Bobcaygeon Drinking Water System

2024 Annual Water Report

Drinking Water System Number: 210000318

Drinking Water System Operating Authorities: City of Kawartha Lakes and Ontario Clean Water Agency

Drinking Water System Category: Large Municipal Residential

Reporting Period: January 1 – December 31, 2024

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Annual Drinking Water Report
City of Kawartha Lakes

Kawartha Lakes
Jump In

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2024 Annual Drinking Water System Summary Report

General Information

The City of Kawartha Lakes prepares a report summarizing system operation and water quality for every municipal drinking water system annually. This report has been prepared to satisfy the annual reporting requirements in O. Reg. 170/03 Section 11 and Schedule 22. The annual reports will be available to residents at the City of Kawartha Lakes Public Works Administration Office by appointment and the City's website. Notification that the reports are available free of charge will be made on the City of Kawartha Lakes website. The City of Kawartha Lakes Public Works Administration Office is located at 322 Kent Street West in Lindsay, Ontario.

This system does not serve more than 10,000 residences.

Drinking Water System Number: 210000318
Drinking Water System Name: Bobcaygeon Drinking Water System
Drinking Water System Owner: City of Kawartha Lakes
Drinking Water System Category: Large Municipal Residential
Reporting Period: January 1, 2024 – December 31, 2024

Compliance Summary

Table 1. Drinking Water Compliance Summary

	Number of Events	Date	Details
Ministry (MECP) Inspections	2	January 24, 2024 October 21, 2024	2023/2024 Unannounced, Focused inspection. Inspection Rating 100% 2024/2025 Announced, Detailed Drinking Water Inspection. Inspection Rating 100%
Adverse Water Quality Incidents (AWQIs)	0		
Non-Compliances	1	October 21, 2024	During 2024/2025 Inspection found NDMA

	Number of Events	Date	Details
			samples were not being collected as per MDWL
Boil Water Advisories	0		
Health and Safety	0		

Drinking Water System Description

The Bobcaygeon drinking water system is a large municipal residential drinking water system that serves the Village of Bobcaygeon, Ontario. The drinking water system is classified as a Class III Water Treatment and Class I Water Distribution subsystems under O. Reg. 128/04.

Source Water

The water supply for the system comes from the Big Bob Channel connected to Sturgeon Lake, which is a surface water source.

Water Treatment Facility

The Bobcaygeon drinking water system consists of two package-type conventional filtration plants. Water is received from the Big Bob Channel (Sturgeon Lake). Each filtration plant consists of one flocculator/clarifier unit with automatic sludge withdrawal, and dual media high rate gravity filters with automatic backwash. Primary disinfection is accomplished using sodium hypochlorite and secondary disinfection is accomplished using ammonium sulphate. SternPAC is added to the treatment process as a coagulant. Treated water is directed to four (4) clearwells, and one (1) high lift chamber. Ammonium Sulphate is added and then the water is sent to a water tower for distribution.

A diesel generator is onsite to provide standby power to the water treatment facility in the event of a power failure.

Distribution System

The distribution system has approximately twenty-five (25) kilometers of watermains and one elevated storage tower. The distribution system is rated for fire protection. The watermains in the Bobcaygeon Distribution System are of various watermain material including PVC, Asbestos Concrete, Ductile Iron and HDPE.

Table 2. Treatment Chemicals Used

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	FloChem

Chemical Name	Use	Supplier
SternPAC	Coagulant	Kemira
Ammonium Sulphate	Chloramination	FloChem

Summary of Non-Compliance

Adverse Water Quality Incidents

There were no adverse water quality incidents reported during the reporting period.

Non-Compliance

Table 3. Non-Compliance

Legislation	Requirement(s) System Failed to Meet	Duration of Failure (Dates)	Corrective Action	Status
O. Reg. 169/03 Schedule 2	Distribution Sampling of NDMA	Quarterly 2022, 2023	Added NDMA to sample calendar, Ordered bottles and took sample ASAP	Completed

Non-Compliance Identified in a Ministry Inspection

Table 4. Non-Compliance Identified in a Ministry Inspection

Legislation	Requirement(s) System Failed to Meet	Duration of Failure (Dates)	Corrective Action	Status
O. Reg. 169/03 Schedule 2	Distribution Sampling of NDMA	Quarterly 2022, 2023	Added NDMA to sample calendar, Ordered bottles and took sample ASAP	Completed

