

# O.Reg 170 SECTION 11 ANNUAL REPORT

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| <b>Drinking-Water System Number:</b>   | 220002672  |
| <b>Drinking-Water System Name:</b>     | Lion's Head Water Supply and Distribution System |
| <b>Drinking-Water System Owner:</b>    | Municipality of Northern Bruce Peninsula         |
| <b>Drinking-Water System Category:</b> | Large Municipal Residential                      |
| <b>Period being reported:</b>          | January 1, 2013 to December 31, 2013             |

|   |   |
|---|---|
| <p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p><b>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [X]</b></p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No [ ]</b></p> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b></p> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"> <p>Municipality of Northern Bruce Peninsula<br/>R.R. 2, 56 Lindsay Road #5<br/>Lion's Head, Ontario<br/>N0G 1W0<br/>519-793-3522</p> </div> | <p><b><u>Complete for all other Categories.</u></b></p> <p><b>Number of Designated Facilities served:</b><br/> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div> </p> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</b></p> <p><b>Number of Interested Authorities you report to:</b> <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px 0;"></div></p> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</b></p> |
|---|---|

**List Drinking-Water Systems, which receive all of their drinking water from your system:**

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 [ ] N/A [X]**

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

- Public access/notice via the web**
- Public access/notice via Government Office**
- Public access/notice via a newspaper**
- Public access/notice via Public Request**
- Public access/notice via a Public Library**
- Public access/notice via other method** \_\_\_\_\_

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## Describe your Drinking-Water System

|       |      |
|-------|------|
| WT II | WD I |
|-------|------|

This facility was commissioned in May 19, 2005 under an Ontario Ministry of the Environment C of A approval (4272-5YAK6U). The official open house occurred on July 22, 2005.

The new plant, with an approximate footprint of 18 x 23m, is located at the intersection of Ida and Helen Streets in the Village of Lion's Head. It contains a combined 150 mm diameter of raw water header hydraulically connected to two membrane filtration package systems (in parallel), with a total design capacity of 15.63 L/s. Each package system consists of a set of rack-mounted 10 hollow-fiber filter modules (with room for expansion to 12), one filter feed pump, one filter backwash pump with a rated capacity of 14.2 L/s, one turbidity analyzer and one particle counter, located on the effluent side of the membrane filters using a chemical wash. A compressed air system is used for air scrubbing of the membrane filters. There are two concrete chlorine contact tanks (in parallel), located bellow the filters, each tank 96 cubic meters in size and with an overflow weir allowing water to flow to baffled reservoir tanks. The concrete reservoir tanks have a storage capacity of 576 cubic meters. Water flows from the water reservoirs to a common high-lift well header container, 384 cubic meters in size. Five variable speed vertical turbine high lift pumps draw water out of the well header, each discharging to a combined 150 mm diameter treated water header connected to the distributions system.

A target distribution pressure of around 560 kPa (80 psi) is maintained by the continuous monitoring and operation of the variable speed pumps. No storage reservoirs are used in the distribution system. Online instrumentation includes continuous free chlorine residual, turbidity, pH, and flow measurement located on the treated water header.

The treatment process includes a sodium hypochlorite feed system consisting of four chemical feed pumps, each with a rated capacity of at least 680 L/hr, with two pumps (duty, standby) for injection at the backwash supply to each membrane filter and the other two pumps (duty, standby) for injection at the filtered discharge of each filter and two 200 L day tanks, spill containment, piping, appurtenances, and associated controls, an acid feed system complete with two metering pumps each with a rated capacity of at least 680 L/hr, one 200 L day tank, spill containment, piping, appurtenances, and associated controls, a caustic feed system complete with two metering pumps each with a rated capacity of at least 680 L/hr, one 200 L day tank, spill containment, piping, appurtenances, and associated controls, one 250 kVA standby diesel generator set, complete with fuel containment, and associated controls, backwash/wastewater handling facilities consisting of a 120 cubic meter backwash settling tank and two supernatant pumps each rated at 2.63 L/s at 6.1 m TDH, transferring supernatant to the storm sewer, all other controls, electrical equipment, instrumentation, piping, and appurtenances essential for the proper operation of the above-noted works.

