



# **Drinking Water Systems for the Municipality of Lakeshore**

## **Belle River 2024 Annual Report**

# Belle River Drinking Water System 2024 Annual Report

**Drinking-Water System Number:** 260091507

**Drinking-Water System Name:** Belle River

**Drinking-Water System Owner:** Municipality of Lakeshore

**Drinking-Water System Category:** Large Municipal Drinking Water System

**Period being reported:** January 1st to December 31st, 2024

## Complete if your Category is Large Municipal Residential or Small Municipal Residential

**Does your Drinking-Water System serve more than 10,000 people?** Yes  No

**Is your annual report available to the public at no charge on a web site on the Internet?**  
Yes  No

**Location where Annual Report required under O. Reg. 170/03 Schedule 11 will be available to the public.**

[Lakeshore.ca/Reports](http://Lakeshore.ca/Reports)

419 Notre Dame Steet, Belle River, ON, N8L 0P8

### Complete for all other Categories

**Number of Designated Facilities served:** N/A

**Did you provide a copy of your annual report to all Designated Facilities you serve?** N/A

**Number of Interested Authorities you report to:** N/A

**Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** N/A

**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
N/A	N/A

**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 its drinking water?**

Yes  No  N/A

**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 a newspaper

### Describe your Drinking-Water System

Description of system: The John George Water Treatment Plant is a class 3 plant and is located on Lakeview Drive. It is a conventional filtration surface water treatment facility with a design capacity of 36,400 m<sup>3</sup>/day. The maximum volume of water that can be taken from Lake St. Clair is 30,000 m<sup>3</sup>/day or 34,722 l/min.

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### List all water treatment chemicals used over this reporting period

Chemical Name	Use	Supplier
Stern PAC-70	Coagulant	Kemira
NorFloc 18812	Polymer	Northland Chemical
Chlorine Gas	Disinfection	Brenntag
Carbon Dioxide (Co2) (seasonal)	PH Control	Linde
Powder Activated Carbon (PAC) (seasonal)	Taste and Oder	Univar

### Were any significant expenses incurred too?

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

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

**High Lift Pump (Engineering): \$38,541**

**Water Meter Replacement: \$493,097 (All Systems)**

**AMI Antenna Replacement Project: \$195,998 (All Systems)**

**County Rd 22 Watermain Replacement: \$543,353**

**West Puce Rd Watermain Improvement: \$1,769,488**

Rochester Watermain Replacement (Engineering): \$9,608

**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 and Number	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
July 24, 2024 (#1-9AJVXZ)	Suspected HAB in Raw	0.4 Raw H2O	µg/L	Addition sample taken and continuing to sample weekly	September 27, 2024
October 07, 2024 (#1-BRZ9WI)	Suspected HAB in the Raw	0.3 Raw H2O	µg/L	Continuing to sample weekly	October 15, 2024

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

	Number of Samples	Range of E. coli Results (min #) - (max #) (CFU/100mL)	Range of Total Coliform Results (min #) - (max #) (CFU/100mL)	Number of HPC Samples	Range of HPC Results (min #) - (max #) (CFU/100mL)
<b>Raw</b>	53	0-100	0-160000	N/A	N/A
<b>Treated</b>	106	0-0	0-0	106	0-10
<b>Distribution - Routine</b>	583	0-0	0-0	312	0-130

