Bobcaygeon Drinking Water System

Waterworks # 210000318
System Category – Large Municipal Residential

Annual Water Report

Prepared For: The City of Kawartha Lakes

Reporting Period of January 1st – December 31st, 2023

Issued: February 21, 2024

Revision: 0

Operating Authorities:

This report has been prepared to satisfy the annual reporting requirements in O. Reg. 170/03 Section 11 and Schedule 22

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Report Availability

This system does not serve more than 10,000 residences. The annual reports will be available to residents at the City of Kawartha Lakes Public Works Administration Office and on the City's website at: www.kawarthalakes.ca. Notification that 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.

Compliance Report Card

Drinking Water System Number: 210000318
Drinking Water System Name: Bobcaygeon WTP
Drinking Water System Owner: City of Kawartha Lakes
Drinking Water System Category: Large Municipal Residential
Period Being Reported: January 1, 2023 - December 31, 2023

	# of Events	Date	Details
Health & Safety			
Number of Incidents	0		
Drinking Water			
MECP Inspections	0		MECP inspection for 2023/2024 inspection cycle began on January 24, 2024.
AWQI's	2	July 3, 2023 November 23, 2023	Loss of continuous filter turbidity analyzers Low distribution chlorine
Number of Non-Compliances	0		
Number of Boil Water Advisories	0		

System Process Description

Raw Source

The Bobcaygeon WTP sources its water from the Big Bob River.

Treatment

The treatment system consists of the following:

- Three lowlifts
- SternPAC feed system with metering pumps
- Two solids re-circulating reactivator type flocculator/clarifier units in parallel which includes flash mixing, flocculation and sedimentation chambers

- Two dual media (anthracite/sand) high rate gravity filters in parallel
- Continuous online turbidity analyzers
- Sodium hypochlorite feed system with metering pumps
- Continuous online chlorine analyzers
- Four clear wells
- Ammonium sulfate feed system with metering pumps
- Continuous online flow meters
- Three highlifts
- Water storage standpipe with a capacity of 4400 m3
- One surge equalization tank for the sludge from the settling tanks and the backwash wastewater from the filters
- Standby power generator

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Disinfection	Brenntag
SternPAC	Coagulant	Kemira
Ammonium Sulphate	Chloramination	FloChem

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
Jul 3, 2023	162393	Filter effluent	Loss of continuous analyzer	Filter 1 and Filter 2 turbidity analyzers lost power after Uninterrupted Power Supply (UPS) failed. The filters were in operation without recording for 19 minutes.	O. Reg. 170/03 Schedule 6-5	Returned power to turbidity analyzers and returned the filters to operation.
Nov 23, 2023	164096	Distribution	Low distribution chlorine at the Bobcaygeon Water tower.	Planned maintenance on the low lift pumps on Nov 23 required shutdown of the treatment plant and running the distribution	O. Reg. 170/03 Schedule 1-2	Restored secondary combined chlorine residual at tower at 22:55 on November 23, 2023. Tested combined chlorine residuals

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
				system off of the water tower.		and collected bacti samples at the water tower and other points in the distribution system at the time of the initial low chlorine and after combined chlorine residual was restored at the water tower. Flushed the system while field testing combined chlorine residual.

Non-Compliance(s)

There were no non-compliances reported during the reporting period.

Non-Compliance Identified in a Ministry Inspection:

