contact time (CT) has occurred. CT is the product of the concentration of the disinfectant (free chlorine) and the contact time with the water being disinfected. The chlorine contact pipe provides a CT value over the minimum requirement of 15 mg-min/L ensuring all water leaving the Water Treatment Facility is properly disinfected. The Water Treatment Facility is programmed that if the CT value falls below 15 mg-min/L, the treatment train will automatically shut down preventing any water that has not been adequately disinfected from entering the distribution system.

### **Sampling Line**

During construction of the chlorine contact pipe, a ¾ inch water line was installed to supply water for sampling. The sampling line is tapped off the piping immediately after the chlorine contact pipe but before the water enters the distribution system. Water sampling is completed to ensure the required disinfection. This sampling line is routed into the water treatment facility and supplies treated water to the on-line water quality analyzers and grab sampling ports.

## Belmont Water System Summary Report for 2023

### **Supervisory Control and Data Acquisition System (S.C.A.D.A.)**

The Municipality of Central Elgin has a S.C.A.D.A. system for all of the water sites. The S.C.A.D.A. system provides operations staff with 24 hour a day, real time interactive contact through a wireless system that operators can view remotely through a wireless laptop computer. This wireless system provides operators with the ability to view and control the equipment at each site.

The S.C.A.D.A. system is constantly recording and tracking security, flows, pump run times, water quality results, tower water levels, water pressures, etc. All of these results are stored on the S.C.A.D.A. computer server. The S.C.A.D.A. computer generates daily, monthly and yearly reports for each site and summarizes all of this data for review by operations staff.

Each site has unique alarm settings for free chlorine, pressure, security, etc. The S.C.A.D.A. system will automatically notify operators by email and on the app if an alarm is generated from any of the sites.

### **Online Water Quality Analyzers**

#### Treated Water Quality Analyzers

Online water quality analyzers are located inside the Belmont Water Treatment Facility to continuously analyze the treated water before entering the distribution system. The online water quality analyzers are continuously testing for free chlorine, total chlorine, turbidity and pH with all of the results recorded in the S.C.A.D.A. system. These analyzers have pre-programmed alarms if a test result falls out of a preset range that will be sent to operators through the S.C.A.D.A. system. The free chlorine analyzer provides the process logic computer (P.L.C.) with the free chlorine residual used in the CT value calculation that will shut down the treatment train if it falls below the CT value of 15 mg-min/L.

#### In Process Water Quality Analyzers

There are in-process online water quality analyzers located inside the Water Treatment Facility. These in-process analyzers monitor the water that has been dosed with sodium hypochlorite and sodium silicate. The online water quality analyzers continuously test free chlorine, turbidity and pH. All of the water quality analyzer results are tracked on the S.C.A.D.A. system for review by operators with pre-programmed alarms that will sound if the result falls out of a preset range.

These online analyzers notify operators of an in-process problem so that treatment process adjustments can be made to prevent problems further along in the treatment train.

## Belmont Water System Summary Report for 2023

### Water Tower Water Quality Analyzers

Inside the elevated water tower is a set of online water quality analyzers that continuously test free chlorine and pH of the tower discharge water. All of the water quality analyzer results are tracked on the S.C.A.D.A. system. These analyzers have pre-programmed alarms that will notify water operators through the S.C.A.D.A. system. The analyzers provide operators with water quality information on the discharge water of the water tower for treatment process adjustments at the water treatment plant.

### Flow Meter Calibration

There are three flow meters in the Belmont Water System that are calibrated annually. All flow data is recorded on the S.C.A.D.A. system.

- 4-inch Flow meters at each of the two wellheads.
  - These meters record the instantaneous flow rates and the total volume of water taken from each well.
- 10-inch flow meter located on the discharge piping of the elevated water storage tower.
  - This meter records the discharge from the elevated water tower.

The well flows are summarized in the Appendices.