A dedicated back-up power supply is used to maintain the necessary electrical supply to operate the filtration plant during power outages.

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

|                           |
|---------------------------|
| - Sodium Hypochlorite 12% |
|---------------------------|

**Were any significant expenses incurred to?**

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

**Describe**

|   |
|---|
| <ul style="list-style-type: none"> <li>- Repaired Backflow Preventer</li> <li>- Replaced mussel control injection line and diffuser ring.</li> <li>- Installed two (2) fire hydrants</li> <li>- Replaced existing 25mm water main on Moore Street, east of Joseph Street.</li> <li>- Replaced discharge valve on PALL Filtration Skid.</li> <li>- Replaced Diesel generator solenoid valve, coolant hoses and controller.</li> <li>- Replaced SCADA processor and PLC I/O card.</li> <li>- Replaced one (1) Krohne flow meter and remote signal converter.</li> <li>- Replaced two (2) Rosemount flow transmitters.</li> <li>- Installed and wired new disconnect for operation of high lift pump from portable generator.</li> </ul> |
|---|

**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 |
|---------------|--------------------------------------|--------|-----------------|--|------------------------|
| 2013/08/26    | Equipment Failure / loss of Service. | 0      | PSI             | Repair emergency power equipment.<br>Microbiological sampling.<br>Precautionary Boil Water Advisory. | 2013/08/28             |
| 2013/09/05    | Total Coliforms                      | 1      | Cfu/100 ml      | Resample and test.   | 2013/09/09             |

**Microbiological testing done under Schedule 10, 11 or 12 of Regulation 170/03 during this reporting Period**

| Location          | Number of Samples | Range of E. Coli Results (min #) – (max #) | Range of Total Coliforms Results (min #) – (max #) | Number of HPC Samples | Range of HPC Results (min #) – (max #) |
|-------------------|-------------------|--|--|-----------------------|--|
| Raw - RW          | 53                | 0 - 17                                     | 0 - 420  |                       |  |
| Treated - TW      | 55                | 0 - 0                                      | 0 - 0  | 54                    | 0 - 9                                  |
| Distribution - DW | 110               | 0 - 0                                      | 0 - 1  | 54                    | 0 - 6                                  |

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**Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report.**

|  | Number of Grab Samples | Range of Results (#-#)                     |
|--|------------------------|--|
| <b>Turbidity (NTU) Maximum</b>               | 8760<br>8760           | #1-0.019 - 0.28 NTU<br>#2-0.026 – 1.03 NTU |
| <b>Chlorine</b>                              | 8760                   | 0.63 – 2.43                                |
| <b>Chlorine Residual Distribution System</b> | 374                    | 0.35 - 1.38                                |

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

*NOTE: Record the unit of measure if it is **not** milligrams per litre. High Filter Effluent Turbidity results were momentary spikes due to air in the sample lines, No Adverse Water Quality Incidents for Turbidity to report in 2013.*

**Summary of additional testing and sampling carried out in accordance with the requirement of an approval or order.**

| Date of order or C of A | Parameter        | Date Sampled | Result                | MDWL Limit | Unit of Measure |
|-------------------------|------------------|--------------|-----------------------|------------|-----------------|
| MDWL # 250-101          | Suspended Solids | Monthly      | Annual Average < 3.75 | 25         | mg/L            |

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

| Parameter                | Sample Date | Sample Result | Exceedance |
|--------------------------|-------------|---------------|------------|
| Antimony: Sb (ug/L) - TW | 2013/01/07  | 0.10          | No         |
| Arsenic: As (ug/L) - TW  | 2013/01/07  | 0.40          | No         |
| Barium: Ba (ug/L) - TW   | 2013/01/07  | 13.90         | No         |
| Boron: B (ug/L) - TW     | 2013/01/07  | 16.00         | No         |
| Cadmium: Cd (ug/L) - TW  | 2013/01/07  | < 0.0030      | No         |
| Chromium: Cr (ug/L) - TW | 2013/01/07  | < 0.50        | No         |
| Lead: Pb (ug/L) - DW     |             |               |            |
| Mercury: Hg (ug/L) - TW  | 2013/01/07  | < 0.010       | No         |
| Selenium: Se (ug/L) - TW | 2013/01/07  | < 1.00        | No         |
| Sodium: Na (mg/L) - TW   | 2013/01/07  | 6.21          | No         |