There were no Ministry Inspection reports received during this period

Flows

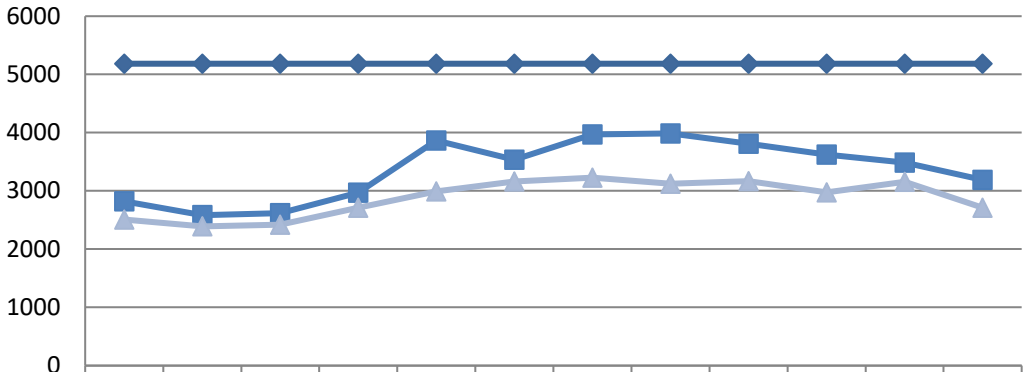
The Bobcaygeon Drinking Water System is operating near or over half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2023 Raw Flow Data was submitted to the Ministry electronically under permit #7640-AQJHCV. The confirmation and a copy of the data that was submitted are attached in Appendix A.

Total Monthly Flows (m³/d)

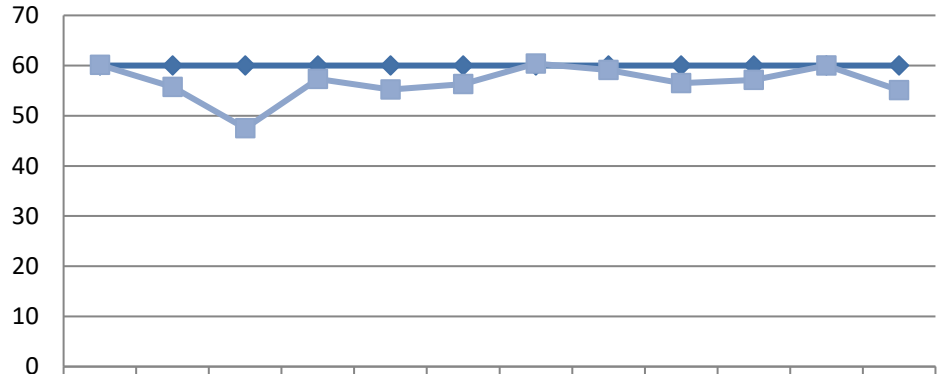
Max Allowable PTTW- Raw



	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)	2823	2583	2617	2970	3863	3535	3971	3987	3811	3626	3485	3192
Avg (m³/d)	2507	2391	2420	2714	2989	3160	3227	3124	3169	2978	3158	2714

Monthly Rated Flows (L/s)

Max allowable rate – PTTW- Raw



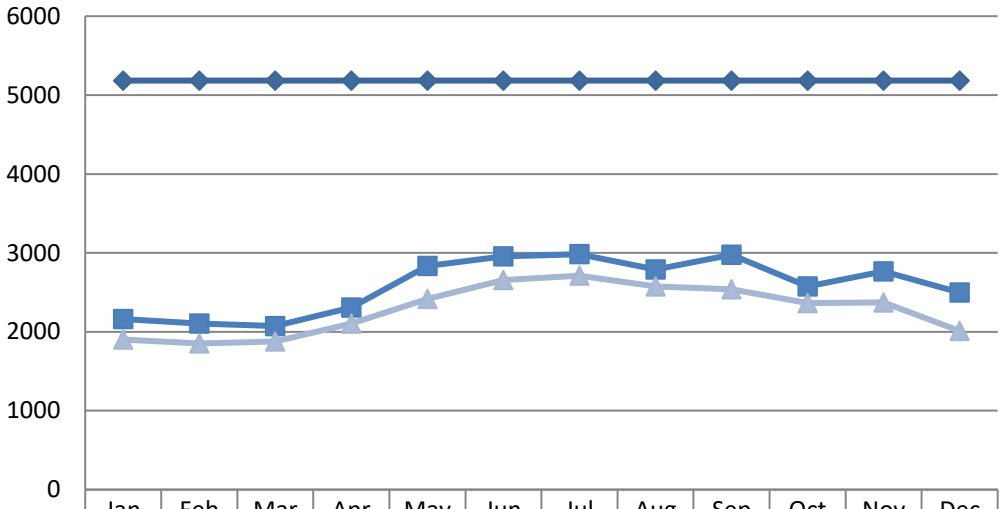
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Max Allowable Rate (L/sec)	60	60	60	60	60	60	60	60	60	60	60	60
Max Rate (L/s)	60	56	48	57	55	56	60	59	57	57	60	55