### Certified Operators

The Municipality of Central Elgin operates the Belmont Water System with eight certified operators. Regulation 128/04 outlines the training requirements of certified water operators in Ontario. The Municipality of Central Elgin ensures that all of its certified operators are properly trained to conform to Ontario Regulation 128/04.

### Accredited Laboratories

The Municipality of Central Elgin uses accredited laboratories for all sampling and testing that is required for the Belmont Water System. Microbiological samples are sent to S.G.S. Environmental Services Limited laboratory in London Ontario and chemical samples are sent to S.G.S. Environmental Limited laboratory in Lakefield Ontario.

## Belmont Water System Summary Report for 2023

### Operations Manual

The Municipality of Central Elgin maintains a Water System Operations Manual that includes:

- procedures for monitoring and recording in-process parameters for the control of the treatment/water system and assessing the performance of the water system;
- procedures for the operation and maintenance of monitoring equipment;
- contingency plans and procedures for adequate equipment and materials to deal with emergencies and equipment breakdown;
- procedures for dealing with complaints related to the drinking water system, including the recording of the nature of the complaint and any investigation and corrective action taken in respect of the complaint, and;
- Process Flow Diagrams (PFD) and Process and Instrumentation Diagrams (P&ID) for the treatment system.

### Permit to take Water (P.T.T.W.)

Permit number 4026-A82QSJ was issued in 2016 for the Belmont Water System allowing for 3,034 cubic meters per day of water to be taken from each well, separately or combined and expires in 2026.

### Raw Water Samples

Raw water samples are taken and tested in-house for turbidity at each wellhead before any treatment or chemicals are applied to the water. Once every week microbiological samples are taken from each well and tested for E-coli, Total Coliforms and Background Colony counts.

A detailed summary of the raw water microbiological test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.

### Treated Water Samples

#### Operational Samples

Daily treated water operational grab samples are taken from the chlorine contact pipe sample line that samples the treated water just before it enters the distribution system. These grab samples are tested by certified operators for free chlorine, total chlorine and turbidity. Online continuous analyzers sample the treated water from the same sample line for free chlorine, total chlorine, pH, and turbidity. These online analyzers provide operators with a constant trending of all test results, providing greater detail and historical information. Information from these sample results are used to make process adjustments at the water treatment plant.

A full summary of the treated operational test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.



## **Belmont Water System Summary Report for 2023**

### **Microbiological Samples**

Microbiological water samples are taken weekly from the treated water and sent to an accredited laboratory and analyzed for E-Coli, Total Coliforms, Background Colony Counts and Heterotrophic Plate Counts. Samples are taken from the chlorine contact pipe sample line that samples the treated water just before it enters the distribution system. A free chlorine residual, total chlorine residual and turbidity test is done with each sample as per Ontario Regulation 170/03.

A full summary of the treated water microbiological test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.

### **Chemical Samples**

The list of chemical tests required on the treated water is in Regulation 170/03. This list includes testing for nitrates, sodium, fluoride, pesticides, herbicides, PCB's and metal compounds. The frequency of these tests ranges from every 3 months to every 5 years. All of these samples are collected by certified operators and sent to an accredited laboratory for analysis.

A full summary of the treated chemical test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.

## **Distribution System Water Samples**

### **Operational Samples**

Distribution system water operational samples such as free chlorine, total chlorine and turbidity are taken from the water tower inlet and outlet points and various points in the distribution system to obtain a representative sampling of the entire system. The information from these sample results is used to make process adjustments at the water treatment plant. If the sample results indicate deteriorating water quality in the distribution system, operations staff will flush the affected area.

A full summary of the distribution operational test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.

### **Microbiological Samples**

Weekly microbiological water samples taken from the distribution system are sent to an accredited laboratory and analyzed for E-Coli, Total Coliforms, Background Colony Counts and Heterotrophic Plate Counts. Samples are taken from the water tower inlet and outlet and various points in the distribution system to obtain a representative sampling of the entire system. A free chlorine residual, total chlorine residual and turbidity test is done with each sample as per Regulation 170/03.

## **Belmont Water System Summary Report for 2023**

A full summary of the distribution microbiological test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.

