



ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

LION'S HEAD
DRINKING WATER SYSTEM

Large Municipal Residential

SECTION 11
ANNUAL REPORT

For the period of
JANUARY 1, 2022 TO DECEMBER 31, 2022

Prepared by the Ontario Clean Water Agency
For the Municipality of Northern Bruce Peninsula

This report was prepared in accordance with the requirements of [O.Reg 170/03, Section 11, Annual reports](#) for the following system and reporting period:

Drinking Water System Number:	220002672
Drinking Water System Name:	Lion's Head Drinking Water System
Drinking Water System Owner:	Municipality of Northern Bruce Peninsula
Drinking Water System Category:	Large Municipal Residential
Reporting Period:	January 1, 2022 – December 31, 2022

Does your Drinking Water System serve more than 10,000 people?

No

Is your Annual Report available to the public at no charge on a website on the Internet?

Yes

Note: If a large municipal residential system serves more than 10,000 people, the owner of the system shall ensure that a copy of every report prepared under this section is available to the public at no charge on a website on the Internet. O. Reg. 170/03, Section 11. (10)

Location where Summary Report required under O. Reg 170/03, Schedule 22 will be available for inspection. (O. Reg 170/03, Section 11.(6)(5)):

- Municipality of Northern Bruce Peninsula, 56 Lindsay Rd #5 RR 2, Lion's Head ON, N0G 1W0
- <https://www.northbrucepeninsula.ca/en/live/utilities.aspx? mid =16210>

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?

N/A

How system users are notified that the annual report is available, and is free of charge:

- | | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Public access/notice via the web |
| <input checked="" type="checkbox"/> | Public access/notice via Government Office |
| <input type="checkbox"/> | Public access/notice via a newspaper |

- | | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Public access/notice via Public Request |
| <input type="checkbox"/> | Public access/notice via a Public Library |
| <input type="checkbox"/> | Public access/notice via other method: _____ |

Description of Drinking Water System (O.Reg 170/03, Section 11.(6)(a)):

The Lion's Head Drinking Water System (DWS) is a Class II Treatment and Class I Distribution System and is supplied by Isthmus Bay (surface water).

The treatment system consists of the following components:

- Chlorination System (for zebra mussel control, primary disinfection and secondary disinfection)
- Membrane filtration
- Residuals Management (backwash wastewater tank, with supernatant transfer to the storm sewer)
- Chlorine Contact Tanks/ Baffled Reservoir (for storage and to achieve the required contact time)
- Standby diesel generator (one for the low lift pumping station and one for the treatment plant)
- Process control and monitoring equipment

The Lion's Head Distribution System consists of approximately 12 kilometers of distribution watermains.

List of water treatment chemicals used by the system during the reporting period (O.Reg 170/03, Section 11.(6)(a)):

- | |
|---|
| <ul style="list-style-type: none">• Sodium Hypochlorite 12% |
|---|

Significant expenses were incurred to:

- | | |
|-------------------------------------|---------------------------------------|
| <input checked="" type="checkbox"/> | Install required equipment |
| <input checked="" type="checkbox"/> | Repair required equipment |
| <input checked="" type="checkbox"/> | Replace required equipment |
| <input type="checkbox"/> | No significant expenses were incurred |

Description of major expenses during the reporting period to install, repair or replace required equipment (O.Reg 170/03, Section 11.(6)(e)):

- | |
|---|
| <ul style="list-style-type: none">• Replaced actuator valve on Pall Skid B• Replaced clearwell level controller• Replaced PLC power supply• Replaced PLC analog output card• Replaced hot water tank• Miscellaneous water distribution parts |
|---|

Summary of any reports/notices submitted to the Ministry and/or Spills Action Centre in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 during the reporting period, including a description of any corrective actions taken under Schedule 17 or 18 (O. Reg 170/03, Section 11.(6)(b),(d):

Incident Date (yyyy/mm/dd)	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date (yyyy/mm/dd)
N/A	N/A	N/A	N/A	N/A	N/A

Table 1. Microbiological testing done under the Schedule 11 of Regulation 170/03 during this reporting period (O.Reg 170/03, Section 11.(6)(c)).