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|------------------------|------------|----------|----|
| Uranium: U (ug/L) - TW | 2013/01/07 | 0.203    | No |
| Fluoride: F (mg/L)- TW | 2013/01/07 | 0.010    | No |
| Nitrite (mg/L) - TW    | 2013/01/07 | < 0.0050 | No |
| Nitrite (mg/L) - TW    | 2013/04/02 | < 0.0030 | No |
| Nitrite (mg/L) - TW    | 2013/07/02 | < 0.0030 | No |
| Nitrite (mg/L) - TW    | 2013/10/07 | < 0.0030 | No |
| Nitrate (mg/L) - TW    | 2013/01/07 | 0.274    | No |
| Nitrate (mg/L) - TW    | 2013/04/02 | 0.267    | No |
| Nitrate (mg/L) - TW    | 2013/07/02 | 0.256    | No |
| Nitrate (mg/L) - TW    | 2013/10/07 | 0.252    | No |

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

| Parameter  | Sample Date | Result Value | Exceedance |
|--|-------------|--------------|------------|
| Alachlor (ug/L) - TW                             | 2013/01/07  | < 0.02       | No         |
| Aldicarb (ug/L) - TW                             | 2013/01/07  | < 0.01       | No         |
| Aldrin + Dieldrin (ug/L) - TW                    | 2013/01/07  | < 0.01       | No         |
| Atrazine + N-dealkylated metabolites (ug/L) - TW | 2013/01/07  | 0.03         | No         |
| Azinphos-methyl (ug/L) - TW                      | 2013/01/07  | < 0.02       | No         |
| Bendiocarb (ug/L) - TW                           | 2013/01/07  | < 0.01       | No         |
| Benzene (ug/L) - TW                              | 2013/01/07  | < 0.32       | No         |
| Benzo(a)pyrene (ug/L) - TW                       | 2013/01/07  | < 0.004      | No         |
| Bromoxynil (ug/L) - TW                           | 2013/01/07  | < 0.33       | No         |
| Carbaryl (ug/L) - TW                             | 2013/01/07  | < 0.01       | No         |
| Carbofuran (ug/L) - TW                           | 2013/01/07  | < 0.01       | No         |
| Carbon Tetrachloride (ug/L) - TW                 | 2013/01/07  | < 0.16       | No         |
| Chlordane:Total (ug/L) - TW                      | 2013/01/07  | < 0.01       | No         |
| Chlorpyrifos (ug/L) - TW                         | 2013/01/07  | < 0.02       | No         |
| Cyanazine (ug/L) - TW                            | 2013/01/07  | < 0.03       | No         |
| Diazinon (ug/L) - TW                             | 2013/01/07  | < 0.02       | No         |
| Dicamba (ug/L) - TW                              | 2013/01/07  | < 0.20       | No         |