### **Chemical Samples**

The Municipality is required by Regulation 170/03 to sample in the distribution system for trihalomethanes, haloacetic acids, lead, alkalinity and pH. Trihalomethane samples are taken where the longest water residency time is experienced while haloacetic acids are taken close to the disinfection point.

Regulation 170/03 outlines how lead samples are taken from private plumbing sites and distribution sites. The Belmont Water System is on a reduced lead sampling program, meaning samples are no longer required from private plumbing sites, but samples must be taken in the distribution system every third twelve month period. This is due to the very low lead test results from previous samples.

A full summary of the distribution chemical test results can be found in the Annual Report for the Belmont Water System located in the appendices of this report.

### **Drinking Water Quality Management System (DWQMS)**

The Municipality of Central Elgin maintains a Drinking Water Quality Operational Plan along with associated Procedures that conforms to the Drinking Water Standard 2.0 as outlined in the Safe Drinking Water Act. This Operational Plan and its associated procedures is followed, reviewed and kept current by staff.

## **NON-COMPLIANCE**

The Ministry of the Environment, Conservation and Parks inspected the Belmont Water System on February 27<sup>th</sup> 2023 and reported water operations to be in compliance.

## **SUMMARY AND DISCUSSION OF THE QUANTITY OF WATER SUPPLIED**

### **Raw Water**

The Permit to Take Water for wells one and two allows for a daily maximum of 3,034 cubic meters of water to be taken per day. In 2023, the combined daily maximum taken from both wells was 1,709 cubic meters. This is 56.3 % of the rated capacity of the wells, leaving room for increases in production. The following chart outlines the combined flows for well one and two for 2023. A more detailed summary can be found in the Appendices.

**Belmont Water System Summary Report for 2023**

**Well Number One + Two**

<b>Maximum Day Well #1 and #2</b>	<b>1,709 cubic meters</b>
<b>Minimum Day Well #1 and #2</b>	<b>0 cubic meters</b>
<b>Average Day Well #1 and #2</b>	<b>380 cubic meters</b>
<b>Average Month Well #1 and #2</b>	<b>11,603 cubic meters</b>
<b>Yearly Total Well #1 and #2</b>	<b>139,247 cubic meters</b>

**Well Number One**

The following chart outlines the flows for well one in 2023. A more detailed yearly summary of raw water taken can be found in the Appendices.

<b>Maximum Day Well #1</b>	<b>1,202 cubic meters</b>
<b>Minimum Day Well #1</b>	<b>0 cubic meters</b>
<b>Average Day Well #1</b>	<b>195 cubic meters</b>
<b>Average Month Well #1</b>	<b>5,961 cubic meters</b>
<b>Yearly Total Well #1</b>	<b>71,536 cubic meters</b>

**Well Number Two**

The following chart outlines the flows for well two in 2023. A more detailed yearly summary of raw water taken can be found in the Appendices.

<b>Maximum Day Well #2</b>	<b>1,709 cubic meters</b>
<b>Minimum Day Well #2</b>	<b>0 cubic meters</b>
<b>Average Day Well #2</b>	<b>185 cubic meters</b>
<b>Average Month Well #2</b>	<b>5,642 cubic meters</b>
<b>Yearly Total Well #2</b>	<b>67,711 cubic meters</b>

## SUMMARY AND DISCUSSION OF WATER SAMPLING RESULTS

Water sampling in the Belmont Water System is completed as required by Regulation 170/03. This Regulation requires the Belmont Water System to take a minimum of one microbiological sample per week from each well, one microbiological sample per week from the entrance point to the distribution system and a minimum of ten microbiological samples per month from the distribution system. A detailed summary of these sample results can be found in the Annual Report for the Belmont Water System in the Appendices of this report.

Regulation 170/03 requires chemical sampling of the treated water that enters the distribution system. This sampling includes Volatile Organic substances, Inorganic substances, pesticides, P.C.B.'s and metals. Some of these parameters are sampled quarterly while other parameters are sampled yearly or at longer intervals. A detailed summary of these sample results can be found in the Annual Report for the Belmont Water System in the Appendices.

