2023 Section 11 Annual Report

Beardmore Drinking Water System

February 2024

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**210001264**
Drinking-Water System Name:	Beardmore Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2023

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X] **Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** **Geraldton Ward Office (Administration)** 1800 Main Street Geraldton, ON P0T 1M0 **Beardmore Ward Office** 285 Main Street Beardmore, ON P0T 1G0	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [ ]** **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?** **Yes [ ] No [ ]**

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
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 of its drinking water?

Yes [X] No [ ]

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

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] Public access/notice via a newspaper
[X] 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 raw water is pumped from the Blackwater River by the low lift pumps into the packaged treatment plant tank, which is a Graver monoplant treatment unit; a type of solids contact clarifier. The flocculation, sedimentation, and filtration processes are all contained within the packaged plant. Aluminum sulfate is added to the raw water as a coagulant after the low lift pumps and prior to the treatment unit. Two polymers are used to assist with flocculation depending on seasonal conditions. These are injected into the raw water immediately before the treatment unit.

The floc settles onto the tube settlers in the clarifier. The water then passes through a two-compartment dual media (sand and anthracite) filter. Once through the filters, the water is chlorinated with sodium hypochlorite. Carus 8500 Ortho-polyphosphate is used for corrosion control and caustic soda is used for pH adjustment. These three chemicals are injected into the piping between the filter and reservoir. The reservoir is located beneath the process floor and is divided into two compartments having a combined capacity of 682 m3.

Two high lift pumps deliver the finished water to the distribution system and a third high lift pump delivers water under fire flow conditions.

A 160-kW-diesel generator provides standby power to the WTP.

List all water treatment chemicals used over this reporting period

- Caustic Soda (Sodium Hydroxide)
- Sodium Hypochlorite
- Nalco-2 (Sodium Aluminate)
- Nalco 8170 polymer
- Aluminum Sulphate
- Carus 8500

Were any significant expenses incurred to?

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
		X	New Lift Station Pump	$22,500.00
		X	Lift Station Conversion	$35,000.00
		X	High Lift Pump Motor	$7,500.00
	INSP		Intake Crib/piping/inspection	$7,392.25
X			Lift Station Panel Install	$26,750.00

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
2023/02/21	HAA RAA Exceedance	82	Ug/L		2023/04/18
2023/05/10	TC present	27	cfu/100ml	Resample	2023/05/15
2023/09/27	TC present	>200	cfu/100ml	resample	2023/10/01

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 #)
Raw	51	0 – 31	0 – 727	N/A	N/A
Treated	62	0 – 0	0 – 0	52	0 – 20
Distribution	107	0 – 0	0 – 200	25	1 – 10

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 (min #)-(max #)
Turbidity*		
Raw (before filter)	8760	0.09 – 10.01 NTU
Treated	8760	0.04 – 0.5 NTU
Chlorine*		
Treated	8760	0.03 – 2.62
Distribution	365	0.27 – 2.61
Fluoride (If the DWS provides fluoridation)	N/A	N/A

NOTE: For continuous monitors use 8760 as the number of samples.

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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
N/A	N/A	N/A	N/A	N/A

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	2023/01/09	> 0.5	µg/L	No
Arsenic	2023/01/09	> 1	µg/L	No
Barium	2023/01/09	9	µg/L	No
Boron	2023/01/09	> 2	µg/L	No
Cadmium	2023/01/09	> 0.1	µg/L	No
Chromium	2023/01/09	> 1	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2023/01/09	> 0.1	µg/L	No
Selenium	2023/01/09	> 0.2	µg/L	No
Sodium	2019/07/22	17.3	mg/L	No
Uranium	2023/01/09	> 1	µg/L	No
Fluoride	2019/07/22	< 0.02	mg/L	No
Nitrite	2023/01/16	> 0.01	mg/L	No
	2023/04/11	> 0.01	mg/L	No
	2023/07/10	> 0.05	mg/L	No
	2023/10/03	> 0.05	mg/L	No
Nitrate	2023/01/16	0.1	mg/L	No
	2023/04/11	0.13	mg/L	No
	2023/07/10	> 0.05	mg/L	No
	2023/10/03	0.31	mg/L	No

Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	N/A	N/A	N/A
Distribution	2	0.1 – 0.2	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor (ug/L) - TW	2023/01/09	< 0.231	µg/L	No
Atrazine & Metabolites	2023/01/09	< 0.5	µg/L	No
Azinphos-methyl (ug/L) - TW	2023/01/09	< 0.173	µg/L	No
Benzene (ug/L) - TW	2023/01/09	< 0.1	µg/L	No
Benzo(a)pyrene (ug/L) - TW	2023/01/09	< 0.01	µg/L	No
Bromoxynil (ug/L) - TW	2023/01/09	< 0.0896	µg/L	No
Carbaryl (ug/L) - TW	2023/01/09	< 2	µg/L	No
Carbofuran (ug/L) - TW	2023/01/09	< 3	µg/L	No
Carbon Tetrachloride (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
Chlorpyrifos (ug/L) - TW	2023/01/09	< 0.173	µg/L	No
Diazinon (ug/L) - TW	2023/01/09	< 0.173	µg/L	No
Dicamba (ug/L) - TW	2023/01/09	< 0.0784	µg/L	No
1,2-Dichlorobenzene (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
1,4-Dichlorobenzene (ug/L) - TW	2023/01/09	< 0.3	µg/L	No
1,2-Dichloroethane (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
1,1-Dichloroethylene (ug/L) - TW	2023/01/09	< 0.3	µg/L	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2023/01/09	< 1	µg/L	No
2,4-Dichlorophenol (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2023/01/09	< 0.336	µg/L	No
Diclofop-methyl (ug/L) - TW	2023/01/09	< 0.112	µg/L	No
Dimethoate (ug/L) - TW	2023/01/09	< 0.173	µg/L	No
Diquat (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
Diuron (ug/L) - TW	2023/01/09	< 9	µg/L	No
Glyphosate (ug/L) - TW	2023/01/09	< 20	µg/L	No
Haloacetic acids (HAA)*	2023/10/03	59.0	µg/L	No
(NOTE: show latest annual average)	2023 Average	71.0	ug/L	No
Malathion (ug/L) - TW	2023/01/09	< 0.173	µg/L	No
Metolachlor (ug/L) - TW	2023/01/09	< 0.116	µg/L	No
Metribuzin (ug/L) - TW	2023/01/09	< 0.116	µg/L	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2023/01/09	< 0.5	µg/L	No
Paraquat (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
PCB (ug/L) - TW	2023/01/09	< 0.06	µg/L	No
Pentachlorophenol (ug/L) - TW	2023/01/09	< 0.3	µg/L	No

Phorate (ug/L) - TW	2023/01/09	< 0.116	µg/L	No
Picloram (ug/L) - TW	2023/01/09	< 0.0784	µg/L	No
Prometryne (ug/L) - TW	2023/01/09	< 0.0578	µg/L	No
Simazine (ug/L) - TW	2023/01/09	< 0.173	µg/L	No
THM (NOTE: show latest annual average)	2023/10/03 2023 Average	57.0 71.0	µg/L µg/L	No No
Terbufos (ug/L) - TW	2023/01/09	< 0.116	µg/L	No
Tetrachloroethylene (ug/L) - TW	2023/01/09	< 0.3	µg/L	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2023/01/09	< 0.3	µg/L	No
Triallate (ug/L) - TW	2023/01/09	< 0.116	µg/L	No
Trichloroethylene (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
2,4,6-Trichlorophenol (ug/L) - TW	2023/01/09	< 0.2	µg/L	No
Trifluralin (ug/L) - TW	2023/01/09	< 0.116	µg/L	No
Vinyl Chloride (ug/L) - TW	2023/01/09	< 0.1	µg/L	No
MCPA	2023/01/09	< 5.6	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
Sodium	17.3	Mg/L	2019/07/22
2023 HAA Running Annual Average (RAA)	71.0	µg/L	N/A
2023 THM Running Annual Average (RAA)	71.0	µg/L	N/A
Benzo(a)pyrene	< 0.01	Ug/L	2023/01/09

2023 Section 11 Annual Report

Caramat Drinking Water System

February 2024

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Ontario **Drinking-Water Systems Regulation O. Reg. 170/03**

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000184**
Drinking-Water System Name:	Caramat Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Small Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2023

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 [X]

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

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Geraldton Ward Office (Administration)
1800 Main Street
Geraldton, ON P0T 1M0
Longlac Ward Office
105 Hamel Avenue
Longlac, ON P0T 2A0

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?
Yes [ ] No [ ]

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?
Yes [ ] No [ ]

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
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 of its drinking water?

Yes [ ] No [ ]

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

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] Public access/notice via a newspaper
[X] 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 treatment process generally consists of pre-ozonation, filtration through the multi-stage slow sand filter, primary chlorination, storage, and secondary chlorination.

The filtration system consists of a 75.2 m^3/day pre-packaged, two-train, multi-stage filtration system designed and manufactured by MS Filter Inc. The two-train roughing filter, slow sand filter and granular activated carbon (GAC) contractor are all contained within one overall filter tank. The ozone generation and contactor equipment is separate from the filter tank.

Primary disinfection is achieved using a 12% sodium hypochlorite solution injected into the raw water, downstream of the filtration system, by means of two (duty/stand-by) chemical metering pumps. The necessary chlorine contact time is achieved within the two 57 m^3 reservoirs. The reservoirs provide the necessary minimum contact time for adequate disinfection as well as equalization and emergency water storage as per MOE guidelines.

Two high lift pumps (duty and stand-by) draw treated water from the reservoirs to the distribution system.

One backwash pump also draws treated water from the reservoirs and is used to backwash the filtration system.

The free chlorine residual of the treated water is monitored continuously by an online analyzer, and recorded in the PLC.

A magnetic flow meter measures the treated water flow to the distribution system. This information is recorded in the PLC.

Secondary disinfection is achieved using a 12% sodium hypochlorite solution injected into the high lift pump discharge header by means of two (duty and stand-by) chemical metering pumps.

A 60-kW-diesel generator in a stand alone container provides standby power to the WTP.

In November 2009, an oxygen concentrator system was installed and put into operation

List all water treatment chemicals used over this reporting period

- Sodium Hypochlorite 12%
- Oxygen (generated on site)
- Ozone (generated on site)
- Granular activated carbon (GAC)

Were any significant expenses incurred to?

[ ] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
			SCADA PC System Upgrade	$, 24,506.00
			Chlorine Analyzer Controller	$ 8,757.90
			Intake Inspection	$ 8,532.10

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 #)
Raw	N/A	N/A	N/A	N/A	N/A
Treated	N/A	N/A	N/A	N/A	N/A
Distribution	54	0	0 – 0	49	1 – 20

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 (min #)-(max #)
Turbidity*		
Raw	100	0.84 – 6.86 NTU
Filter #1	8760	0.00 – 1.99 NTU
Filter #2	8760	0.00 – 1.97NTU
Chlorine*		
Treated	8760	0.00 – 2.63
Distribution	111	0.08 – 1.93
Fluoride (If the DWS provides fluoridation)	N/A	N/A

***NOTE**: For continuous monitors use 8760 as the number of samples.*

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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
July 4, 2011 Municipal Drinking Water Licence (MDWL)#225-101	Nitrosodimethylamine (NDMA) Quarterly	2023/01/09 2023/04/04 2023/07/04 2023/10/03	<0.00090 <0.00090 <0.00090 <0.00090	µg/L µg/L µg/L µg/L
July 4, 2011 Municipal Drinking Water Licence (MDWL)#225-101	Trihalomethanes (THM's) Monthly	2023/01/09 2023/02/13 2023/03/06 2023/04/04 2023/05/01 2023/06/05 2023/07/04 2023/08/01 2023/09/05 2023/10/03 2023/11/06 2023/12/04	31.8 24.4 28.2 38.2 13.7 14 29 42 27 25 25.8 28.3	µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L µg/L

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	2022/01/17	< 0.6	µg/L	No
Arsenic	2022/01/17	< 1.0	µg/L	No
Barium	2022/01/17	18.0	µg/L	No
Boron	2022/01/17	< 50.0	µg/L	No
Cadmium	2022/01/17	< 0.1	µg/L	No
Chromium	2022/01/17	< 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2022/01/17	< 0.1	µg/L	No
Selenium	2022/01/17	< 1.0	µg/L	No
Sodium	2022/01/17	5.74	mg/L	No
Uranium	2022/01/17	< 2.0	µg/L	No
Fluoride	2022/01/17	< 0.022	mg/L	No
Nitrite	2023/01/09	> 0.01	mg/L	No
	2023/04/04	> 0.01	mg/L	No
	2023/07/07	> 0.05	mg/L	No
	2023/10/03	> 0.05	mg/L	No
Nitrate	2023/01/09	0.35	mg/L	No
	2023/04/04	0.58	mg/L	No
	2023/07/07	0.64	mg/L	No
	2023/10/03	> 0.05	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems**,** small
municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	2	1 – 1	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	2022/01/17	<0.1	µg/L	No
Atrazine + N-dealkylated metobolites	2022/01/17	<0.2	µg/L	No
Azinphos-methyl	2022/01/17	<0.1	µg/L	No
Benzene	2022/01/19	<0.5	µg/L	No
Benzo(a)pyrene	2022/01/17	<0.005	µg/L	No
Bromoxynil	2022/01/17	<0.2	µg/L	No
Carbaryl	2022/01/17	<0.2	µg/L	No
Carbofuran	2022/01/17	<0.2	µg/L	No
Carbon Tetrachloride	2022/01/19	<0.2	µg/L	No
Chlorpyrifos	2022/01/17	<0.1	µg/L	No
Diazinon	2022/01/17	<0.1	µg/L	No
Dicamba	2022/01/19	<0.2	µg/L	No
1,2-Dichlorobenzene	2022/01/19	<0.5	µg/L	No
1,4-Dichlorobenzene	2022/01/19	<0.5	µg/L	No
1,2-Dichloroethane	2022/01/19	<0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2022/01/19	<0.5	µg/L	No
Dichloromethane (methylene chloride)	2022/01/19	<5.0	µg/L	No
2-4 Dichlorophenol	2022/01/17	<0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2022/01/17	<0.2	µg/L	No
Diclofop-methyl	2022/01/17	<0.2	µg/L	No
Dimethoate	2022/01/17	<0.1	µg/L	No
Diquat	2022/01/17	<1.0	µg/L	No
Diuron	2022/01/17	<1.0	µg/L	No
Glyphosate	2022/01/17	<5.0	µg/L	No
Haloacetic acids (HAA) **(**NOTE**:** show latest annual average**)**	2023/10/03 2023 Average	76.0 67.5	µg/L ug/L	No No
Malathion	2022/01/17	<0.1	µg/L	No
Metolachlor	2022/01/17	<0.1	µg/L	No
Metribuzin	2022/01/17	<0.1	µg/L	No
Monochlorobenzene	2022/01/19	<0.5	µg/L	No
Paraquat	2022/01/17	<1.0	µg/L	No
Pentachlorophenol	2022/01/17	<0.5	µg/L	No
Phorate	2022/01/17	<0.1	µg/L	No
Picloram	2022/01/17	<0.2	µg/L	No
Polychlorinated Biphenyls(PCB)	2022/01/25	<0.035	µg/L	No
Prometryne	2022/01/17	<0.1	µg/L	No
Simazine	2022/01/17	<0.1	µg/L	No
THM **(**NOTE**:** show latest annual average**)**	2023/10/03 2023 Average	25.0 26.9	µg/L µg/L	No No
Terbufos	2022/01/17	<0.2	µg/L	No
Tetrachloroethylene	2022/01/19	<0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2022/01/17	<0.5	µg/L	No
Triallate	2022/01/17	<0.1	µg/L	No

Trichloroethylene	2022/01/19	<0.5	µg/L	No
2,4,6-Trichlorophenol	2022/01/17	<0.5	µg/L	No
Trifluralin	2022/01/17	<0.1	µg/L	No
Vinyl Chloride	2022/01/19	<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
2023 HAA – Running Annual Average (RAA)	67.5	µg/L	N/A

2023 Section 11 Annual Report

Geraldton Drinking Water System

February 2024

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**210000292**
Drinking-Water System Name:	Geraldton Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2023

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 [X]

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

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Geraldton Ward Office (Administration)
1800 Main Street
Geraldton, ON
P0T 1M0

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?
Yes [ ] No [ ]

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?
Yes [ ] No [ ]

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
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 of its drinking water?