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

Parameter Tested - (Online Analyzers)	Number of Grab Samples	Range of Results		
		Minimum	Average	Maximum
Chlorine Total – Zebra Mussel (mg/L)	Continuous Monitoring Total Chlorine (1)	0	0.35	5
Turbidity - Raw Water (NTU) Surface Scatter	Continuous Monitoring	0	31.24	280
Turbidity – Clarifier #1 (NTU)	Continuous Monitoring (2)	0	0.31	20
Turbidity – Clarifier #2 (NTU)	Continuous Monitoring (2)	0	0.43	20
Turbidity – Clarifier #3 (NTU)	Continuous Monitoring (2)	0.025	0.44	20
Turbidity – Clarifier #4 (NTU)	Continuous Monitoring (2)	0.019	0.21	20
Turbidity – Filter Influent (NTU)	Continuous Monitoring (2)	0.019	0.15	20
Turbidity – Filter #1 (NTU)	Continuous Monitoring (3)	0.012	0.029	2
Turbidity – Filter #2 (NTU)	Continuous Monitoring (3)	0.013	0.029	2
Turbidity – Filter #3 (NTU)	Continuous Monitoring (3)	0.014	0.029	2.06
Turbidity – Filter #4 (NTU)	Continuous Monitoring (3)	0.014	0.038	0.75
Turbidity – Finished Water (NTU)	Continuous Monitoring (4)	0.019	0.036	5
Chlorine Free – Cell #1 (mg/L)	Continuous Monitoring (5) Free Chlorine	0	1.62	2.32
Chlorine Total – Cell #1 (mg/L)	Continuous Monitoring (6) Total Chlorine	0	1.83	5
Chlorine Free – Cell #2 (mg/L)	Continuous Monitoring (5) Free Chlorine	0	1.48	2.17
Chlorine Total – Cell #2 (mg/L)	Continuous Monitoring (6) Total Chlorine	0	1.68	4.52
Chlorine Free – Finished Water (mg/L)	Continuous Monitoring (5) Free Chlorine	0	1.56	3.6
Chlorine Total – Finished Water (mg/L)	Continuous Monitoring (6) Total Chlorine	0	1.77	4.8

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UV No.1 Transmittance (%)	Continuous Monitoring (7)	0	89.92	99.8
UV No.2 Transmittance (%)	Continuous Monitoring (7)	0	89.66	99.8
Alkalinity – Raw Water (mg/L)	(52 bench tests)	77.6	106.6	206.4
Hardness – Raw Water (mg/L)	(52 bench tests)	90.0	126.4	164.4
Colour – Raw Water (Pt-Co mg/L)	(52 bench tests)	0	102.7	750.0
PH – Raw Water	(366 bench tests)	6.88	7.90	8.73
Temperature – Raw Water (°C)	(365 bench tests)	0.25	12.70	26.27
UV Transmittance – Raw Water (%)	(365 bench tests)	50.4	89.7	98.7
Alkalinity – Treated Water (mg/L)	(52 bench tests)	75.2	103.5	176.4
Hardness – Treated Water (mg/L)	(52 bench tests)	79.6	133.7	172
Colour – Treated Water (Pt-Co mg/L)	(52 bench tests)	0	1.9	38
Aluminum Residual – Treated Water (mg/L)	(356 bench tests)	0.006	0.052	0.182
PH – Treated Water	(366 bench tests)	7.02	7.38	7.89
Temperature – Treated Water (°C)	(364 bench tests)	0.81	12.84	26.30
UV Transmittance – Treated Water (%)	(364 bench tests)	87.0	95.72	100.0

### Notes for above table operational testing completed under Schedule 7, 8 or 9:

1. High total chlorine on zebra mussel result of starting up the system.
2. High clarifier turbidity results of clarifier maintenance, calibration, power outage, flushing turbidity meter and clarifier offline.
3. High filter turbidity results from filter backwash, analyzer calibration or plant shutdown.
4. High finished water turbidity results of calibration or maintenance.
5. Low free chlorine residual (cell #1, cell #2 and finished water) result of generator backup power testing, maintenance, or calibration.
6. Low total chlorine residual (cell #1, cell #2 and finished water) result of generator backup power testing, maintenance, or calibration.
7. Low UV transmittance result of PLC maintenance, calibration/performance review.

### 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 (YYYY-MM-DD)	Result Treated Samples (µg/L)	Results Distribution Samples (µg/L)	Rolling Annual Average Quarter (distribution) (µg/L)
Municipal Drinking Water License #031-101 Issue #4 2021-May-21	THM	2024-Feb-27	17	31	33.25
		2024-May-29	20	29	31.75
		2024-Sept-12	19	45	32.50
		2024-Dec-10	<6	15	30

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**Notes:**

1. Maximum Allowable Concentration (MAC) for THM is based on a four-quarter rolling annual average of 0.100 mg/L or 100.0 ug/L