Daily chlorine and turbidity grab samples are taken from the entrance point to the distribution system and in the distribution system as required by the Regulations. There are online water quality analyzers at the treatment facility and the water tower that continually sample the water.

There were no incidents of adverse microbiological water samples in the Belmont Water System in 2023.

## SUMMARY AND DISCUSSION OF TREATMENT CHEMICALS USED

### Sodium Hypochlorite

Sodium Hypochlorite with 12% available chlorine is used to disinfect the water at the Belmont Water Treatment Facility. The Sodium Hypochlorite used meets all applicable standards of the American Water Works Association (AWWA) and meets all the safety criteria of the American National Standards Institute (ANSI). The Sodium Hypochlorite is added with chemical feed pumps. The following chart summarizes the amount of Sodium Hypochlorite used and the average chlorine dosage rate in 2023.

A more detailed summary can be found in the Process Chemical Summary in the Appendices of this report.

Total Litres Used	Avg. Chlorine Dosage mg/L
4,568	3.94

**Belmont Water System Summary Report for 2023**

**Sodium Silicate**

Sodium Silicate is added to the water in Belmont to sequester iron and prevent iron from precipitating out in the distribution system. The Sodium Silicate used meets all applicable standards of the American Water Works Association (AWWA) and meets all the safety criteria of the American National Standards Institute (ANSI). Sodium Silicate is added with chemical feed pumps. The following chart summarizes the amount of Sodium Silicate used and the average Sodium Silicate dosage rate for 2023.

A more detailed summary can be found in the Process Chemical Summary in the Appendices of this report.

<b>Total Litres Used</b>	<b>Avg. Silicate Dosage mg/L</b>
3,084	8.86

**SUMMARY AND DISCUSSION OF WORK DONE TO SYSTEM**

Work done to the Belmont Water System in 2023 included:

- A section of water main was installed at Canterbury Place to facilitate the expansion of a new subdivision development called Ashford Street.
- New Sodium Silicate chemical pump at the Belmont Pumphouse
- New online chlorine and pH analyzer at the Belmont Water Tower

**SUMMARY**

The Belmont Water System continues to supply the residents of Belmont with high quality potable water. With an extensive water quality sampling program in place that includes microbiological, chemical and chlorine residuals that range in frequency from daily to every five years, no adverse water samples were detected in 2023. The amount of water produced fluctuated with seasonal demand. Daily visits by certified operators ensured the Belmont Water Treatment Facility is operating in compliance.

The upgrades completed in 2007 at the treatment plant provides Belmont with a modern ground water treatment facility that will operate efficiently for many years.

The attached Appendices provide a more detailed summary of the water produced, water supplied to the distribution system, production chemicals used and sampling results. These summaries will further outline the diligence that the Municipality of Central Elgin takes in operating the Belmont Water System.