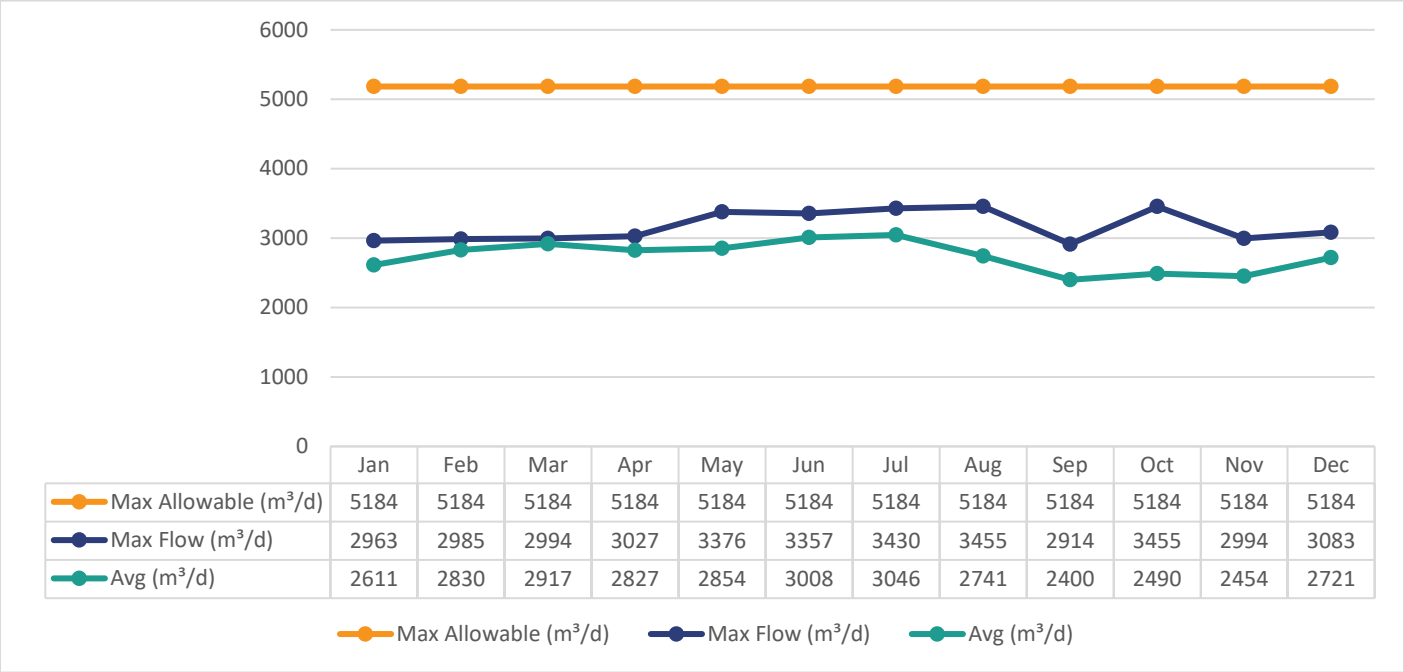
Flows

The Bobcaygeon Drinking Water System is operating near or over half the rated capacity. The rated capacity of the system (treated water flows) is 5,184 m^3/day.

