



Ontario Clean Water Agency
Agence Ontarienne Des Eaux



Annual Performance Report

Leamington Distribution System

Drinking Water System # 220004992

2018

Prepared for the Municipality of Leamington

By the Ontario Clean Water Agency

Ken Penney

Process & Compliance Technician

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ANNUAL REPORT

Drinking-Water System Number:	220004992
Drinking-Water System Name:	Leamington Distribution System (Union WSS)
Drinking-Water System Owner:	The Municipality of Leamington
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	01-January-2018 to 31-December 2018

<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>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Municipality of Leamington Office 111 Erie Street North, Leamington, ON N8H 2Z9</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <div style="border: 1px solid black; padding: 2px; display: inline-block;">N/A</div> </p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; padding: 2px; display: inline-block;">N/A</div> </p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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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 [N/A]



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 _____

Describe your Drinking-Water System

Stand alone distribution system serving a population of approximately 31,000 residents of the Municipality of Leamington.

List all water treatment chemicals used over this reporting period

N/A

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

Point Pelee Drive Phase 3 watermain replacement project \$809,000.
 Erie South/Forest/Conover/Stewart watermain replacement project \$185,000.
 Mill Street West watermain replacement project \$195,700.

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
June 22, 2018	Low chlorine residual at SS-L-22	Free: 0.01 Total: 0.10	mg/L	Leamington distribution staff flushed the affected area until the residual was restored	June 22, 2018
July 20, 2018	Low chlorine residual at SS-L-22	Free: 0.02 Total: 0.13	mg/L	Leamington distribution staff flushed the affected area until the residual was restored	July 20, 2018



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 #) Cfu/100ml	Range of Total Coliform Results (min #)-(max #) Cfu/100ml	Number of HPC Samples	Range of HPC Results (min #)-(max #) Cfu/100ml
Raw	Please see the Annual Report for the Union Water Supply System # 210000853				
Treated	Please see the Annual Report for the Union Water Supply System # 210000853				
Distribution	542	0-0	0-0	268	<10-40

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	Please see the Annual Report for the Union Water Supply System # 210000853	
Combined Chlorine	161	Max: 2.10 mg/l Min: 0.12 mg/l Avg: 1.64 mg/l Combined Residual (Chloramination)
Free Chlorine (On June 04, 2018 the ammonia system was shut off at the Union WTP)	203	Max: 1.48 mg/l Min: 0.01 mg/l Avg: 1.17 mg/l
Fluoride (If the DWS provides fluoridation)	N/A	

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

*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
None				

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	October 15, 2018	<0.1	mg/L	No
Nitrate	October 15, 2018	<0.1	mg/L	No
Nitrate + Nitrite (N)	October 15, 2018	0.04	mg/L	No
Ammonia (N) -Total	October 15, 2018	0.10	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 Results (min#) – (max #)		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Distribution – Lead Results (ug/L)	n/a	n/a	n/a	n/a	n/a
Distribution – Alkalinity (mg/L)	8	74	79	n/a	n/a
Distribution – pH In-House	8	7.75	8.08	n/a	n/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
THM (NOTE: show latest annual average)	Annual Average	29.4	ug/L	No
HAA (NOTE: show latest annual average)	Annual Average	9.7	ug/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
None			

UNION WATER SUPPLY SYSTEM SUMMARY REPORT 2018

For the Union Water Supply System
(Made under Schedule 22 of Ontario Regulation 170/03, a regulation made under
the Safe Drinking Water Act, 2002)

EXPLANATION

Schedule 22 of Ontario Regulation 170/03, a regulation made under the Safe Drinking Water Act, 2002 requires that a large municipal residential drinking-water system must provide to its board members a Summary Report on various aspects of the system before March 31 of the following year. The Union Water Supply System is classed as a large municipal residential drinking-water system and all of the municipal water systems that obtain water from it are classified as large municipal residential drinking-water systems and are therefore subject to Schedule 22.

The Summary Report must list the following:

- The requirements of the Safe Drinking Water Act, 2002 that the system failed to meet during the period covered by the Summary Report
- The requirements of the regulations made under the Safe Drinking Water Act, 2002 that the system failed to meet during the period covered by the Summary Report
- Any condition of the drinking-water system's drinking water works permit or municipal drinking water license that the system failed to meet during the period covered by the Summary Report
- Any order that the system failed to meet during the period covered by the Summary Report, the duration of any such failure and any measures that were taken to correct such failure
- A summary of the quantities and flow rates of water supplied by the drinking-water system by monthly average and maximum daily flow rates and instantaneous peak flow rates
- A comparison of actual flow rates with rated capacity and flow rates in the systems approval

A drinking-water system that supplies water to another drinking water system must provide a copy of the Summary Report to that system's owner by March 31 of the year following the year covered in the Summary Report.