Treated Water Flows

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

Monthly Rated Flows

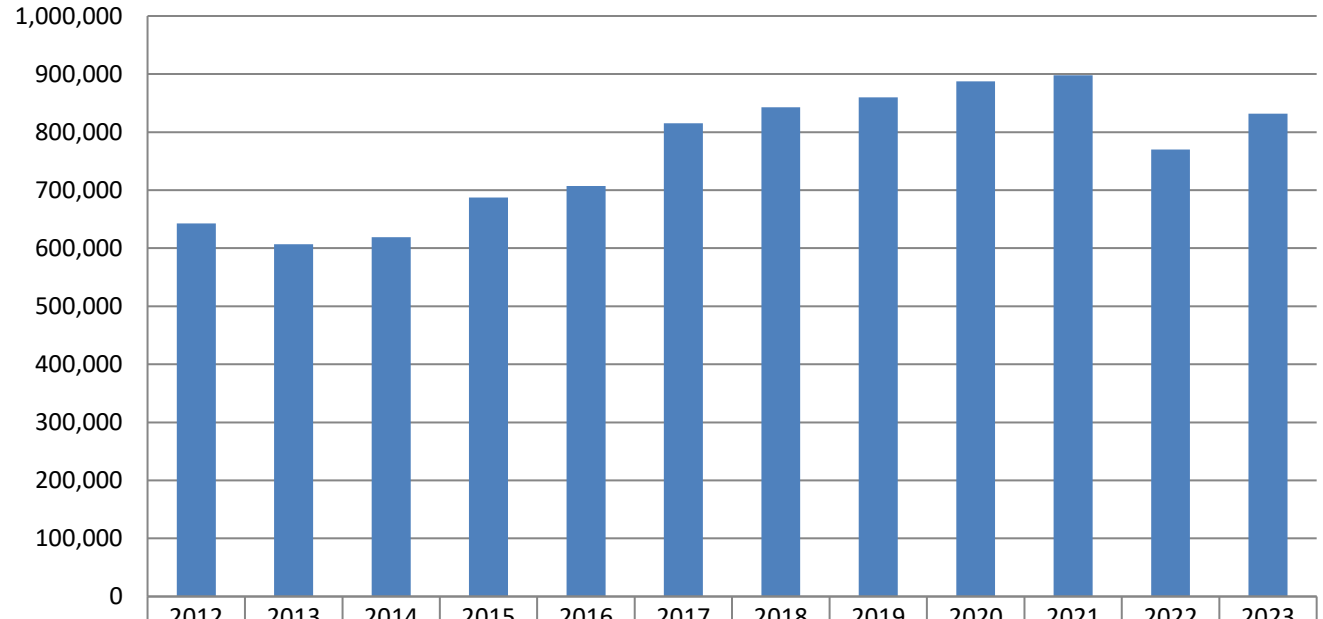
Rated Capacity - MDWL



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Rated Capacity (m^3/d)	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184	5184
Max Daily Flow (m^3/d)	2162	2103	2073	2307	2836	2956	2983	2789	2976	2576	2766	2497
Avg (m^3/d)	1900	1852	1876	2105	2415	2655	2711	2575	2540	2364	2373	2012

Annual Total Flow Comparison

Total Annual m^3



	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
WTP (m^3)	642,812	606,751	619,132	687,260	707,050	815,070	842,869	859,579	887,426	898,045	769,713	831,511

Regulatory Sample Results Summary

Microbiological Testing

	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	52	0	NDOGT	7	NDOGT		
Treated	53	0	0	0	0	0	6
Distribution	162	0	0	0	0	0	95

Note: NDOGT - No Data, Overgrown with Target bacteria. Maximum counted Raw E. coli 13 Colony Forming Unit (CFU), maximum counted Raw Total Coliform 127 CFU

Operational Testing

Parameter	Number of Samples Collected	Range of Results Minimum	Range of Results Maximum
Turbidity Raw (NTU)	43	0.38	1.26
Turbidity Filter 1 (NTU)	8760	0	1.52
Turbidity Filter 2 (NTU)	8760	0	0.90
Chlorine	8760	0	5.92
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