Location	Number of Samples	Range of E. Coli or Fecal Results		Range of Total Coliform Results		Number of HPC Samples	Range of HPC Samples	
		Min.	Max.	Min.	Max.		Min.	Max.
Raw	52	0	3	0	3	N/A	N/A	N/A
Treated	52	0	0	0	0	52	0	3
Distribution*	105	0	0	0	0	53	0	1

*As per O.Reg 170/03 Schedule 10-2.(a),(3) if the system serves 100,000 people or less, at least eight distribution samples, plus one additional distribution sample for every 1,000 people served by the system, are taken every month and at least 25% of the samples are tested for HPC.

Table 2. Operational testing done under Schedule 7 of Regulation 170/03 during the period covered by this Annual Report (O. Reg 170/03, Section 11.(6)(c)).

Parameter & Location	Number of Samples	Range of Results	
		Min.	Max.
Turbidity, Raw Water ^a (NTU)	8760	0.07	3.00
Turbidity, Filter Skid A (NTU)	8760	0.00	1.00*
Turbidity, Filter Skid B (NTU)	8760	0.00	1.00*
Free Chlorine Residual, Treated Water (mg/L)	8760	0.00**	2.93
Free Chlorine Residual, Distribution Water (mg/L)	363 ^b	0.94	1.69

Note: The number of samples used for continuous monitoring units is 8760.

^aO. Reg 170/03 Schedule 7-3 (2) requires a raw water sample be taken at least once every month and tested for turbidity.

^bDistribution chlorine residuals taken every day. Two days were missed: May 30 (due to offsite emergency) and December 26 (due to road closures)

**Filter turbidity spiked to 1.0 NTU for short durations of less than 2 minutes. Not reportable as an Adverse Water Quality Incident (AWQI). Monthly filter efficiency of >99% was achieved.

**Low chlorine caused by maintenance on September 13. Zero calibration and cycling off of analyzer. No adverse.

Table 3. Summary of additional testing and sampling results carried out in accordance with the requirement of an approval, municipal drinking water licence or order (including OWRA) or other legal instrument. (O. Reg 170/03, Section 11.(6)(c))

Legal Instrument & Issue Date (yyyy/mm/dd)	Parameter	Date Sampled	Annual Average	Allowable Annual Average	Sample Date (yyyy/mm/dd)	Sample Results
December 20, 2020 MDWL #250-101 (Issue 4)	Filter Backwash Suspended Solids	Monthly	3.58 mg/L	N/A	2022/01/04	5
					2022/02/07	4
					2022/03/07	3
					2022/04/04	2
					2022/05/02	2
					2022/06/06	2
					2022/07/05	3
					2022/08/01	7
					2022/09/06	7
					2022/10/03	7
					2022/11/06	2
December 20, 2020 MDWL #250-101 (Issue 4)	Filter Backwash Free Chlorine Residual	Monthly	0.00 mg/L	0.02 mg/L	2011/12/05	2
					2022/01/04	0.00
					2022/02/07	0.00
					2022/03/07	0.00
					2022/04/04	0.00
					2022/05/02	0.00
					2022/06/06	0.00
					2022/07/05	0.00
					2022/08/01	0.00
					2022/09/06	0.00
					2022/10/03	0.00
2022/11/06	0.00					
2011/12/05	0.00					

Table 4. Summary of Inorganic parameters tested during this reporting period or the most recent sample results (O.Reg 170/03, Section 11.(6)(c))