The sections below details the occasions on which the Union Water Supply System (UWSS) and the connected municipal water systems failed to meet the requirements of the Safe Drinking Water Act 2002, associated regulations, system approvals and provincial officer orders in 2018.

Union Water Supply System (UWSS)

The following provides details of occurrences where the Union Water Supply System was not in compliance with the requirements of the Safe Drinking Water Act 2002, associated regulations, system approvals and provincial officer orders.

Non-Compliance Item:

The following Adverse Water Quality Incident (AWQI) identified for the Union Water Supply System.

- AWQI #139437 - May 19, 2018 loss of coagulant to Clarifier #4. It was discovered that coagulant was not flowing continuously to Clarifier #4 for 51 minutes, due to PLC failure. Maintenance personnel was called in to restore the failed PLC.

Leamington Water Distribution System

Non-Compliance Item:

The following Adverse Water Quality Incident (AWQI) identified for the Leamington Distribution System that is supplied by the Union Water Supply System.

- AWQI #139992 - June 22, 2018
- AWQI #140847 - July 20, 2018
(same for both) Adverse residual at sample station SS-L-22. Town of Leamington staff flushed affected area: the residual came up to acceptable levels in both instances.

Kingsville Water Distribution System

Non-Compliance Item:

The following Adverse Water Quality Incident (AWQI) identified for the Kingsville Distribution System that is supplied by the Union Water Supply System

There were no non-compliances or AWQIs identified for the portion of the Town of Kingsville Water Distribution System that is supplied by Union Water Supply System:

Essex Water Distribution System

Non-Compliance Item:

The following Adverse Water Quality Incident (AWQI) identified for the Essex Distribution System that is supplied by the Union Water Supply System

There were no non-compliances or AWQIs identified for the portion of the Town of Essex Water Distribution System that is supplied by Union Water Supply System:

Lakeshore Water Distribution System

Non-Compliance Item:

The following Adverse Water Quality Incident (AWQI) identified for the Lakeshore Distribution System that is supplied by the Union Water Supply System

- AWQI #139698 - June 9, 2018 adverse residual during extra sampling for conversion from chloramination to free chlorine. Lakeshore staff was contacted and flushing was conducted until acceptable residual was reached.

SUMMARY OF THE QUANTITIES AND FLOW RATES OF WATER SUPPLIED DURING THE PERIOD COVERED BY THE REPORT, INCLUDING MONTHLY AVERAGE AND MAXIMUM DAILY FLOWS, AND DAILY INSTANTANEOUS PEAK FLOW RATES

The following sections provide information in regards to the Union Water Supply System's Permit to Take Water, issued under Ontario Regulation 387/04 and Drinking Water License issued under the Safe Drinking Water Act, 2002.

Permit to Take Water

The Union Water Supply System operated under Permit to Take Water (PTTW) Number 0816-9T9SVT, which expires at the end of 2025. The PTTW has the following flow conditions:

- Maximum Allowable Amount Taken per Minute (Litres/Min) 113,650
- Maximum Allowable Amount Taken Per Day (Litres/Day) 163,656,000

The maximum amounts of raw water taken during 2018 (see Table 1 below) are as follows:

- Maximum Amount Taken per Minute in 2018 (Litres/Min) 56,402
- Maximum Amount Taken Per Day in 2018 (Litres/Day) 94,256,000

The system did not exceed the PTTW limits in 2018.

Drinking Water License

The UWSS operates under Municipal Drinking Water Licence 041-01; issue Number 4 which has been issued for the period July 21, 2014 to July 20, 2019. The Certificate of Approval and licence had the following condition:

- The drinking water system shall not be operated to exceed 124,588 m³/d (27.4 MIGD) on any calendar day, conveyed from the treatment system to the distribution system.
- The maximum daily volume of water pumped into the distribution system was 82,478 m³ (18.15 MIGD).

Tables 1A through 3B below provide the monthly average, maximum and peak flows for raw and treated water for the Union Water Supply System.