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|  |            |        |    |
|--|------------|--------|----|
| 1,2-Dichlorobenzene (ug/L) - TW                                | 2013/01/07 | < 0.41 | No |
| 1,4-Dichlorobenzene (ug/L) - TW                                | 2013/01/07 | < 0.36 | No |
| Dichlorodiphenyltrichloroethane(DDT) + metabolites (ug/L) - TW | 2013/01/07 | < 0.01 | No |
| 1,2-Dichloroethane (ug/L) - TW                                 | 2013/01/07 | < 0.35 | No |
| 1,1-Dichloroethylene (ug/L) - TW                               | 2013/01/07 | < 0.33 | No |
| Dichloromethane (ug/L) - TW                                    | 2013/01/07 | < 0.35 | No |
| 2,4-Dichlorophenol (ug/L) - TW                                 | 2013/01/07 | < 0.15 | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW            | 2013/01/07 | < 0.19 | No |
| Diclofop-methyl (ug/L) - TW                                    | 2013/01/07 | < 0.40 | No |
| Dimethoate (ug/L) - TW   | 2013/01/07 | < 0.03 | No |
| Dinoseb (ug/L) - TW  | 2013/01/07 | < 0.36 | No |
| Diquat (ug/L) - TW   | 2013/01/07 | < 1.00 | No |
| Diuron (ug/L) - TW   | 2013/01/07 | < 0.03 | No |
| Glyphosate (ug/L) - TW   | 2013/01/07 | < 6.00 | No |
| Heptachlor+Hepachlor Epoxide (ug/L) - TW                       | 2013/01/07 | < 0.01 | No |
| Lindane: (ug/L) - TW   | 2013/01/07 | < 0.01 | No |
| Malathion (ug/L) - TW  | 2013/01/07 | < 0.02 | No |
| Methoxychlor (ug/L) - TW                                       | 2013/01/07 | < 0.01 | No |
| Metolachlor (ug/L) - TW  | 2013/01/07 | < 0.01 | No |
| Metribuzin (ug/L) - TW   | 2013/01/07 | < 0.02 | No |
| Monochlorobenzene (ug/L) - TW                                  | 2013/01/07 | < 0.30 | No |
| Paraquat (ug/L) - TW   | 2013/01/07 | < 1.00 | No |
| Parathion (ug/L) - TW  | 2013/01/07 | < 0.02 | No |
| Pentachlorophenol (ug/L) - TW                                  | 2013/01/07 | < 0.15 | No |
| Phorate (ug/L) - TW  | 2013/01/07 | < 0.01 | No |
| Picloram (ug/L) - TW   | 2013/01/07 | < 0.25 | No |
| Polychlorinated Bichenysl(PCB) (ug/L) - TW                     | 2013/01/07 | < 0.04 | No |
| Prometryne (ug/L) - TW   | 2013/01/07 | < 0.03 | No |
| Simazine (ug/L) - TW   | 2013/01/07 | < 0.01 | No |
| ***THM (ug/L) - DW   | 2013       | 33.5   | No |
| Temephos (ug/L) - TW   | 2013/01/07 | < 0.01 | No |
| Terbufos (ug/L) - TW   | 2013/01/07 | < 0.01 | No |

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|  |            |        |    |
|--|------------|--------|----|
| Tetrachloroethylene (ug/L) - TW                | 2013/01/07 | < 0.35 | No |
| 2,3,4,6-Tetrachlorophenol (ug/L) - TW          | 2013/01/07 | < 0.14 | No |
| Triallate (ug/L) - TW                          | 2013/01/07 | < 0.01 | No |
| Trichloroethylene (ug/L) - TW                  | 2013/01/07 | < 0.44 | No |
| 2,4,6-Trichlorophenol (ug/L) - TW              | 2013/01/07 | < 0.25 | No |
| 2,4,5-Trichlorophenoxy acetic acid (ug/L) - TW | 2013/01/07 | < 0.22 | No |
| Trifluralin (ug/L) - TW                        | 2013/01/07 | < 0.02 | No |
| Vinyl Chloride (ug/L) - TW                     | 2013/01/07 | < 0.17 | No |

\*\*\* Annual average (THMs)

**List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.**

| Parameter | Result Value | Unit of Measure | Date of Sample |
|-----------|--------------|-----------------|----------------|
| N/A       |              |                 |                |

**(Only if DWS category is large municipal residential, small municipal residential, large municipal non residential, small municipal non residential, large non municipal non residential)**

### 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<br>(min#) – (max #) | Number of Exceedances |
|---------------------|-------------------|---|-----------------------|
| <b>Plumbing</b>     |                   |   |                       |
| <b>Distribution</b> |                   |   |                       |

The Lions Head Drinking Water System has been granted regulatory relief from sampling and testing for lead in plumbing samples. Four (4) distribution samples shall be collected and tested annually as per the requirements of the Municipal Drinking Water License # 250-101, issue #2. The next scheduled distribution lead sampling period is December 15, 2014 to April 15, 2015.