**APPENDIX**

**A**

**RAW & TREATED FLOW SUMMARIES**

**FOR  
THE BELMONT WATER SYSTEM**

**Belmont Water System Summary Report for 2023**

**BELMONT WATER FACILITY  
2023 WATER PRODUCTION SUMMARY**

Month	Well #1	Well #2	Total for Both	Max Day	Min Day	Avg. Day	Max Day	Min Day	Avg. Day	Max Day	Min Day	Avg. Day
2023	Output	output	Well #1+ #2	Well #1	Well #1	Well #1	Well #2	Well #2	Well #2	Well #1+ #2	Well #1+ #2	Well #1+ #2
	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m	Cubic m
January	10443.80	0.00	10443.80	1160.80	0.00	336.90	0.00	0.00	0.00	1160.80	0.00	336.90
February	9361.40	0.00	9361.40	1074.90	0.00	334.34	0.00	0.00	0.00	1074.90	0.00	334.34
March	10106.30	0.00	10106.30	1105.20	0.00	326.01	0.00	0.00	0.00	1105.20	0.00	326.01
April	4252.40	6198.50	10450.90	958.60	0.00	141.75	988.90	0.00	206.62	988.90	0.00	348.36
May	0.00	15042.20	15042.20	0.00	0.00	0.00	1438.00	0.00	485.23	1438.00	0.00	485.23
June	0.00	15611.30	15611.30	0.00	0.00	0.00	1709.60	0.00	520.38	1709.60	0.00	520.38
July	5548.20	5740.80	11289.00	1101.40	0.00	178.97	1105.20	0.00	185.19	1105.20	0.00	364.16
August	10802.10	0.00	10802.10	1143.20	0.00	348.45	0.00	0.00	0.00	1143.20	0.00	348.45
September	11033.90	2273.90	13307.80	1082.00	0.00	367.80	1018.00	0.00	75.80	1082.00	0.00	443.59
October	0.00	11013.50	11013.50	0.00	0.00	0.00	1230.40	0.00	355.27	1230.40	0.00	355.27
November	43.60	10378.20	10421.80	43.60	0.00	1.45	1163.40	0.00	345.94	1163.40	0.00	347.39
December	9944.70	1452.90	11397.60	1202.50	0.00	320.80	745.80	0.00	46.87	1202.50	0.00	367.66
<b>Yearly Total</b>	<b>71536.40</b>	<b>67711.30</b>	<b>139247.70</b>	<b>1202.50</b>	<b>0.00</b>	<b>195.99</b>	<b>1709.60</b>	<b>0.00</b>	<b>185.51</b>	<b>1709.60</b>	<b>0.00</b>	<b>380.46</b>

**APPENDIX**

**B**

**PROCESS CHEMICAL SUMMARY**

**FOR  
THE BELMONT WATER SYSTEM**



**Belmont Water System Summary Report for 2023**

**BELMONT WATER FACILITY  
2023 PROCESS CHEMICAL SUMMARY**

Month 2023	Well #1 Output Cubic m	Well #2 Output Cubic m	Well #1 and Well #2 Cubic m	Sodium Hypochlorite 12 Solution Litres Used	Chlorine Dosage Rate mg/L	Sodium Silicate Litres Used	Sodium Silicate Dosage Rate mg/L
January	10443.80	0.00	10443.80	278.60	3.20	225.41	8.63
February	9361.40	0.00	9361.40	302.16	3.87	202.14	8.64
March	10106.30	0.00	10106.30	279.09	3.31	218.19	8.64
April	4252.40	6198.50	10450.90	310.14	3.56	225.70	8.64
May	0.00	15042.20	15042.20	480.41	3.83	325.72	8.66
June	0.00	15611.30	15611.30	441.33	3.39	337.92	8.66
July	5548.20	5740.80	11289.00	382.79	4.07	254.51	9.02
August	10802.10	0.00	10802.10	395.81	4.40	257.63	9.54
September	11033.90	2273.90	13307.80	737.44	6.65	291.42	8.76
October	0.00	11013.50	11013.50	280.12	3.05	250.19	9.09
November	43.60	10378.20	10421.80	278.88	3.21	236.55	9.08
December	9944.70	1452.90	11397.60	402.01	4.23	258.73	9.08
	71536.40 Yearly Total	67711.30 Yearly Total	139247.70 Yearly Total	4568.78 Yearly Total	3.94 Yearly Average	3084.11 Yearly Total	8.86 Yearly Average

**APPENDIX**

**C**

**ANNUAL REPORT**

**FOR  
THE BELMONT WATER SYSTEM**

**Part III Form 2  
Section 11. ANNUAL REPORT.**

<b>Drinking-Water System Number:</b>	220002468
<b>Drinking-Water System Name:</b>	Belmont Water System
<b>Drinking-Water System Owner:</b>	Municipality of Central Elgin
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 1, 2023 to December 31, 2023