Note: Record the unit of measure if it is **not** milligrams per litre.
Note: For continuous monitors 8760 is used as the number of samples**.** Spikes recorded by on-line 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 170/03. Sodium and Fluoride are required to be tested every five years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

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

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Antimony: Sb (ug/L)	2023/01/17	<MDL 0.6	6.0	No	No

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Arsenic: As (ug/L)	2023/01/17	<MDL 0.2	10.0	No	No
Barium: Ba (ug/L)	2023/01/17	21.2	1000.0	No	No
Boron: B (ug/L)	2023/01/17	15.0	5000.0	No	No
Cadmium: Cd (ug/L)	2023/01/17	<MDL 0.003	5.0	No	No
Chromium: Cr (ug/L)	2023/01/17	0.13	50.0	No	No
Mercury: Hg (ug/L)	2023/01/17	<MDL 0.01	1.0	No	No
Selenium: Se (ug/L)	2023/01/17	<MDL 0.04	50.0	No	No
Uranium: U (ug/L)	2023/01/17	0.01	20.0	No	No
Additional Inorganics					
Fluoride (mg/L)	2023/01/17	<MDL 0.06	1.5	No	No
Nitrite (mg/L)	2023/01/17	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2023/04/17	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2023/07/11	<MDL 0.003	1.0	No	No
Nitrite (mg/L)	2023/10/11	<MDL 0.003	1.0	No	No
Nitrate (mg/L)	2023/01/17	0.248	10.0	No	No
Nitrate (mg/L)	2023/04/17	0.674	10.0	No	No
Nitrate (mg/L)	2023/07/11	0.08	10.0	No	No
Nitrate (mg/L)	2023/10/11	0.053	10.0	No	No
Sodium: Na (mg/L)	2023/01/17	8.13	20*	No	No

*There is no "MAC" for Sodium. 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.

Schedule 15 Sampling:

The Schedule 15 Sampling is required under O. Reg. 170/03. This system is under reduced sampling. No plumbing samples were collected.

Distribution System	Number of Sampling Points	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
Alkalinity (mg/L)	6	6	53	94	N/A	N/A

Distribution System	Number of Sampling Points	Number of Samples	Range of Results Minimum	Range of Results Maximum	MAC (ug/L)	Number of Exceedances
pH	6	6	6.96	7.32	N/A	N/A
Lead (ug/l)	6	6	0.06	0.45	10	0

Organic Parameters

These parameters are tested annually as a requirement under O. Reg. 170/03.
In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Alachlor (ug/L) - TW	2023/01/17	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (ug/L)	2023/01/17	<MDL 0.01	5.0	No	No
Azinphos-methyl (ug/L)	2023/01/17	<MDL 0.05	20.0	No	No
Benzene (ug/L)	2023/01/17	<MDL 0.32	1.0	No	No
Benzo(a)pyrene (ug/L)	2023/01/17	<MDL 0.004	0.01	No	No
Bromoxynil (ug/L)	2023/01/17	<MDL 0.33	5.0	No	No
Carbaryl (ug/L)	2023/01/17	<MDL 0.05	90.0	No	No
Carbofuran (ug/L)	2023/01/17	<MDL 0.01	90.0	No	No
Carbon Tetrachloride (ug/L)	2023/01/17	<MDL 0.17	2.0	No	No
Chlorpyrifos (ug/L)	2023/01/17	<MDL 0.02	90.0	No	No
Diazinon (ug/L)	2023/01/17	<MDL 0.02	20.0	No	No
Dicamba (ug/L)	2023/01/17	<MDL 0.2	120.0	No	No
1,2-Dichlorobenzene (ug/L)	2023/01/17	<MDL 0.41	200.0	No	No
1,4-Dichlorobenzene (ug/L)	2023/01/17	<MDL 0.36	5.0	No	No
1,2-Dichloroethane (ug/L)	2023/01/17	<MDL 0.35	5.0	No	No
1,1-Dichloroethylene (ug/L)	2023/01/17	<MDL 0.33	14.0	No	No
Dichloromethane (Methylene Chloride) (ug/L)	2023/01/17	<MDL 0.35	50.0	No	No
2,4-Dichlorophenol (ug/L)	2023/01/17	<MDL 0.15	900.0	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2023/01/17	<MDL 0.19	100.0	No	No
Diclofop-methyl (ug/L)	2023/01/17	<MDL 0.4	9.0	No	No
Dimethoate (ug/L)	2023/01/17	<MDL 0.06	20.0	No	No
Diquat (ug/L)	2023/01/17	<MDL 1.0	70.0	No	No
Diuron (ug/L)	2023/01/17	<MDL 0.03	150.0	No	No
Glyphosate (ug/L)	2023/01/17	<MDL 1.0	280.0	No	No
Malathion (ug/L)	2023/01/17	<MDL 0.02	190.0	No	No
Metolachlor (ug/L)	2023/01/17	<MDL 0.01	50.0	No	No
Metribuzin (ug/L)	2023/01/17	<MDL 0.02	80.0	No	No