Raw Water Flows

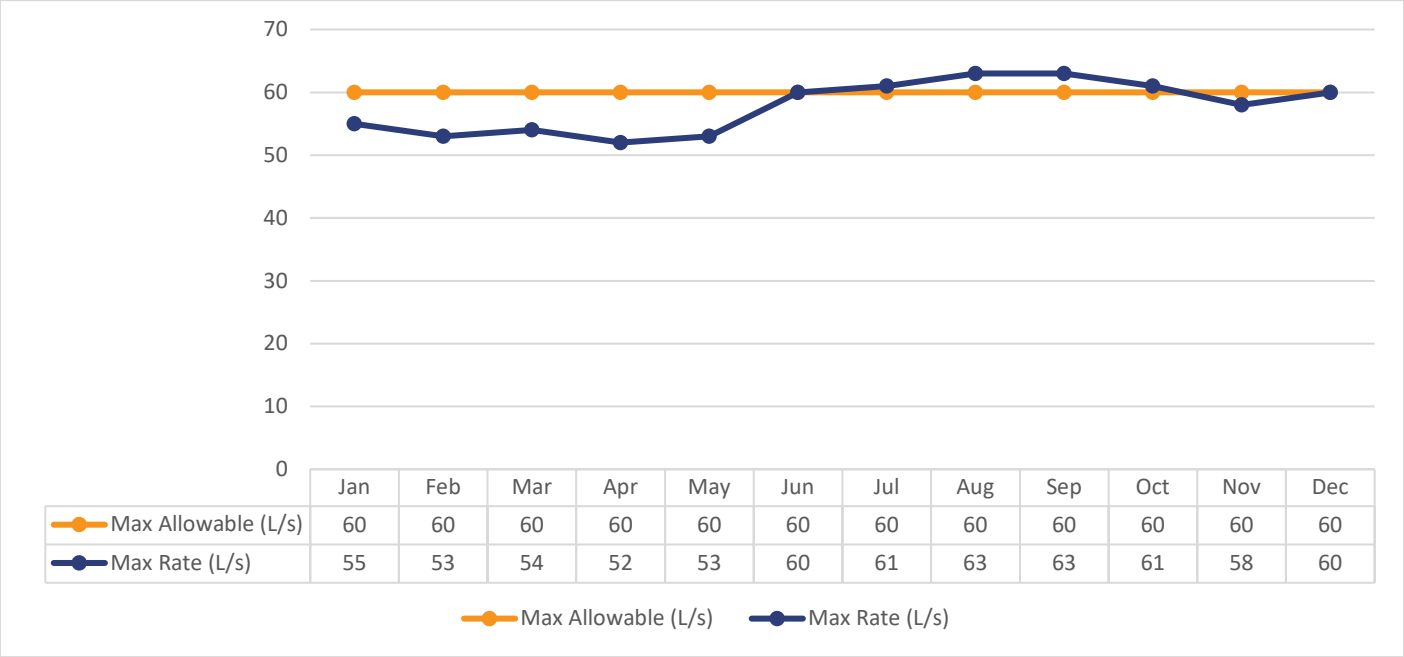
The raw water flows are regulated under the Permit to Take Water. Raw flow data for 2024 was submitted to the Ministry of Environment, Conservation and Parks (MECP) electronically under permit #7640-AQJHCV. The confirmation of the data that was submitted is attached in Appendix A.

Graph 1. Total Monthly Flows (m³/d) – Big Bob Channel (Max Allowable PTTW)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (m³/d)	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184
Max Flow (m³/d)	2963	2985	2994	3027	3376	3357	3430	3455	2914	3455	2994	3083
Avg (m³/d)	2611	2830	2917	2827	2854	3008	3046	2741	2400	2490	2454	2721

Graph 2. Monthly Rated Flows (L/s) – Big Bob Channel (Max Allowable Rate PTTW)