Yes [ ] No [ ]

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

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] Public access/notice via a newspaper
[X] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[ ] Public access/notice via other method

_____

Describe your Drinking-Water System

Cecile Lake is the sole source of supply for the Geraldton water system. The surface water is conveyed by gravity through two (2) coarse screens to the intake well and low lift pumping chamber.

Prior to entering the treatment plant, Alum (aluminum sulphate) and polymer are added for coagulation. Potassium permanganate is added to the raw water for manganese removal as required.

The raw water passes through stages of mixing, flocculation, sedimentation with the aid of tube settlers and passes through a filter of mixed media consisting of anthracite, sand and gravel.

Disinfection is provided by injecting chlorine gas into the filtered water before it enters the storage reservoirs.

Three high lift pumps deliver water to the distribution system.
A 200-kW-diesel generator provides standby power to the WTP.

List all water treatment chemicals used over this reporting period

- Aluminum Sulphate A-10
- Magnafloc LT-20 polymer
- Potassium Permanganate
- Chlorine Gas

Were any significant expenses incurred to?

[ ] Install required equipment
[ ] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
		X	High Lift Pump	$ 50,000.00
	INSP		Intake Inspection	$ 7,392.25

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
2023/02/02	NC - Missed HPC sampling Sept 2022 to Jan 2023				
2023/04/13	Other Observation - Loss of pressure due to water break. 16 homes 2 business affected			Sampled one set Bacti	2023/04/19
2023/05/08	Main Break			Sampled one set Bacti	2023/05/12
2023/06/19	Other Observation - Loss of pressure due to water break. 20 homes 2 business affected			Repair and Flush, Sample at 2 locations	2023/06/23
2023/07/19	Installing new main with valves leaked on July 19 2023.			Collect two samples 16hrs apart	2023/07/25
2023/08/01	Loss of pressure during a hydrant replacement			Collect one bacti sample	2023/08/04
2023/08/28	Loss of Data - HMI failure			Replace communications card, alarms active during outage and plant operation.	2023/08/28
2023/09/13	Main Break			Collect 2 sets of Bacti Samples	2023/09/19
2023/09/27	TC Present - Distribution 107 Edith	68	cfu/100 ml	resample	2023/10/04
2023/09/27	TC Present - Treated	NDOGT		resample	2023/10/04
2023/09/30	TC Present - Distribution 101 Edith (second resample AWQI163645)	28	cfu/100ml	Resample	2023/10/
2023/10/30	Main Break			Collect bacti sample	2023/11/03

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 #)
Raw	53	0 – 2	0 – 96	N/A	N/A
Treated	53	0 – 0	0 – 0	52	1 – 30
Distribution	179	0 - 0	0 - 68	70	1 – 2000

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 (min #)-(max #)
Turbidity*		
Raw	243	0.64 – 4.33 NTU
Filter #1	8760	0.00 – 3.00 NTU
Filter #2	8760	0.00 – 3.00 NTU
Chlorine*		
Treated	8760	0.00 – 5.0
Distribution	406	0.26 – 1.68
Fluoride (If the DWS provides fluoridation)	N/A	N/A

NOTE: For continuous monitors use 8760 as the number of samples.

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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
July 4, 2011 Municipal Drinking Water Licence 225-104	Suspended Solids (Composite) Frequency: Monthly Location: Point of Discharge to Yvonne Lake	2023/06/21 2023/07/25 2023/08/29 2023/09/18 2023/10/24	<0.67 2.670 2.00 1.00 <0.67	mg/L mg/L mg/L mg/L mg/L
Note: Samples can only be collected when conditions permit. Winter conditions prevent sampling as the discharge location is frozen.		Average Annual Concentration for 2023	1.402	mg/L

