



| | |
|--|--|
| Drinking-Water System Number: | 210000906 |
| Drinking-Water System Name: | Lambton Area Water Supply System |
| Drinking-Water System Owner: | Lambton Area Water Supply System Joint Board of Management |
| Drinking-Water System Category: | Large Municipal Residential System |
| Period being reported: | January 1, 2017 to December 31, 2017 |



| | |
|---|---|
| <p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [X] No []</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>The report is available at: www.lawss.org</p> | <p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input type="text" value="N/A"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No [X]</p> <p>Number of Interested Authorities you report to: <input type="text" value="N/A"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No [X]</p> |
|---|---|



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

Lambton Area Water Supply System

1215 Fort St. Sarnia, ON
N7V 1M1
519-344-7429

Sarnia City Hall

255 N Christina St. Sarnia, ON
N7T 7N2
519-332-0330

Village of Point Edward Municipal Office

135 Kendall St. Pt. Edward, ON
N7M 4G6
519-337-3021

St. Clair Civic Centre

1155 Emily St. Mooretown, ON
N0N 1M0
519-867-2021

Town Of Plympton-Wyoming Municipal Office

546 Niagara St. Wyoming, ON
N0N 1T0
519-845-3939

Township of Warwick Municipal Office

6332 Nauvoo Rd. Watford, ON
N0M 2S0
519-849-3926

Lambton Shores Municipal Office

7883 Amtelecom Parkway Forest, ON
N0N 1J0
519-786-2335

Township of Brooke-Alvinston Municipal Office

3234 River St. P.O. Box 28 Alvinston, ON
N0N 1A0
519-898-2173



This list shows all the Drinking-Water Systems, which receive all of their drinking water from the Lambton Area Water Supply System:

| Drinking Water System Name | Drinking Water System Number |
|--|-------------------------------------|
| Sarnia Distribution System | 260003136 |
| Village of Point Edward Distribution System | 210000924 |
| St. Clair Distribution System | 260006464 |
| Plympton-Wyoming Distribution System | 260006594 |
| Township of Warwick Distribution System | 260001799 |
| Alvinston Distribution System | 260040170 |
| Corporation of the Municipality of Lambton Shores Distribution System (receives only some of their water from LAWSS) | 260006581 |

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.

- 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
-



Description of the Lambton Area Water Supply System

The Lambton Area Water Supply System (LAWSS) is a direct filtration facility with a maximum rated capacity of 181,844 m³/day. The Water Treatment Plant (WTP) uses chemically assisted filtration with disinfection. The facility consists of an intake system, a low lift pumping system, a treatment system and distribution pumping system that supplies water to seven different drinking water systems. Water is drawn into the plant (a zebra mussel chemical control system is available when needed) via a 1675 mm intake pipe, located approximately 100 m into the St. Clair River at a depth of 15 m. The water passes through travelling screens prior to entering the surge wells and pre-disinfection is utilized. Water flows to the low lift pump wet wells where a total of 4 vertical turbine pumps are located and used as needed. The water is then pumped to a common discharge header where a coagulant is added and then flash mixed. Powdered activated carbon (PAC) is also applied at this location when needed to control taste and odor problems. The water is then flocculated with polymer being added when needed. Polymer can be added to any and all of the following as required: to the flocculation trains, filter inlet channels and each filter. Water from the flocculators is then sent to be filtered by dual media filters (10 filters in total). The filter effluents combine into two clearwells via gravity where sodium hypochlorite is added. To increase the chlorine contact time, the treated water is diverted to two baffled reservoirs (in series with total capacity of 67460 m³). The water is fluoridated upon exiting the reservoirs. Six vertical turbine pumps are available for supplying water to the distribution system. The water treatment process and distribution components are controlled by a dedicated supervisory control and data acquisition (SCADA) computer system and are monitored by a certified operator 24 hours a day. Emergency generators powered by diesel are available at the WTP to keep the plant in operation should a power failure occur. The utility serves a large part of Lambton County and has about 250 km of water main of various size and materials. The LAWSS distribution system has three standpipes and one elevated tower. The East Lambton Booster Station has a water storage capacity of 9,000 m³ and the West Lambton Pumping Station has 90,000 m³ of water storage capacity. The booster stations are controlled and monitored from the WTP via the SCADA system. Backwash from the dual media filters is treated using a high rate clarification process (ACTIFLO). The clarified water is dechlorinated and then discharged to the St. Clair River and the settled material is sent to the Sarnia Water Pollution Control Plant for final treatment and disposal. This system is referred to as the Residual Management System.