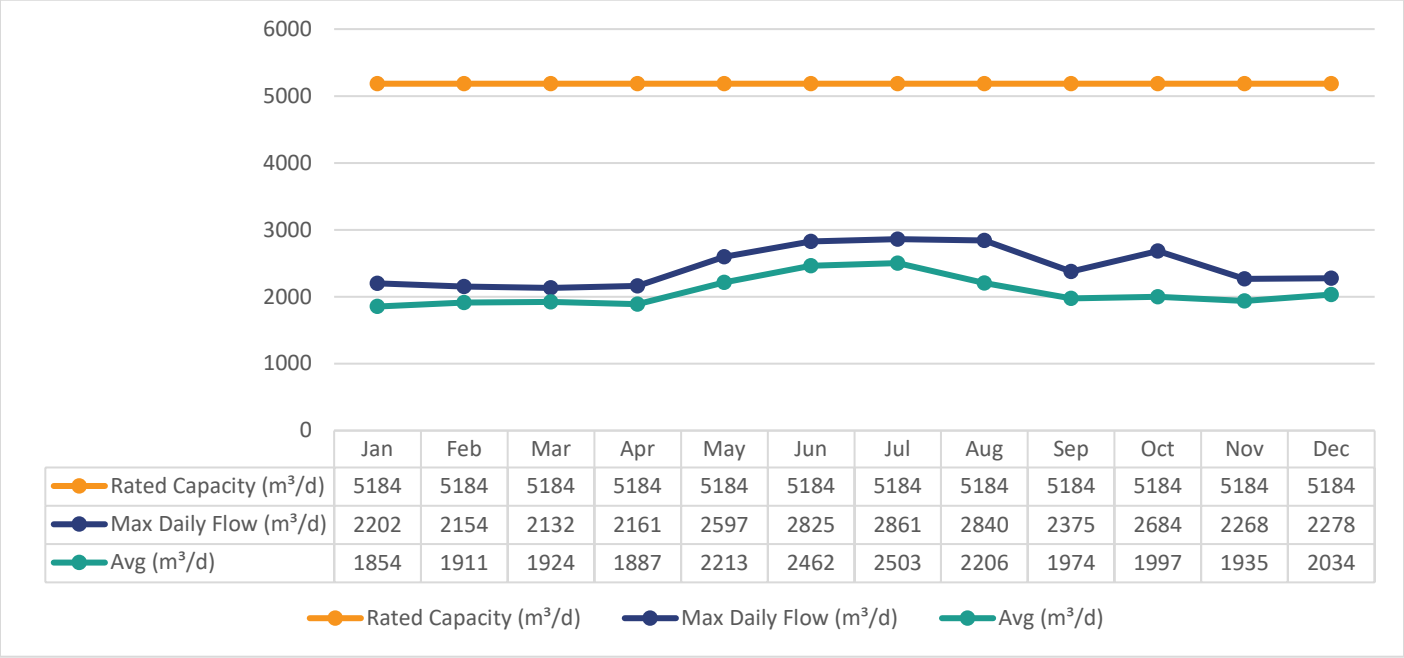
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable (L/s)	60	60	60	60	60	60	60	60	60	60	60	60
Max Rate (L/s)	55	53	54	52	53	60	61	63	63	61	58	60

Note: The above table shows there were exceedances in instantaneous peak flow rate (L/s) but these exceedances were short in duration. Spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. The significant spike in September was due to scheduled flow meter calibration. All spikes are reviewed for compliance with O. Reg. 170/03.

Treated Water Flows

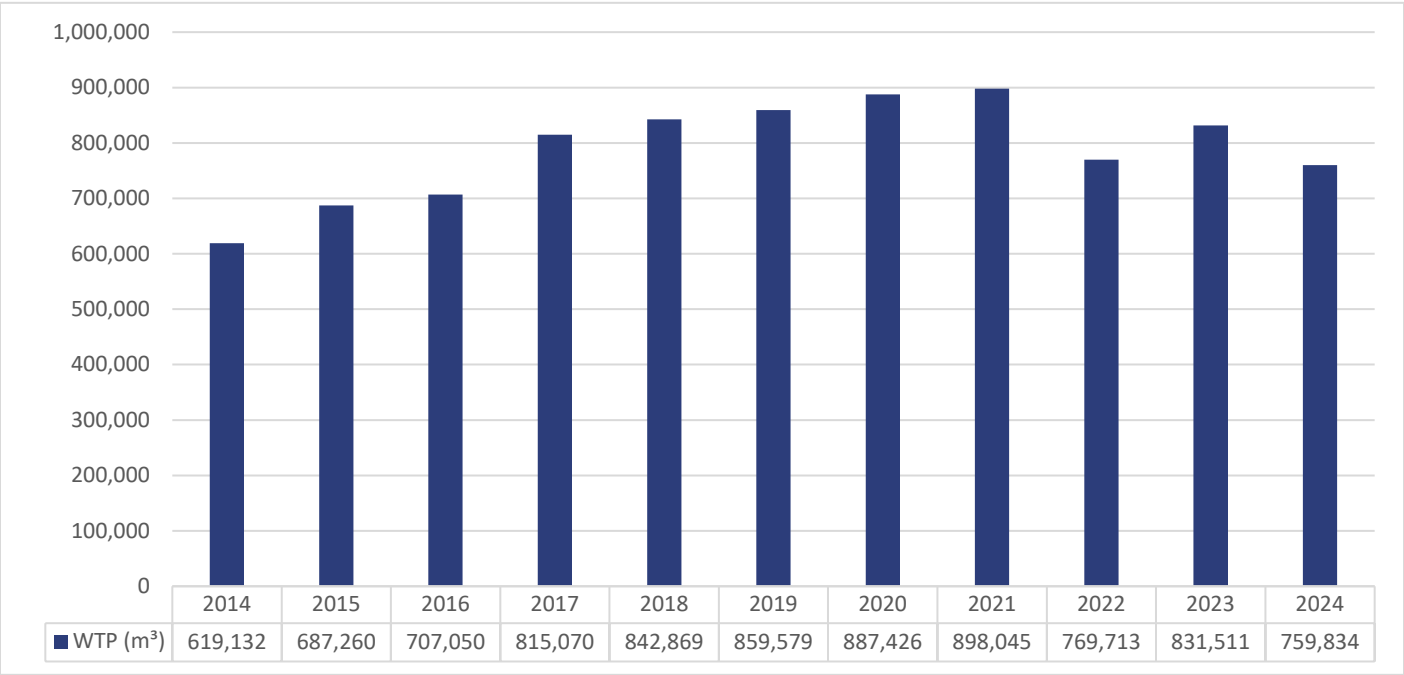
The Treated Water flows are regulated under the Municipal Drinking Water Licence 141-105.