**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 (YYYY-MM-DD)	Result –Monthly TSS (mg/L)
Municipal Drinking Water License #031-101 issue #4 (Schedule C section 1.5, table 3)	TSS (composite sample)	2024-01-03	6
		2024-02-05	22
		2024-03-20	8
		2024-04-12	3
		2024-05-21	13
		2024-06-07	7
		2024-07-03	13
		2024-08-15	3
		2024-09-20	23
		2024-10-22	11
		2024-11-06	<3
		2024-12-04	6

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

Parameter	Sample Date (YYYY-MM-DD)	Result Value	Unit of Measure	Exceedance
<b>Antimony</b>	2024-Sept-24	<0.0001	mg/L	No
Arsenic	2024-Sept-24	0.0002	mg/L	No
Barium	2024-Sept-24	0.017	mg/L	No
Boron	2024-Sept-24	0.020	mg/L	No
Cadmium	2024-Sept-24	<0.000015	mg/L	No
<b>Chromium</b>	2024-Sept-24	<0.0010	mg/L	No
Mercury	2024-Sept-24	<0.00002	mg/L	No
Selenium	2024-Sept-24	<0.001	mg/L	No
Uranium	2024-Sept-24	<0.00005	mg/L	No
1 <sup>st</sup> Quarter Nitrite	2024-Feb-27	<0.05	mg/L	No
2 <sup>nd</sup> Quarter Nitrite	2024-June-03	0.06	mg/L	No
3 <sup>rd</sup> Quarter Nitrite	2024-Sept-12	<0.05	mg/L	No
4 <sup>th</sup> Quarter Nitrite	2024-Sept-24	<0.05		
	2024-Dec-24	<0.05	mg/L	No
1 <sup>st</sup> Quarter Nitrate	2024-Feb-27	2.83	mg/L	No
2 <sup>nd</sup> Quarter Nitrate	2024-June-03	1.09	mg/L	No
3 <sup>rd</sup> Quarter Nitrate	2024-Sept-12	0.19	mg/L	No
4 <sup>th</sup> Quarter Nitrate	2024-Sept-24	0.14		
	2024-Dec-10	0.40	mg/L	No
Sodium	2024-Sept-24	11.1	mg/L	No
Fluoride	2024-Sept-24	<0.1	mg/L	No

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Parameter	Sample Date (YYYY-MM-DD)	Result Value (ug/L)	Rolling Annual Average Quarter (ug/L)	Exceedance
HAA5 1 <sup>st</sup> Quarter	2024-Feb-27	<5.3	<5.3	No
HAA5 2 <sup>nd</sup> Quarter	2024-May-29	<5.3	<5.3	No
HAA5 3 <sup>rd</sup> Quarter	2024-Sept-12	<5.3	<5.3	No
HAA5 4 <sup>th</sup> Quarter	2024-Dec-10	<5.3	<5.3	No

**Notes:**

1. Maximum Allowable Concentration (MAC) for HAA is based on a four-quarter rolling annual average of 0.080 mg/L or 80.0 ug/L

**Summary of lead testing under O.Reg 170/03 Schedule 13.3 during this reporting period**

Location Type	Number of Total Samples	Range of Lead Results Sample min# – max #(mg/L)	Number of Exceedances
Distribution	14	0.00009 – 0.00157	0

Location Type	Number of Total Samples	pH (min # - max #)
Distribution	7	6.89 – 7.34

Location Type	Number of Total Samples	Alkalinity mg/L (min # - max #)
Distribution	14	89 - 101

**Notes:**

1. Maximum Allowable Concentration (MAC) for lead is 0.010 mg/L or 10.0 ug/L.
2. Only Distribution lead samples above 0.010 mg/L or 10.0 ug/L are reportable.