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	2023/01/17	> 0.5	µg/L	No
Arsenic	2023/01/17	> 1	µg/L	No
Barium	2023/01/17	9	µg/L	No
Boron	2023/01/17	> 2	µg/L	No
Cadmium	2023/01/17	> 0.1	µg/L	No
Chromium	2023/01/17	1	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2023/01/17	> 0.1	µg/L	No
Selenium	2023/01/17	0.5	µg/L	No
Sodium	2019/01/09	17.2	mg/L	No
Uranium	2023/01/17	> 1	µg/L	No
Fluoride	2019/01/09	< 0.02	mg/L	No
Nitrite	2023/01/17 2023/04/11 2023/07/26 2023/11/20	> 0.01 > 0.01 0.57 < 0.01	mg/L mg/L mg/L mg/L	No No No No
Nitrate	2023/01/17 2023/04/11 2023/07/26 2023/11/20	> 0.03 0.2 0.05 < 0.02	mg/L mg/L mg/L mg/L	No No No No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	2	0.2 – 0.65	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	2023/01/17	< 0.248	µg/L	No
Atrazine & Metabolites	2023/01/17	< 0.5	µg/L	No
Azinphos-methyl	2023/01/17	< 0.186	µg/L	No
Benzene	2023/01/17	< 0.1	µg/L	No
Benzo(a)pyrene	2023/01/17	< 0.01	µg/L	No
Bromoxynil	2023/01/17	< 0.0967	µg/L	No
Carbaryl	2023/01/17	< 3	µg/L	No
Carbofuran	2023/01/17	< 5	µg/L	No
Carbon Tetrachloride	2023/01/17	< 0.2	µg/L	No
Chlorpyrifos	2023/01/17	< 0.186	µg/L	No
Diazinon	2023/01/17	< 0.186	µg/L	No
Dicamba	2023/01/17	0.089	µg/L	No
1,2-Dichlorobenzene	2023/01/17	< 0.2	µg/L	No
1,4-Dichlorobenzene	2023/01/17	< 0.3	µg/L	No
1,2-Dichloroethane	2023/01/17	< 0.2	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2023/01/17	< 0.3	µg/L	No
Dichloromethane	2023/01/17	< 1	µg/L	No
2-4 Dichlorophenol	2023/01/17	< 0.2	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2023/01/17	0.85	µg/L	No
Diclofop-methyl	2023/01/17	< 0.121	µg/L	No
Dimethoate	2023/01/17	< 0.186	µg/L	No
Diquat	2023/01/17	< 0.2	µg/L	No
Diuron	2023/01/17	< 20	µg/L	No
Glyphosate	2023/01/17	< 20	µg/L	No

Haloacetic acids (HAA)*	2023/11/20	32.2	µg/L	No
(NOTE**:** show latest annual average**)**	2023 Average	45.3		No
Malathion	2023/01/17	< 0.186	µg/L	No
Metolachlor	2023/01/17	< 0.124	µg/L	No
Metribuzin	2023/01/17	< 0.124	µg/L	No
Monochlorobenzene	2023/01/17	< 0.5	µg/L	No
Paraquat	2023/01/17	< 0.2	µg/L	No
Pentachlorophenol	2023/01/17	< 0.3	µg/L	No
Phorate	2023/01/17	< 0.124	µg/L	No
Picloram	2023/01/17	0.47	µg/L	No
Polychlorinated Biphenyls(PCB)	2023/01/17	< 0.06	µg/L	No
Prometryne	2023/01/17	< 0.0619	µg/L	No
Simazine	2023/01/17	< 0.186	µg/L	No
THM	2023/11/20	52.1	µg/L	No
(NOTE**:** show latest annual average**)**	2023 Average	45.0	µg/L	No
Terbufos	2023/01/17	< 0.124	µg/L	No
Tetrachloroethylene	2023/01/17	< 0.3	µg/L	No
2,3,4,6-Tetrachlorophenol	2023/01/17	< 0.3	µg/L	No
Triallate	2023/01/17	< 0.124	µg/L	No
Trichloroethylene	2023/01/17	< 0.2	µg/L	No
2,4,6-Trichlorophenol	2023/01/17	< 0.2	µg/L	No
Trifluralin	2023/01/17	< 0.124	µg/L	No
Vinyl Chloride	2023/01/17	< 0.1	µg/L	No
MCPA	2023/01/17	29	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
2023 HAA Running Annual Average (RAA)	45.3	ug/L	N/A
Nitrite	0.57	Mg/L	2023/07/26
Benzo(a)pyrene	< 0.1	Ug/L	2023/01/17

2023 Section 11 Annual Report

Longlac Drinking Water System

February 2024

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Ontario **Drinking-Water Systems Regulation O. Reg. 170/03**

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000264**
Drinking-Water System Name:	Longlac Water Treatment Plant
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2023

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 [X]

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

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Geraldton Ward Office (Administration)
1800 Main Street
Geraldton, ON P0T 1M0
Longlac Ward Office
105 Hamel Avenue
Longlac, ON P0T 2A0

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?
Yes [ ] No [ ]

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?
Yes [ ] No [ ]

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
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 of its drinking water?

Yes [ ] No [ ]

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

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] Public access/notice via a newspaper
[X] 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 Longlac Water Treatment Plant (WTP), located on Park Street, draws raw water from Long Lake. The WTP is a package plant, consisting of two Graver Reactors/Filters. Treatment includes coagulation, flocculation, and sedimentation with the aid of tube settlers, filtration, corrosion control and disinfection. This plant has a design capacity of 6,050 m^3/day. The WTP presently serves a population of approximately 1750 persons within the community and 500 persons within two First Nations. The WTP was designed with the anticipation that the community would experience growth.

Long Lake is the sole source of supply for the Longlac water system. A surface water intake with 245 m of 450 mm diameter intake piping through two course screens convey water by gravity to the intake well, and the low lift pumping chamber. Alum is the coagulant and the flocculation aid is Nalclear 8181 (polymer), they are added to the raw water between the low lift pumps and the treatment unit. The water is then pumped to the *Graver* Reactors/Filters Treatment Unit. The Reactivators are solids contact clarifiers combining coagulation, flocculation, and sedimentation in one unit. The water is flocculated, and the floc settled out using tube settlers in the solids contact clarifier and by maintaining a sludge blanket. The water then passes through a two-compartment dual media (sand and anthrafilt) filter.