Graph 3. Monthly Rated Flows (m³/d) – Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m³/d)	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184
Max Daily Flow (m³/d)	2202	2154	2132	2161	2597	2825	2861	2840	2375	2684	2268	2278
Avg (m³/d)	1854	1911	1924	1887	2213	2462	2503	2206	1974	1997	1935	2034

Graph 4. Annual Total Flow Comparison (m³)



	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
WTP (m³)	619,132	687,260	707,050	815,070	842,869	859,579	887,426	898,045	769,713	831,511	759,834

Regulatory Sample Results Summary

Microbiological Testing

Table 5. Microbiological Test Results

	No. of Samples Collected	Range of E. Coli Results	Range of E. Coli Results	Range of Total Coliform Results	Range of Total Coliform Results	Range of HPC Results	Range of HPC Results
		Min	Max	Min	Max	Min	Max
Raw	53	0	10	0	68	N/A	N/A
Treated	56	0	0	0	0	0	3
Distribution	160	0	0	0	0	0	9

OG = Overgrowth
HPC = Heterotrophic Plate Count

Operational Testing

Table 6. Operational Test Results

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
Turbidity Raw (NTU)	45	0.56	3.40
Turbidity Filter 1 (NTU)	8760	0	2.00
Turbidity Filter 2 (NTU)	8760	0	2.0
Chlorine	8760	0	5.16
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measurement if it is **not** milligrams per litre.
Note: For continuous monitors 8760 is used as the number of samples. Spikes recorded by online instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O. Reg. 170/03.

Inorganic Parameters

These parameters are tested as a requirement under O. Reg. 170/03. Sodium and Fluoride are required to be tested every five years. Nitrate and Nitrate are tested quarterly and the metals are tested annually as required under O. Reg. 170/03. In the event any of the parameters listed in Schedule 23 or 24 of O. Reg. 170/03 exceed half of the maximum allowable concentration the parameter is required to be samples quarterly. Based on the latest test results no additional testing is required.

Table 7. Inorganic Parameters Test Results

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Treated Water					
Antimony	2024 01 08	<MDL 0.6	µg/L	6.0	No
Arsenic	2024 01 08	<MDL 0.2	µg/L	10.0	No
Barium	2024 01 08	21.9	µg/L	1000.0	No
Boron	2024 01 08	7.0	µg/L	5000.0	No
Cadmium	2024 01 08	<MDL 0.003	µg/L	5.0	No
Chromium	2024 01 08	0.21	µg/L	50.0	No
Mercury	2024 01 08	<MDL 0.01	µg/L	1.0	No
Selenium	2024 01 08	0.04	µg/L	50.0	No
Uranium	2024 01 08	0.08	µg/L	20.0	No
Additional Organics					
Fluoride	2023 01 17	<MDL 0.06	mg/L	1.5	No
Nitrite	2024 01 08	<MDL 0.003	mg/L	1.0	No
Nitrite	2024 04 08	0.003	mg/L	1.0	No
Nitrite	2024 07 08	0.004	mg/L	1.0	No
Nitrite	2024 10 15	<MDL 0.003	mg/L	1.0	No
Nitrate	2024 01 08	0.245	mg/L	10.0	No
Nitrate	2024 04 08	0.509	mg/L	10.0	No
Nitrate	2024 07 08	0.066	mg/L	10.0	No
Nitrate	2024 10 15	0.047	mg/L	10.0	No
Sodium	2023 01 17	8.13	mg/L	20*	No

MAC = Maximum Allowable Concentration as per O. Reg. 169/03
MDL = Method Detection Limit
*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. Sodium results exceeding 20 mg/L are to be reported to the Medical Officer of Health as per Schedule 16-3 (8) of O. Reg. 170/03.