**Summary of Microcystin Testing under Schedule C, Section 6 of the MDWL #031-101 Issue**

**#4**

	Number of Samples	Number of Samples with a Detectable Sample	Range of Microcystin Quantitative) (min #) - (max #) (ug/L)
<b>Raw</b>	26	11	0-2.77
<b>Treated</b>	26	0	0

**Notes:**

1. The owner must implement the Plan annually during the harmful algal bloom season, during but not limited to the warm seasonal period between June 1 and October 31 each year, or as otherwise directed by the Ministry or the Medical Officer of Health.
2. collected, at a minimum, once per week, or as otherwise directed by the Ministry or the medical officer of health

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

Parameter	Sample Date (YYYY-MM-DD)	Result Value	Unit of Measure	Exceedance
Alachlor	2024-Sept-24	<0.3	µg/L	No
Atrazine	2024-Sept-24	<0.5	µg/L	No
Atrazine + N-dealkylated metabolites	2024-Sept-24	<0.5	µg/L	No
Azinphos-methyl	2024-Sept-24	<1	µg/L	No
Benzene	2024-Sept-24	<0.5	µg/L	No
Benzo(a)pyrene	2024-Sept-24	<0.006	µg/L	No
Bromoxynil	2024-Sept-24	<0.5	µg/L	No
Carbaryl	2024-Sept-24	<3	µg/L	No
Carbofuran	2024-Sept-24	<1	µg/L	No
Carbon Tetrachloride	2024-Sept-24	<0.2	µg/L	No
Chlorpyrifos	2024-Sept-24	<0.5	µg/L	No
Desethyl atrazine	2024-Sept-24	<0.5	µg/L	No
Diazinon	2024-Sept-24	<1	µg/L	No
Dicamba	2024-Sept-24	<1.0	µg/L	No
1,2-Dichlorobenzene	2024-Sept-24	<0.5	µg/L	No
1,4-Dichlorobenzene	2024-Sept-24	<0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2024-Sept-24	<0.5	µg/L	No
1,2-Dichloroethane	2024-Sept-24	<0.5	µg/L	No
Dichloromethane	2024-Sept-24	<5	µg/L	No
2,4-Dichlorophenol	2024-Sept-24	<0.2	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2024-Sept-24	<1.0	µg/L	No



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Diclofop-methyl	2024-Sept-24	<0.9	µg/L	No
Dimethoate	2024-Sept-24	<1	µg/L	No
Diquat	2024-Sept-24	<5	µg/L	No
Diuron	2024-Sept-24	<5	µg/L	No
Glyphosate	2024-Sept-24	<25	µg/L	No
Malathion	2024-Sept-24	<5	µg/L	No
2-Methyl-4-chlorophenoxyacetic acid (MCPA)	2024-Sept-24	<10	µg/L	No
Metolachlor	2024-Sept-24	<3	µg/L	No
Metribuzin	2024-Sept-24	<3	µg/L	No
Monochlorobenzene	2024-Sept-24	<0.5	µg/L	No
Paraquat	2024-Sept-24	<1	µg/L	No
Pentachlorophenol	2024-Sept-24	<0.2	µg/L	No
Phorate	2024-Sept-24	<0.3	µg/L	No
Picloram	2024-Sept-24	<5.0	µg/L	No
Polychlorinated Biphenyls (PCB)	2024-Sept-24	<0.05	µg/L	No
Prometryne	2024-Sept-24	<0.1	µg/L	No
Simazine	2024-Sept-24	<0.5	µg/L	No
Terbufos	2024-Sept-24	<0.5	µg/L	No
Tetrachloroethylene (perchloroethylene)	2024-Sept-24	<0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2024-Sept-24	<0.2	µg/L	No
Triallate	2024-Sept-24	<10	µg/L	No
Trichloroethylene	2024-Sept-24	<0.5	µg/L	No
2,4,6-Trichlorophenol	2024-Sept-24	<0.2	µg/L	No
Trifluralin	2024-Sept-24	<0.5	µg/L	No
Vinyl Chloride	2024-Sept-24	<0.2	µg/L	No

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
N/A	N/A	N/A	N/A

### Glossary

**AWQI** = adverse water quality indicator

**CFU** = colony forming units

**DWS** = drinking water system

**DS** = distribution system

**EA** = Environmental Assessment

**HAA5** = total haloacetic acid

**mg/L** = milligrams per liter

**MDWL** = Municipal Drinking Water License

**TTHM** = trihalomethane

**ug/L** = micrograms per liter

**WTP** = water treatment plant

### Contact for more information:

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