Once through the filters the water is chlorinated with chlorine gas; and Carus 8500 orthophosphate is added for corrosion control. The water then enters a treated water reservoir. The reservoir, located beneath the process floor, is divided into three compartments with a total capacity of 705 m^3. Three high lift pumps deliver the finished water to the distribution system. The elevated storage tank with a capacity of 2273 m^3 provides emergency storage and fire flow. Pressure is controlled by a pilot operated Pressure Relief Valve.

Wastewater from the filter backwash and clarifier blowdown is collected in a wastewater storage tank, and then pumped to the municipal sanitary sewer system.

A 200-kW-diesel generator provides standby power to the entire WTP.

List all water treatment chemicals used over this reporting period

- Aluminum Sulphate
- Chlorine Gas
- Carus 8500
- Nalclear 8181 Polymer

Were any significant expenses incurred to?

[X] Install required equipment
[] Repair required equipment
[X] Replace required equipment

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

Install	Repair	Replace	Description	Expense
	INSP		Intake Inspection	$17,020.00
		X	Critical Spare Metering (Alum/Poly)	$10,000.00
		X	Filter Control Valve	$10,000.00

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
2023/01/15	Other Observation - Loss of pressure (Forestry- 75 residences, 10 Business, 3 schools)			Flush and one Bacti sample collected downstream of break.	2023/01/18
2023/02/21	HAA RAA Exceedance	82	ug/L		
2023/04/19	Lead Exceedance	37	mg/L	Resampled	2023/04/27
2023/06/13	Other Observation - Loss of pressure Ginoogaming - 200 residences and sawmill			flush and resample bacti	2023/06/16
2023/07/25	Chlorine Analyzer failure	0	mg/L	replaced UPS backup unit	2023/07/25
2023/08/11	EC Exceedance on treated sample	>200	cfu/100ml	Two sets samples including treated, Plant washroom and closest user as per MOH. Increase disinfection.	2023/08/13
2023/08/23	TC Exceedance on Distribution sample (LCBO)	2	cfu/100ml	Resample upstream, at location and downstream	2023/08/25

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 #)
Raw	52	0 – 22	0 – 308	N/A	N/A
Treated	52	0 – 200	0 – 200	52	1 – 90
Distribution	124	0 – 0	0 – 2	52	1 – 120

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 (min #)-(max #)
Turbidity*		
Raw	240	0.66 – 5.40 NTU
Filter #1	8760	0.0 – 3.00 NTU
Filter #2	8760	0.0 – 3.00 NTU
Chlorine*		
Treated	8760	0.00 – 4.31
Distribution	236	1.33 – 2.16
Fluoride (If the DWS provides fluoridation)	N/A	N/A

NOTE: For continuous monitors use 8760 as the number of samples.

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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
N/A	N/A	N/A	N/A	N/A

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	2023/01/09	> 0.5	µg/L	No
Arsenic	2023/01/09	> 1	µg/L	No
Barium	2023/01/09	8	µg/L	No
Boron	2023/01/09	> 2	µg/L	No
Cadmium	2023/01/09	> 0.1	µg/L	No
Chromium	2023/01/09	> 1	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2023/01/09	> 0.1	µg/L	No
Selenium	2023/01/09	> 0.2	µg/L	No
Sodium	2023/01/09	2.7	mg/L	No
Uranium	2023/01/09	> 1	µg/L	No
Fluoride	2023/01/09	> 0.05	mg/L	No
Nitrite	2023/01/09	> 0.01	mg/L	No
	2023/04/04	0.25	mg/L	No
	2023/07/04	0.08	mg/L	No
	2023/10/03	< 0.01	mg/L	No
Nitrate	2023/01/09	0.11	mg/L	No
	2023/04/04	0.12	mg/L	No
	2023/07/04	0.06	mg/L	No
	2023/10/03	0.025	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	4	0.1 – 37	1