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Antimony: Sb (ug/L) - TW	2022/01/17	<MDL 0.6	6.0	No
Arsenic: As (ug/L) - TW	2022/01/17	0.3	10.0	No
Barium: Ba (ug/L) - TW	2022/01/17	13.1	1000.0	No
Boron: B (ug/L) - TW	2022/01/17	14.0	5000.0	No
Cadmium: Cd (ug/L) - TW	2022/01/17	<MDL 0.003	5.0	No
Chromium: Cr (ug/L) - TW	2022/01/17	0.22	50.0	No
Mercury: Hg (ug/L) - TW	2022/01/17	<MDL 0.01	1.0	No
Selenium: Se (ug/L) - TW	2022/01/17	0.09	50.0	No
Uranium: U (ug/L) - TW	2022/01/17	0.185	20.0	No
Fluoride (mg/L) – TW	2018/01/08 ^c	0.07	1.5	No
Nitrite (mg/L) - TW	2022/01/04	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2022/04/04	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2022/07/05	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2022/10/03	<MDL 0.003	1.0	No
Nitrate (mg/L) - TW	2022/01/04	0.274	10.0	No
Nitrate (mg/L) - TW	2022/04/04	0.278	10.0	No
Nitrate (mg/L) - TW	2022/07/05	0.271	10.0	No
Nitrate (mg/L) - TW	2022/10/03	0.249	10.0	No

^cFluoride is reportable every 60 months. Next set of Fluoride samples are scheduled to be sampled in 2024.

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Aesthetic Objective (AO)	Exceedance	
				AO	> 20 mg/L
Sodium: Na (mg/L) - TW	2018/01/08 ^c	6.72	200 ^d	No	No

Note: MDL = Minimum Detection Limit

^cSodium is reportable every 60 months. Next set of sodium samples is scheduled to be sampled in 2024.

^dThere is no regulatory Maximum Allowable Concentration (MAC) Sodium. The aesthetic objective (AO) 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.

Table 5: Summary of lead testing under Schedule 15.1 during this reporting period (O.Reg 170/03, Section 11.(6)(g))

Location/Type & Parameter	Number of Samples	Range of Results		Number of Lead Exceedances (MAC = 10 µ/L)
		Min.	Max.	
Period: January 1 to April 15				
Plumbing – Lead (µg/L) ^a	N/A	N/A	N/A	N/A
Distribution – Lead (µg/L) ^b	N/A	N/A	N/A	N/A
Distribution – Alkalinity (mg/L as CaCO ₃)	2	75	77	N/A
Distribution – pH	2	8.16	8.24	N/A
Period: June 15 to October 15				
Plumbing – Lead (µg/L) ^a	N/A	N/A	N/A	N/A
Distribution – Lead (µg/L) ^b	N/A	N/A	N/A	N/A
Distribution – Alkalinity (mg/L as CaCO ₃)	2	73	73	N/A
Distribution – pH	2	8.17	8.23	N/A
Period: December 15 to 31				
Plumbing – Lead (µg/L) ^a	N/A	N/A	N/A	N/A
Distribution – Lead (µg/L) ^b	N/A	N/A	N/A	N/A
Distribution – Alkalinity (mg/L as CaCO ₃)	N/A	N/A	N/A	N/A
Distribution - pH	N/A	N/A	N/A	N/A

Note: this is required for large municipal residential systems, small municipal residential systems or non-municipal year-round residential system.

^aPlumbing samples are not applicable as this system qualifies for the plumbing exemption per O. Reg 170/03 Schedule 15.1-5 (9) (10).

^bDistribution lead samples are taken every 36 months. The next set of distribution lead samples is scheduled to be sampled during the winter period of December 15, 2023 to April 15, 2024 and summer period of June 15, 2024 to October 15, 2024.

Table 6: Summary of Organic parameters sampled during this reporting period or the most recent sample results (O.Reg 170/03, Section 11.(6)(c)).