Schedule 15 Sampling (Lead)

The Schedule 15 sampling is required under O. Reg. 170/03. This system is under reduced sampling. Only distribution samples were collected, and no plumbing samples were collected.

Table 8. Schedule 15 Test Results (Lead)

	Number of Sampling Points	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (µg/L)	Number of Exceedances
Alkalinity (mg/L)	6	6	59	106	N/A	N/A
pH	6	6	7.31	7.95	N/A	N/A
Lead (µg/L)	0	0			10.0	

Organic Parameters

These parameters are tested as a requirement under O. Reg. 170/03. In the event any of the parameters listed in Schedule 23 or 24 of O. Reg. 170/03 exceed half of the maximum allowable concentration the parameter is required to be samples quarterly. Based on the latest test results no additional testing is required.

Table 9. Organic Parameters Test Results

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Treated Water					
Alachlor	2024 01 08	<MDL 0.02	µg/L	5.0	No
Atrazine + N-dealkylated metabolites	2024 01 08	<MDL 0.01	µg/L	5.0	No
Azinphos-methyl	2024 01 08	<MDL 0.05	µg/L	20.0	No
Benzene	2024 01 08	<MDL 0.32	µg/L	1.0	No
Benzo(a)pyrene	2024 01 08	<MDL 0.004	µg/L	0.01	No
Bromoxynil	2024 01 08	<MDL 0.33	µg/L	5.0	No
Carbaryl	2024 01 08	<MDL 0.05	µg/L	90.0	No
Carbofuran	2024 01 08	<MDL 0.01	µg/L	90.0	No
Carbon Tetrachloride	2024 01 08	<MDL 0.17	µg/L	2.0	No
Chlorpyrifos	2024 01 08	<MDL 0.02	µg/L	90.0	No
Diazinon	2024 01 08	<MDL 0.02	µg/L	20.0	No
Dicamba	2024 01 08	<MDL 0.20	µg/L	120.0	No
1,2-Dichlorobenzene	2024 01 08	<MDL 0.41	µg/L	200.0	No
1,4-Dichlorobenzene	2024 01 08	<MDL 0.36	µg/L	5.0	No
1,2-Dichloroethane	2024 01 08	<MDL 0.35	µg/L	5.0	No
1,1-Dichloroethylene	2024 01 08	<MDL 0.33	µg/L	14.0	No

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Dichloromethane (Methylene Chloride)	2024 01 08	<MDL 0.35	µg/L	50.0	No
2,4-Dichlorophenol	2024 01 08	<MDL 0.15	µg/L	900.0	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2024 01 08	<MDL 0.19	µg/L	100.0	No
Diclofop-methyl	2024 01 08	<MDL 0.40	µg/L	9.0	No
Dimethoate	2024 01 08	<MDL 0.06	µg/L	20.0	No
Diquat	2024 01 08	<MDL 1.0	µg/L	70.0	No
Diuron	2024 01 08	<MDL 0.03	µg/L	150.0	No
Glyphosate	2024 01 08	<MDL 1.0	µg/L	280.0	No
Malathion	2024 01 08	<MDL 0.02	µg/L	190.0	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)	2024 01 08	<MDL 0.12	µg/L	100.0	No
Metolachlor	2024 01 08	<MDL 0.01	µg/L	50.0	No
Metribuzin	2024 01 08	<MDL 0.02	µg/L	80.0	No
Monochlorobenzene (Chlorobenzene)	2024 01 08	<MDL 0.30	µg/L	80.0	No
Paraquat	2024 01 08	<MDL 1.0	µg/L	10.0	No
PCB	2024 01 08	<MDL 0.04	µg/L	3.0	No
Pentachlorophenol	2024 01 08	<MDL 0.15	µg/L	60.0	No
Phorate	2024 01 08	<MDL 0.01	µg/L	2.0	No
Picloram	2024 01 08	<MDL 1.0	µg/L	190.0	No
Prometryne	2024 01 08	<MDL 0.03	µg/L	1.0	No
Simazine	2024 01 08	<MDL 0.01	µg/L	10.0	No
Terbufos	2024 01 08	<MDL 0.01	µg/L	1.0	No
Tetrachloroethylene	2024 01 08	<MDL 0.35	µg/L	10.0	No
2,3,4,6-Tetrachlorophenol	2024 01 08	<MDL 0.2	µg/L	100.0	No
Triallate	2024 01 08	<MDL 0.01	µg/L	230.0	No
Trichloroethylene	2024 01 08	<MDL 0.44	µg/L	5.0	No
2,4,6-Trichlorophenol	2024 01 08	<MDL 0.25	µg/L	5.0	No
Trifluralin	2024 01 08	<MDL 0.02	µg/L	45.0	No
Vinyl Chloride	2024 01 08	<MDL 0.17	µg/L	1.0	No
Distribution Water					
Trihalomethane Total Annual Average Q1	2024 01 08	44.25	µg/L	100.0	No
Trihalomethane Total Annual Average Q2	2024 04 08	41.75	µg/L	100.0	No
Trihalomethane Total Annual Average Q3	2024 07 08	41.25	µg/L	100.0	No