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [x]</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] No [ ]</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;">                 Central Elgin Administration Office                  450 Sunset Drive St. Thomas                  Ontario, Canada                  N5R 5V1             </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served:  <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve?                  Yes [ ] No [ ]</p> <p>Number of Interested Authorities you report to: <input style="width: 100px; height: 20px;" type="text"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?                  Yes [ ] No [ ]</p>
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**Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report.**

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
-	-

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?  
 Yes [ ] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

- Public access/notice via the web  
 Public access/notice via Government Office  
 Public access/notice via a newspaper  
 Public access/notice via Public Request  
 Public access/notice via a Public Library  
 Public access/notice via other method \_\_\_\_\_

**Describe your Drinking-Water System.**

**The Belmont water system is a Large Municipal Residential system located in the Village of Belmont within the Municipality of Central Elgin.**  
**The drinking water is drawn from two artesian ground water wells. Sodium hypochlorite is used for disinfection and sodium silicate is added for iron sequestration. Each well pumps water through a water treatment facility where these chemicals are added. The well pumps also provide the hydraulic force required to pump the disinfected water through a large 750mm diameter by 136 meter long chlorine contact pipe and into the distribution system and eventually into the elevated water tower. The contact pipe provides adequate contact time between the water and the chlorine that is added to ensure proper disinfection before water enters the distribution system. The elevated water tower stores 2,100 cubic meters of water for peak demand and fire flows. The Water Treatment facility and Water Tower utilize a Supervisory Control and Data Acquisition system (S.C.A.D.A.).**  
**The treatment facility is located at 200 Caesar Road in the Village of Belmont and serves a population of approximately 2,330.**

**List all water treatment chemicals used over this reporting period.**

**There are two chemicals used in the treatment process in the Belmont Water System. They are Sodium Hypochlorite for disinfection and Sodium Silicate for iron sequestration. The amounts of these chemicals used in 2023 are as follows:**

**Sodium Hypochlorite: 4,568 Litres**  
**Sodium Silicate: 3,084 Litres**

# Drinking-Water Systems Regulation O. Reg. 170/03

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment

**Please provide a brief description and a breakdown of monetary expenses incurred.**

**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre.**

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date

**Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

	Number of Samples	Range of E.Coli or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)	Number of Back Ground Samples	Range of Background Results (min #)-(max #)
Raw	104	0 to 0	0 to 0	0	-	104	0 to 49
Treated	52	0 to 0	0 to 0	51	<10 to 10	52	0 to 0
Distribution	312	0 to 0	0 to 0	305	<10 to 150	312	0 to 8

**Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.**

	Number of Grab Samples	Range of Results of Grab Samples (min#)-(max#)	Number of Continuous Monitoring Samples	Range of Results of Continuous Monitoring (min#)-(max#)	Average of Continuous Monitoring Samples
Turbidity (Raw)	153	0.07 to 5.32 NTU	0	N/A	N/A
Turbidity (Treated)	365	0.06 to 1.62 NTU	8760	0.05 to 7.68 NTU	0.33
Turbidity (Distribution)	940	0.06 to 0.93 NTU	0	N/A	N/A
pH (Raw)	0	N/A	0	N/A	N/A
pH (Treated)	0	N/A	8760	7.63 to 8.46	7.80
pH (Distribution)	4	6.97 to 7.50	8760	7.07 to 8.24	7.89
Free Chlorine (Treated)	365	0.58 to 1.57 mg/L	8760	0.46 to 2.28 mg/L	1.19 mg/L
Free Chlorine (Distribution)	940	0.45 to 1.67 mg/L	8760	0.63 to 2.03 mg/L	1.03 mg/L
Total Chlorine (Treated)	365	0.64 to 1.62 mg/L	8760	0.49 to 2.00 mg/L	1.27 mg/L
Total Chlorine (Distribution)	940	0.56 to 1.70 mg/L	0	N/A	N/A
Temperature (Raw)	0	N/A	0	N/A	N/A
Temperature (Distribution)	0	N/A	4380	5.06 to 20.66 Celsius	10.91 Celsius