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	2023/01/09	< 0.229	µg/L	No
Atrazine	2023/01/09	< 0.5	µg/L	No
Atrazine & Metabloites	2023/01/09	< 0.172	µg/L	No
Azinphos-methyl	2023/01/09	< DL 0.1	µg/L	No
Benzene	2023/01/09	< 0.01	µg/L	No
Benzo(a)pyrene	2023/01/09	< 0.0943	µg/L	No
Bromoxynil	2023/01/09	< 1	µg/L	No
Carbaryl	2023/01/09	< 2	µg/L	No
Carbofuran	2023/01/09	< 0.2	µg/L	No
Carbon Tetrachloride	2023/01/09	< 0.172	µg/L	No
Chlorpyrifos	2023/01/09	< 0.172	µg/L	No
Diazinon	2023/01/09	< 0.0825	µg/L	No
Dicamba	2023/01/09	< 0.229	µg/L	No
1,2-Dichlorobenzene	2023/01/09	< 0.2	µg/L	No
1,4-Dichlorobenzene	2023/01/09	< 0.3	µg/L	No
1,2-Dichloroethane	2023/01/09	< 0.2	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2023/01/09	< 0.3	µg/L	No
Dichloromethane	2023/01/09		µg/L	No
2-4 Dichlorophenol	2023/01/09	< 0.2	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2023/01/09	< 0.353	µg/L	No
Diclofop-methyl	2023/01/09	< 0.118	µg/L	No
Dimethoate	2023/01/09	< 0.172	µg/L	No
Diquat	2023/01/09	< 0.2	µg/L	No
Diuron	2023/01/09	< 7	µg/L	No
Glyphosate	2023/01/09	< 20	µg/L	No
Haloacetic acids (HAA) **(**NOTE**:** show latest annual average**)**	2023/10/03 2023 Average	57.5 61.1	µg/L	No No
Malathion	2023/01/09	< 0.172	µg/L	No
Metolachlor	2023/01/09	< 0.115	µg/L	No
Metribuzin	2023/01/09	< 0.115	µg/L	No
Monochlorobenzene	2023/01/09	< 0.5	µg/L	No
Paraquat	2023/01/09	< 0.2	µg/L	No
Pentachlorophenol	2023/01/09	< 0.3	µg/L	No
Phorate	2023/01/09	< 0.115	µg/L	No
Picloram	2023/01/09	< 0.0825	µg/L	No
Polychlorinated Biphenyls(PCB)	2023/01/09	< 0.06	µg/L	No
Prometryne	2023/01/09	< 0.0573	µg/L	No
Simazine	2023/01/09	< 0.172	µg/L	No
THM **(**NOTE**:** show latest annual average**)**	2023/10/03 2023 Average	61.8 47.6	µg/L µg/L	No No
Terbufos	2023/01/09	< 0.115	µg/L	No
Tetrachloroethylene	2023/01/09	< 0.3	µg/L	No
2,3,4,6-Tetrachlorophenol	2023/01/09	< 0.3	µg/L	No
Triallate	2023/01/09	< 0.115	µg/L	No
Trichloroethylene	2023/01/09	< 0.2	µg/L	No

2,4,6-Trichlorophenol	2023/01/09	< 0.2	µg/L	No
Trifluralin	2023/01/09	< 0.115	µg/L	No
Vinyl Chloride	2023/01/09	< 0.1	µg/L	No
MCPA	2023/01/09	< 5.89	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
2023 HAA Running Annual Average (RAA)	61.1	µg/L	N/A
Lead	37	Ug/L	2023/04/12
Benzo(a)pyrene	< 0.01	Ug/L	2023/01/09

2023 Section 11 Annual Report

Nakina Drinking Water System

February 2024

Prepared by the

Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Section 11 ANNUAL REPORT

Drinking-Water System Number:	**220000200**
Drinking-Water System Name:	Nakina Well Supply
Drinking-Water System Owner:	The Corporation of the Municipality of Greenstone
Drinking-Water System Category:	**Large Municipal Residential Drinking Water-System**
Period being reported:	January 1 – December 31, 2023

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 [X]

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

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Geraldton Ward Office (Administration)
1800 Main Street
Geraldton, ON P0T 1M0
Nakina Ward Office
200 Centre Avenue
Nakina, ON P0T 2H0

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?
Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

N/A

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
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 of its drinking water?
Yes [ ] No [ ]

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

[X] Public access/notice via the web
[X] Public access/notice via Government Office (Municipal)
[X] Public access/notice via a newspaper
[X] 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 Nakina Water Supply System is supplied by two (2) groundwater wells. The water supply aquifer utilized by the Corporation of the Municipality of Greenstone – Nakina Ward lies within an esker complex (significant sand and gravel deposit). These deposits are common throughout the area and the most extensive of these features trend southwesterly through the Township. Composed primarily of gravelly sand, this broad belt stretches approximately 4 km in width and 60 km in length. The two wells are located approximately 72 m from the southeastern shore of Rounds Lake.

The wells are housed within the same building, and a common header delivers water to the reservoir beneath the high lift pumping station. The water is chlorinated using sodium hypochlorite at the entry point to the reservoir. The high lift and fire pumps draw water from the reservoir for the delivery to the system.

Wells #1 & #2 are each capable of supplying 18.9 L/s, and were designed to be operated simultaneously for a total of 37.9 L/s. Fire flow and emergency storage is supplied from the reservoir. The facility presently serves a population of approximately 700 persons and was designed with the anticipation of growth within the community.

A 60 kW diesel generator provides standby power for the well pumps and a 200 kW diesel generator provides power for the chemical feed system and the high lift and fire pumps.

In a hydro geological study conducted by KGS Group, the wells were identified **as not** under the direct influence of surface water.

List all water treatment chemicals used over this reporting period

- Sodium Hypochlorite

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

Install	Repair	Replace	Description	Expense

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
2023/01/23	Repair on a leaking water line Thorton			Flushed 10 min and sampled downstream as per MOH	2023/01/25
2023/01/25	Repair on a broken water line Parkview			Flushed 10 min and sampled as per MOH	2023/01/28
2023/09/19	Low pressure to replace service water line Northwood			Flushed 10 min and sampled as per MOH	2023/09/21
2023/09/20	Loss of pressure due to replacing service line			Flushed and collected bacti sample	2023/09/22
2023/09/27	TC Present	NDOGN		resample	2023/09/30
2023/10/16	Hydrant Repair			Flush and sample	2023/10/19

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 #)
Raw					
Well 1	46	0 – 1	0 – 1	N/A	N/A
Well 2	46	0 – 1	0 – 5	N/A	N/A
Treated	50	0 – 0	0 – 0	49	1 – 60
Distribution	110	0 – 0	0 – 0	50	1 – 20

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 (min #)-(max #)
Turbidity*		
Raw Well #1	80	0.08 – 0.30 NTU
Raw Well #2	153	0.06 – 0.26 NTU
Treated	8760	0.00 – 4.00 NTU
Chlorine*		
Treated	8760	0.25 – 5.00
Distribution	350	0.48 – 1.23
Fluoride (If the DWS provides fluoridation)	N/A	N/A

NOTE: For continuous monitors use 8760 as the number of samples.