Treated Water Parameter	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Exceedances MAC	Exceedances ½ MAC
Monochlorobenzene (Chlorobenzene) (ug/L)	2023/01/17	<MDL 0.3	80.0	No	No
Paraquat (ug/L)	2023/01/17	<MDL 1.0	10.0	No	No
PCB (ug/L)	2023/01/17	<MDL 0.04	3.0	No	No
Pentachlorophenol (ug/L)	2023/01/17	<MDL 0.15	60.0	No	No
Phorate (ug/L)	2023/01/17	<MDL 0.01	2.0	No	No
Picloram (ug/L)	2023/01/17	<MDL 1.0	190.0	No	No
Prometryne (ug/L)	2023/01/17	<MDL 0.03	1.0	No	No
Simazine (ug/L)	2023/01/17	<MDL 0.01	10.0	No	No
Terbufos (ug/L)	2023/01/17	<MDL 0.01	1.0	No	No
Tetrachloroethylene (ug/L)	2023/01/17	<MDL 0.35	10.0	No	No
2,3,4,6-Tetrachlorophenol (ug/L)	2023/01/17	<MDL 0.2	100.0	No	No
Triallate (ug/L)	2023/01/17	<MDL 0.01	230.0	No	No
Trichloroethylene (ug/L)	2023/01/17	<MDL 0.44	5.0	No	No
2,4,6-Trichlorophenol (ug/L)	2023/01/17	<MDL 0.25	5.0	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L)	2023/01/17	<MDL 0.12	100.0	No	No
Trifluralin (ug/L)	2023/01/17	<MDL 0.02	45.0	No	No
Vinyl Chloride (ug/L)	2023/01/17	<MDL 0.17	1.0	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2023	44.0	100.0	No	No
HAA Total (ug/L) Annual Average - DW	2023	30.6	80.0	No	No

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

Additional Legislated Samples

Municipal Drinking Water Licence	Collected Weekly June – Oct	Total Microcystin Raw Results Range (ug/L)	Total Microcystin Treated Water Results Range (ug/L)	Treated Water Total Microcystin Limit 1.5 ug/L Exceeded Y/N
Harmful Algal Blooms Monitoring required June to October at a minimum. Treated and Raw Water Samples collected weekly.	June	<0.1 – <0.1	<0.1 - <0.1	N
	July	<0.1 - <0.1	<0.1 - <0.1	N

Municipal Drinking Water Licence	Collected Weekly June – Oct	Total Microcystin Raw Results Range (ug/L)	Total Microcystin Treated Water Results Range (ug/L)	Treated Water Total Microcystin Limit 1.5 ug/L Exceeded Y/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
	November	<0.1 - <0.1	<0.1 - <0.1	N

Major Maintenance Summary incurred to install, repair or replace required equipment

WO #	Description
3341653	Surge Tank Plumbing Leak Repair
3620745	ESA Inspection and Defects Repair
3622537	Total Chlorine Analyzer Probe Troubleshoot and Replacement
3624855	5779, Bobcaygeon WT, Domestic Waste Pump Replacement
3662139	Alum Pump Repair Kits

Appendix A

WTRS Data and Submission Confirmation