	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Trihalomethane Total Annual Average Q4	2024 10 15	43.75	µg/L	100.0	No
HAA Total Annual Average Q1	2024 01 08	31.33	µg/L	80.0	No
HAA Total Annual Average Q2	2024 04 08	29.6	µg/L	80.0	No
HAA Total Annual Average Q3	2024 07 08	31.88	µg/L	80.0	No
HAA Total Annual Average Q4	2024 10 15	34.9	µg/L	80.0	No
NDMA Total Annual Average	2024	0.0016	µg/L	0.009	No

MAC = Maximum Allowable Concentration as O. Reg. 169/03
MDL = Method Detection Limit
NDMA = Nitrosodimethylamine

Additional Legislated Samples

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

Harmful Algal Blooms monitoring is required as a condition within the Municipal Drinking Water Licence between June and October of each reporting year at a minimum. Treated and Raw samples are collected weekly during this time period and tested for Microcystin, which is an indicator for harmful algal blooms.

Table 10. Microcystin Sample Results

Municipal Drinking Water Licence	Collected Weekly June – Oct	Total Microcystin Raw Results Range (µg/L)	Total Microcystin Treated Water Results Range (µg/L)	Treated Water Total Microcystin Limit 1.5 µg/L Exceeded
Harmful Algal Blooms Monitoring	June	<0.1 - <0.1	<0.1 - <0.1	N
	July	<0.1 - <0.1	<0.1 - <0.1	N
	August	<0.1 - <0.1	<0.1 - <0.1	N
	September	<0.1 - <0.1	<0.1 - <0.1	N
	October	<0.1 - <0.1	<0.1 - <0.1	N

Method Detection Limit is 0.1 µg/L

Table 11. Nitrosodimethylamine (NDMA) Sample Results

Municipal Drinking Water Licence	Sample Date (yyyy/mm/dd)	Sample Result	Unit of Measure	MAC	Exceedance
Nitrosodimethylamine (NDMA)	2024 10 30	0.0016	µg/L	0.009	No
			µg/L	0.009	
			µg/L	0.009	
			µg/L	0.009	

MAC = Maximum Allowable Concentration as per O. Reg. 169/03
MDL = Method Detection Limit

Minor Maintenance

- Ceiling fan replacement
- Intake wet well screen replacement
- Alum pump #1 replacement
- Admin office heat pump repair
- Clearwell transducer installation
- Lowlift pump #1 overload fault repair
- DSC backup battery replacement
- VFD low lift pump #1 pump speed troubleshooting
- Underdrain inspection
- Stairs and loading dock concrete repairs
- Dehumidifier repair
- SternPAC PLC UPS failure repair
- Office SCADA UPS failure repair
- Outpost panel battery replacement

Major Maintenance Expense (above $10,000)

Under Section 11 of O. Reg. 170/03, a description of any major expenses incurred during this reporting period to install, repair or replace required equipment must be included in the annual report. The details of the major expenses for this drinking water system are as follows:

Bobcaygeon Water Treatment Plant

- Bobcaygeon WTP PLC Replacement - $23,206
- Bobcaygeon WTP Filter and Clarifier Valve Actuators Replacement - $132,640
- Bobcaygeon WTP Lowlift and Highlift pump and piping replacement - $469,099

- Bobcaygeon WTP Window Replacement - $27,646

APPENDIX A

WTR Submission Confirmation