** Turbidity & chlorine Min/Max (lows/highs) are due to planned maintenance and not plant upset.*

***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
N/A	N/A	N/A	N/A	N/A

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	2021/04/12	< 0.6	µg/L	No
Arsenic	2021/04/12	< 1.0	µg/L	No
Barium	2021/04/12	22.0	µg/L	No
Boron	2021/04/12	< 50.0	µg/L	No
Cadmium	2021/04/12	< 0.1	µg/L	No
Chromium	2021/04/12	< 1.0	µg/L	No
***Lead**	Refer to Summary Table Below			
Mercury	2021/04/12	< 0.1	µg/L	No
Selenium	2021/04/12	< 5.0	µg/L	No
Sodium	2019/12/09	12.5	mg/L	No
Uranium	2021/04/12	< 5.0	µg/L	No
Fluoride	2019/12/09	0.051	mg/L	No
Nitrite	2023/01/03	> 0.01	mg/L	No
	2023/04/04	> 0.01	mg/L	No
	2023/07/05	> 0.05	mg/L	No
	2023/10/10	< 0.01	mg/L	No
Nitrate	2023/01/03	0.16	mg/L	No
	2023/04/04	0.17	mg/L	No
	2023/07/05	0.11	mg/L	No
	2023/10/10	0.115	mg/L	No

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period
(applicable to the following drinking water systems; large municipal residential systems**,** small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	Sampling not required as per Ont. Regulation 170	-	-
Distribution	2	0.15 – 1.65	0

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	2021/04/12	< 0.1	µg/L	No
Atrazine + N-dealkylated metobolites	2021/04/12	< 0.2	µg/L	No
Azinphos-methyl	2021/04/12	< 0.1	µg/L	No
Benzene	2021/04/12	< 0.5	µg/L	No
Benzo(a)pyrene	2021/04/12	< 0.005	µg/L	No
Bromoxynil	2021/04/12	< 0.2	µg/L	No
Carbaryl	2021/04/12	< 0.2	µg/L	No
Carbofuran	2021/04/12	< 0.2	µg/L	No
Carbon Tetrachloride	2021/04/12	< 0.2	µg/L	No
Chlorpyrifos	2021/04/12	< 0.1	µg/L	No
Diazinon	2021/04/12	< 0.1	µg/L	No
Dicamba	2021/04/12	< 0.2	µg/L	No
1,2-Dichlorobenzene	2021/04/12	< 0.5	µg/L	No
1,4-Dichlorobenzene	2021/04/12	< 0.5	µg/L	No
1,2-Dichloroethane	2021/04/12	< 0.5	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	2021/04/12	< 0.5	µg/L	No
Dichloromethane	2021/04/12	< 5.0	µg/L	No
2-4 Dichlorophenol	2021/04/12	< 0.3	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2021/04/12	< 0.2	µg/L	No
Diclofop-methyl	2021/04/12	< 0.2	µg/L	No
Dimethoate	2021/04/12	< 0.1	µg/L	No
Diquat	2021/04/12	< 1.0	µg/L	No
Diuron	2021/04/12	< 1.0	µg/L	No

Glyphosate	2021/04/12	< 5.0	µg/L	No
Haloacetic acids (HAA)*	2023/10/05	9.3	µg/L	No
(NOTE**:** show latest annual average**)**	2023 Average	9.8		No
Malathion	2021/04/12	< 0.1	µg/L	No
Metolachlor	2021/04/12	< 0.1	µg/L	No
Metribuzin	2021/04/12	< 0.1	µg/L	No
Monochlorobenzene	2021/04/12	< 0.5	µg/L	No
Paraquat	2021/04/12	< 1.0	µg/L	No
Pentachlorophenol	2021/04/12	< 0.035	µg/L	No
Phorate	2021/04/12	< 0.5	µg/L	No
Picloram	2021/04/12	< 0.1	µg/L	No
Polychlorinated Biphenyls(PCB)	2021/04/12	< 0.2	µg/L	No
Prometryne	2021/04/12	< 0.1	µg/L	No
Simazine	2021/04/12	< 0.1	µg/L	No
THM	2023/10/05	6.2	µg/L	No
(NOTE: show latest annual average)	2023 Average	12.0	µg/L	No
Terbufos	2021/04/12	< 0.2	µg/L	No
Tetrachloroethylene	2021/04/12	< 0.5	µg/L	No
2,3,4,6-Tetrachlorophenol	2021/04/12	< 0.5	µg/L	No
Triallate	2021/04/12	< 0.1	µg/L	No
Trichloroethylene	2021/04/12	< 0.5	µg/L	No
2,4,6-Trichlorophenol	2021/04/12	< 0.5	µg/L	No
2-methyl-4-chlorophenoxyacetic acid (MCPA)	2021/04/12	< 0.2	ug/L	No
Trifluralin	2021/04/12	< 0.1	µg/L	No
Vinyl Chloride	2021/04/12	< 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
Sodium	12.5	Mg/L	2019/12/09