**NOTE:** Record the unit of measure if it is **not** milligrams per litre.

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure

**Summary of Inorganic parameters tested during this reporting period or the most recent sample results**

Parameter	Sample Date	M.A.C.	Result Value	Unit of Measure	Exceedance
Antimony	Mar. 1/21	0.006	<0.0009	Mg/L	No
Arsenic	Mar. 1/21	0.010	0.0046	Mg/L	No
Barium	Mar. 1/21	1.0	0.192	Mg/L	No
Boron	Mar. 1/21	5.0	0.06	Mg/L	No
Cadmium	Mar. 1/21	0.005	0.000003	Mg/L	No
Chromium	Mar. 1/21	0.050	0.0008	Mg/L	No
Lead	See	Table	Below		
Mercury	Mar. 1/21	0.001	<0.00001	Mg/L	No
Selenium	Mar. 1/21	0.050	<0.0004	Mg/L	No
Sodium	Mar. 1/21	20.0	19.9	Mg/L	No
Uranium	Mar. 1/21	0.02	0.000093	Mg/L	No
Fluoride	Mar. 1/23	1.5	0.82	Mg/L	No
Nitrite	2023 RAA	1	<0.003	Mg/L	No
Nitrate	2023 RAA	10	<0.006	Mg/L	No
Nitrite	Mar. 1/23	1	<0.003	Mg/L	No
Nitrate	Mar. 1/23	10	<0.006	Mg/L	No
Nitrite	June 5/23	1	<0.003	Mg/L	No
Nitrate	June 5/23	10	<0.006	Mg/L	No
Nitrite	Sept. 6/23	1	<0.003	Mg/L	No
Nitrate	Sept. 6/23	10	<0.006	Mg/L	No
Nitrite	Dec. 5/23	1	<0.003	Mg/L	No
Nitrate	Dec. 5/23	10	<0.006	Mg/L	No

**Summary of lead testing under Schedule 15.1 during this reporting period.**

Location Type	Number of Samples	M.A.C.	Range of Lead Results	Number of Exceedances
Plumbing	0	0.10 mg/L	N/A	N/A
Distribution	4	0.10 mg/L	.00005 to .00017	0

**Summary of alkalinity testing under Schedule 15.1 during this reporting period.**

Location Type	Number of Samples	M.A.C.	Range of alkalinity Results	Number of Exceedances
Distribution	4	N/A	179 to 191 mg/L	N/A