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Alachlor (ug/L) - TW	2022/01/17	<MDL 0.02	5.0	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2022/01/17	0.02	5.0	No
Azinphos-methyl (ug/L) - TW	2022/01/17	<MDL 0.05	20.0	No
Benzene (ug/L) - TW	2022/01/17	<MDL 0.32	1.0	No
Benzo(a)pyrene (ug/L) - TW	2022/01/17	<MDL 0.004	0.01	No
Bromoxynil (ug/L) - TW	2022/01/17	<MDL 0.33	5.0	No

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Carbaryl (ug/L) - TW	2022/01/17	<MDL 0.05	90.0	No
Carbofuran (ug/L) - TW	2022/01/17	<MDL 0.01	90.0	No
Carbon Tetrachloride (ug/L) - TW	2022/01/17	<MDL 0.17	2.0	No
Chlorpyrifos (ug/L) - TW	2022/01/17	<MDL 0.02	90.0	No
Diazinon (ug/L) - TW	2022/01/17	<MDL 0.02	20.0	No
Dicamba (ug/L) - TW	2022/01/17	<MDL 0.2	120.0	No
1,2-Dichlorobenzene (ug/L) - TW	2022/01/17	<MDL 0.41	200.0	No
1,4-Dichlorobenzene (ug/L) - TW	2022/01/17	<MDL 0.36	5.0	No
1,2-Dichloroethane (ug/L) - TW	2022/01/17	<MDL 0.35	5.0	No
1,1-Dichloroethylene (ug/L) - TW	2022/01/17	<MDL 0.33	14.0	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2022/01/17	<MDL 0.35	50.0	No
2,4-Dichlorophenol (ug/L) - TW	2022/01/17	<MDL 0.15	900.0	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2022/01/17	<MDL 0.19	100.0	No
Diclofop-methyl (ug/L) - TW	2022/01/17	<MDL 0.4	9.0	No
Dimethoate (ug/L) - TW	2022/01/17	<MDL 0.06	20.0	No
Diquat (ug/L) - TW	2022/01/17	<MDL 1.0	70.0	No
Diuron (ug/L) - TW	2022/01/17	<MDL 0.03	150.0	No
Glyphosate (ug/L) - TW	2022/01/17	<MDL 1.0	280.0	No
Malathion (ug/L) - TW	2022/01/17	<MDL 0.02	190.0	No
Metolachlor (ug/L) - TW	2022/01/17	<MDL 0.01	50.0	No
Metribuzin (ug/L) - TW	2022/01/17	<MDL 0.02	80.0	No
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2022/01/17	<MDL 0.3	80.0	No
Paraquat (ug/L) - TW	2022/01/17	<MDL 1.0	10.0	No
PCB (ug/L) - TW	2022/01/17	<MDL 0.04	3.0	No
Pentachlorophenol (ug/L) - TW	2022/01/17	<MDL 0.15	60.0	No
Phorate (ug/L) - TW	2022/01/17	<MDL 0.01	2.0	No
Picloram (ug/L) - TW	2022/01/17	<MDL 1.0	190.0	No
Prometryne (ug/L) - TW	2022/01/17	<MDL 0.03	1.0	No

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Simazine (ug/L) - TW	2022/01/17	<MDL 0.01	10.0	No
Terbufos (ug/L) - TW	2022/01/17	<MDL 0.01	1.0	No
Tetrachloroethylene (ug/L) - TW	2022/01/17	<MDL 0.35	10.0	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2022/01/17	<MDL 0.2	100.0	No
Triallate (ug/L) - TW	2022/01/17	<MDL 0.01	230.0	No
Trichloroethylene (ug/L) - TW	2022/01/17	<MDL 0.44	5.0	No
2,4,6-Trichlorophenol (ug/L) - TW	2022/01/17	<MDL 0.25	5.0	No
Trifluralin (ug/L) - TW	2022/01/17	<MDL 0.02	45.0	No
Vinyl Chloride (ug/L) - TW	2022/01/17	<MDL 0.17	1.0	No
Trihalomethane: Total (ug/L) Annual Average - DW	2022 (Quarterly)	30.75	100.0	No
HAA Total (ug/L) Annual Average - DW	2022 (Quarterly)	11.9	80.0	No

Note: DW = Distribution Water, TW = Treated Water, MDL = Minimum Detection Limit, MAC = Maximum Allowable Concentration

Table 7: List of Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards for the reporting period.

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result
N/A	N/A	N/A