Emergency Water Line connections exist between the LAWSS system and the following drinking water systems to provide water to either system in case of emergencies:

Chatham-Kent: A connection exists at Whitebread Line and Highway #40

Petrolia: A connection exists at Confederation Line and Ploughing Match Rd.



Lambton Shores: A connection exists at Lakeshore Rd. and the Northwest corner of Ravenswood Rd.

The following is a list of all water treatment chemicals used over this reporting period

Sodium Hypochlorite: Pre and post disinfection
Hydrofluosilicic Acid: Fluoridation
Clar+Ion A7: Coagulation
Powdered Activated Carbon: Taste and Odor (when required)
Polymer 8103+: Filter/Coagulant aid (when required)
Polymer Zetag 4120: Residual Management System coagulant
Sodium Bisulfite: Residual Management System dechlorination system

Note: All water treatment chemicals are NSF/ANSI approved and certified.

There were significant expenses incurred to the following.

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

The following is a brief description and a breakdown of monetary expenses incurred.

| | |
|---|----------|
| Main Plant HVAC | \$616072 |
| Parking lot upgrades for accessibility | \$2011 |
| Forest Tower complete repainting | \$971300 |
| SCADA Radio upgrade project | \$150000 |
| 24" Watermain replacement | \$293999 |
| Electrical room cooling system | \$38187 |
| Zion Line hydrant replacement | \$32317 |
| Maher Drain watermain offset | \$50488 |
| New meters for surface wash and backwash water | \$4236 |
| Replace panel relays on 600 V in MCC | \$13228 |
| HLP3 motor refurbishment | \$6904 |
| HLP3 Ross valve rebuild | \$9622 |
| Rebuild Panelboard L, LC, LD, HA, HC HD including engineering | \$56766 |
| Arc flash short circuit protection transformer fuses | \$4812 |
| Maintenance on Limitorque valves at WTP reservoir | \$1772 |
| Low lift clean out and inspection | \$8587 |
| Electrical inspections at ELBS and WLBS | \$6177 |
| New hydrant in Sombra | \$9086 |
| Forest mag meter chamber repair using sealant | \$16974 |
| New isolation valve on distribution system at Reece's Corners | \$10448 |
| Refurbish external gear operation on valve at Front and Maxwell | \$2417 |
| P2 Ross valve rebuild at WLBS | \$12620 |



The following are 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 |
|---------------|------------|--------|-----------------|-------------------|------------------------|
| | Zero noted | | | | |

The below table shows 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 #) Units: cfu /100 mL | Range of Total Coliform Results (min #)- (max #) Units: cfu /100 mL | Range of Background Results (min #)- (max #) Units: cfu /100 mL | Range of HPC Results (min #)- (max #) Units: cfu /100 mL |
|----------------|-------------------|---|---|---|--|
| Raw | 52 | 0-10 | 0-230 | 0-4400 | N/A |
| Treated | 52 | 0-0 | 0-0 | 0-1 | <10-390 |

The table below shows 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 #) | Unit of Measure |
|------------------|------------------------|----------------------------------|-----------------|
| Turbidity | 8760 | 0.00-5.0 | NTU |
| Chlorine | 8760 | 0.00-2.04 | mg/L |
| Fluoride | 8760 | 0.00-2.0 | mg/L |

Notes: Turbidity is measured on each filter effluent line at a frequency greater than is required under O. Reg 170/03 Schedule 6-5. Chlorine min residual of 0.00 mg/L was caused during the annual maintenance of the online chlorine analyzer. Fluoride max residual of 2.0 mg/L was caused by the replacement of all feed tubes and the fluoride probe.

The table below is a summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument. The three parameters on this list are a requirement for the Residual Management System.

| Date of legal instrument issued | Parameter | Result Range | Unit of Measure |
|---------------------------------|-------------------------|--------------|-----------------|
| October 14, 2015 | Total Suspended Solids | 2-9 | mg/L |
| October 14, 2015 | Aluminum | 0.036-0.333 | mg/L |
| October 14, 2015 | Total Chlorine Residual | 0-0.04 | mg/L |

The table below is 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 | May 10, 2017 | 0.11 | ppb | No |
| Arsenic | May 10, 2017 | 0.3 | ppb | No |
| Barium | May 10, 2017 | 13.9 | ppb | No |
| Boron | May 10, 2017 | 14 | ppb | No |
| Cadmium | May 10, 2017 | 0.006 | ppb | No |
| Chromium | May 10, 2017 | 0.55 | ppb | No |
| Mercury | May 10, 2017 | <0.01 | ppb | No |
| Selenium | May 10, 2017 | 0.19 | ppb | No |
| Sodium | April 27, 2015 | 5.9 | mg/L | No |
| Uranium | May 10, 2017 | 0.113 | ppb | No |
| Nitrite | Nov 6, 2017 | <0.003 | mg/L | No |
| Nitrate | Nov 6, 2017 | 0.272 | mg/L | No |