**Summary of Organic parameters sampled during this reporting period or the most recent sample results**

Parameter	Sample Date	M.A.C.	Result Value	Unit of Measure	Exceedance
Alachlor	Mar. 1/21	0.005	<0.00002	Mg/L	No
Atrazine + N-dealkylated metabolites	Mar. 1/21	0.005	<0.00001	Mg/L	No
Azinphos-methyl	Mar. 1/21	0.02	<0.00005	Mg/L	No
Benzene	Mar. 1/21	0.001	<0.00032	Mg/L	No
Benzo(a)pyrene	Mar. 1/21	0.00001	<0.000004	Mg/L	No
Bromoxynil	Mar. 1/21	0.005	<0.00033	Mg/L	No
Carbaryl	Mar. 1/21	0.09	<0.00005	Mg/L	No
Carbofuran	Mar. 1/21	0.09	<0.00001	Mg/L	No
Carbon Tetrachloride	Mar. 1/21	0.002	<0.00017	Mg/L	No
Chlorpyrifos	Mar. 1/21	0.09	<0.00002	Mg/L	No
Diazinon	Mar. 1/21	0.02	<0.00002	Mg/L	No
Dicamba	Mar. 1/21	0.120	<0.0002	Mg/L	No
1,2-Dichlorobenzene	Mar. 1/21	0.2	<0.00041	Mg/L	No
1,4-Dichlorobenzene	Mar. 1/21	0.005	<0.00036	Mg/L	No
1,2-Dichloroethane	Mar. 1/21	0.005	<0.00035	Mg/L	No
1,1-Dichloroethylene (vinylidene chloride)	Mar. 1/21	0.014	<0.00033	Mg/L	No
Dichloromethane	Mar. 1/21	0.05	<0.00035	Mg/L	No
2,4 Dichlorophenol	Mar. 1/21	0.9	<0.00015	Mg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	Mar. 1/21	0.1	<0.00019	Mg/L	No
Diclofop-methyl	Mar. 1/21	0.009	<0.0004	Mg/L	No
Dimethoate	Mar. 1/21	0.02	<0.00006	Mg/L	No
Diquat	Mar. 1/21	0.07	<0.001	Mg/L	No
Diuron	Mar. 1/21	0.15	<0.00003	Mg/L	No
Glyphosate	Mar. 1/21	0.28	<0.001	Mg/L	No
Total Haloacetic Acids (HAA5)	2023 Avg.	R.A.A. 0.08	R.A.A. <0.0053	mg/L	No
Malathion	Mar. 1/21	0.19	<0.00002	Mg/L	No
Metolachlor	Mar. 1/21	0.05	<0.00001	Mg/L	No
Metribuzin	Mar. 1/21	0.08	<0.00002	Mg/L	No
Monochlorobenzene	Mar. 1/21	0.08	<0.0003	Mg/L	No
Paraquat	Mar. 1/21	0.01	<0.001	Mg/L	No
Pentachlorophenol	Mar. 1/21	0.06	<0.00015	Mg/L	No
Phorate	Mar. 1/21	0.002	<0.00001	Mg/L	No
Picloram	Mar. 1/21	0.19	<0.001	Mg/L	No
Polychlorinated Biphenyls (PCB)	Mar. 1/21	0.003	<0.04	Mg/L	No
Prometryne	Mar. 1/21	0.001	<0.00003	Mg/L	No
Simazine	Mar. 1/21	0.01	<0.00001	Mg/L	No



<b>THM (Total)</b> (NOTE: show latest annual average)	<b>2023 Avg.</b>	<b>R.A.A.</b> <b>0.10</b>	<b>R.A.A.</b> <b>0.017</b>	<b>Mg/L</b>	<b>No</b>
<b>Terbufos</b>	<b>Mar. 1/21</b>	<b>0.001</b>	<b>&lt;0.00001</b>	<b>Mg/L</b>	<b>No</b>
<b>Tetrachloroethylene</b>	<b>Mar. 1/21</b>	<b>0.010</b>	<b>&lt;0.00035</b>	<b>Mg/L</b>	<b>No</b>
<b>2,3,4,6-Tetrachlorophenol</b>	<b>Mar. 1/21</b>	<b>0.1</b>	<b>&lt;0.0002</b>	<b>Mg/L</b>	<b>No</b>
<b>Triallate</b>	<b>Mar. 1/21</b>	<b>0.23</b>	<b>&lt;0.00001</b>	<b>Mg/L</b>	<b>No</b>
<b>Trichloroethylene</b>	<b>Mar. 1/21</b>	<b>0.005</b>	<b>&lt;0.00044</b>	<b>Mg/L</b>	<b>No</b>
<b>2,4,6-Trichlorophenol</b>	<b>Mar. 1/21</b>	<b>0.005</b>	<b>&lt;0.00025</b>	<b>Mg/L</b>	<b>No</b>
<b>2-Methyl-4-chlorophenoxyacetic acid (MCPA)</b>	<b>Mar. 1/21</b>	<b>0.1</b>	<b>&lt;0.00012</b>	<b>Mg/L</b>	<b>No</b>
<b>Trifluralin</b>	<b>Mar. 1/21</b>	<b>0.045</b>	<b>&lt;0.00002</b>	<b>Mg/L</b>	<b>No</b>
<b>Vinyl Chloride</b>	<b>Mar. 1/21</b>	<b>0.001</b>	<b>&lt;0.00017</b>	<b>Mg/L</b>	<b>No</b>

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample

**(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, non municipal year round residential, large non municipal non residential)**