The table below is a 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 #) | Unit of Measure | Number of Exceedances |
|---------------------|-------------------|--|-----------------|-----------------------|
| Plumbing | - | - | - | - |
| Distribution | 32 | 0.01-6.32 | ppb | 0 |

Note: The above results are for the total system that OCWA/LAWSS provides water to with the exception of Lambton Shores and Plympton-Wyoming (samples done by CH2M Hill). Local results can be obtained by contacting the local municipal office.

The below table is a 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 | May 10, 2017 | <0.02 | ppb | No |
| Atrazine + N-dealkylated metabolites | May 10, 2017 | 0.02 | ppb | No |
| Azinphos-methyl | May 10, 2017 | <0.05 | ppb | No |
| Benzene | May 10, 2017 | <0.32 | ppb | No |
| Benzo(a)pyrene | May 10, 2017 | <0.004 | ppb | No |
| Bromoxynil | May 10, 2017 | <0.33 | ppb | No |
| Carbaryl | May 10, 2017 | <0.05 | ppb | No |
| Carbofuran | May 10, 2017 | <0.01 | ppb | No |
| Carbon Tetrachloride | May 10, 2017 | <0.16 | ppb | No |
| Chlorpyrifos | May 10, 2017 | <0.02 | ppb | No |
| Atrazine | May 10, 2017 | .01 | ppb | No |
| Desethyl atrazine | May 10, 2017 | 0.01 | ppb | No |
| Diazinon | May 10, 2017 | <0.02 | ppb | No |
| Dicamba | May 10, 2017 | <0.2 | ppb | No |
| 1,2-Dichlorobenzene | May 10, 2017 | <0.41 | ppb | No |
| 1,4-Dichlorobenzene | May 10, 2017 | <0.36 | ppb | No |
| 1,2-Dichloroethane | May 10, 2017 | <0.35 | ppb | No |
| 1,1-Dichloroethylene (vinylidene chloride) | May 10, 2017 | <0.33 | ppb | No |
| Dichloromethane | May 10, 2017 | <0.35 | ppb | No |
| 2-4 Dichlorophenol | May 10, 2017 | <0.15 | ppb | No |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | May 10, 2017 | <0.19 | ppb | No |



| | | | | |
|---|--------------|---------|-----|----|
| Diclofop-methyl | May 10, 2017 | <0.4 | ppb | No |
| Dimethoate | May 10, 2017 | <0.03 | ppb | No |
| Diquat | May 10, 2017 | <1.0 | ppb | No |
| Diuron | May 10, 2017 | <0.03 | ppb | No |
| Glyphosate | May 10, 2017 | <1.0 | ppb | No |
| Malathion | May 10, 2017 | <0.02 | ppb | No |
| MCPA | May 10, 2017 | <.00012 | ppm | No |
| Metolachlor | May 10, 2017 | <0.01 | ppb | No |
| Metribuzin | May 10, 2017 | <0.02 | | No |
| Monochlorobenzene | May 10, 2017 | <0.3 | ppb | No |
| Paraquat | May 10, 2017 | <1.0 | ppb | No |
| Pentachlorophenol | May 10, 2017 | <0.15 | ppb | No |
| Phorate | May 10, 2017 | <0.01 | ppb | No |
| Picloram | May 10, 2017 | <1.0 | ppb | No |
| Polychlorinated Biphenyls(PCB) | May 10, 2017 | <0.04 | ppb | No |
| Prometryne | May 10, 2017 | <0.03 | ppb | No |
| Simazine | May 10, 2017 | <0.01 | ppb | No |
| THM (NOTE: show latest annual average) | Nov 6, 2017 | 53.00 | ppb | No |
| Terbufos | May 10, 2017 | <0.01 | ppb | No |
| Tetrachloroethylene | May 10, 2017 | <0.35 | ppb | No |
| 2,3,4,6-Tetrachlorophenol | May 10, 2017 | <0.2 | ppb | No |
| Triallate | May 10, 2017 | <0.01 | ppb | No |
| Trichloroethylene | May 10, 2017 | <0.44 | ppb | No |
| 2,4,6-Trichlorophenol | May 10, 2017 | <0.25 | ppb | No |
| Trifluralin | May 10, 2017 | <0.02 | ppb | No |
| Vinyl Chloride | May 10, 2017 | <0.17 | ppb | No |

Below is a list of 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 | | | |