Table 1A
2018 Raw Water Taking from Lake Erie in Metric Units

	Maximum Allowed Flow Rate (m3/Day)	Average Flow (m3/Day)	Maximum Flow (m3/Day)	Maximum Flow (Litres/Day)	Maximum Allowed Flow Rate (Litres/Minute)	Peak Flow (Litres/Minute)
January	163,656	31,887	41,547	41,547,250	113,650	28,673
February	163,656	34,478	46,742	46,742,310	113,650	28,663
March	163,656	46,745	58,846	58,846,290	113,650	39,368
April	163,656	43,556	57,854	57,854,120	113,650	40,882
May	163,656	56,401	84,355	84,355,270	113,650	56,403
June	163,656	66,429	85,454	85,453,940	113,650	55,426
July	163,656	73,878	94,256	94,256,390	113,650	55,153
August	163,656	64,561	79,579	79,579,280	113,650	54,275
September	163,656	54,206	41,687	41,687,190	113,650	43,880
October	163,656	41,687	52,795	52,795,370	113,650	34,954
November	163,656	31,583	38,362	38,362,300	113,650	48,820
December	163,656	29,462	36,738	36,738,190	113,650	28,856

Table 1B
2018 Raw Water Taking from Lake Erie in Imperial Units

	Maximum Allowed Flow Rate (MGD)	Average Flow (MGD)	Maximum Flow (MGD)	Maximum Allowed Flow Rate (Gallons/Minute)	Peak Flow (Gallons/Minute)
January	36.00	7.01	9.14	25,000	6,307
February	36.00	7.58	10.28	25,000	6,305
March	36.00	10.28	12.94	25,000	8,660
April	36.00	9.58	12.73	25,000	8,993
May	36.00	12.41	18.56	25,000	12,407
June	36.00	14.61	18.80	25,000	12,192
July	36.00	16.25	20.73	25,000	12,132
August	36.00	14.20	17.50	25,000	11,939
September	36.00	11.92	9.17	25,000	9,652
October	36.00	9.17	11.61	25,000	7,689
November	36.00	6.95	8.44	25,000	10,739
December	36.00	6.48	8.08	25,000	6,347

Table 2A**2018 Treated Water Flow Into Distribution System in Metric Units**

	Maximum Allowed Flow Rate (m ³ /Day)	Average Daily Flow (m ³ /Day)	Maximum Daily Flow (m ³ /Day)	Peak Instantaneous Flow (Litres/Second)
January	124,588	29,240	35,250	546
February	124,588	31,665	38,482	712
March	124,588	36,841	45,614	871
April	124,588	41,315	53,133	927
May	124,588	51,521	70,209	1,129
June	124,588	61,045	78,992	1,167
July	124,588	69,489	82,478	1,233
August	124,588	61,696	74,819	1,145
September	124,588	52,561	67,718	1,044
October	124,588	38,787	47,701	802
November	124,588	29,266	33,944	601
December	124,588	26,624	30,987	483

Table 2B**2018 Treated Water Flow Into Distribution System in Imperial Units**

	Maximum Allowed Flow Rate (MGD)	Average Daily Flow (MGD)	Maximum Daily Flow (MGD)	Peak Instantaneous Flow (Gallons/Second)
January	27.4	6.43	7.76	120
February	27.4	6.97	8.47	157
March	27.4	8.10	10.04	192
April	27.4	9.09	11.69	204
May	27.4	11.33	15.45	248
June	27.4	13.43	17.38	257
July	27.4	15.29	18.15	271
August	27.4	13.57	16.46	252
September	27.4	11.56	14.90	230
October	27.4	8.53	10.49	176
November	27.4	6.44	7.47	132
December	27.4	5.86	6.82	106

Table 3A
2018 Treated Flow to Local Municipalities in Metric Units

	<u>Leamington</u>		<u>Kingsville</u>		<u>Essex</u>		<u>Lakeshore</u>	
	Monthly Total (m3)	Average Day (m3/day)	Monthly Total (m3)	Average Day (m3/day)	Monthly Total (m3)	Average Day (m3/day)	Monthly Total (m3)	Average Day (m3/day)
January	449,036	14,485	307,329	9,914	59,480	1,919	37,901	1,223
February	454,972	15,689	326,663	11,264	53,984	1,862	31,957	1,102
March	543,023	17,517	419,638	13,537	52,455	1,692	30,898	997
April	649,702	21,657	671,015	22,367	70,778	2,359	39,954	1,332
May	734,691	23,700	671,518	21,662	61,525	1,985	35,141	1,134
June	992,661	33,089	720,181	24,006	80,361	2,679	52,122	1,737
July	1,165,664	37,602	935,489	30,177	93,819	3,026	57,042	1,840
August	973,568	31,405	608,791	19,638	79,418	2,562	42,631	1,375
September	1,071,255	35,709	619,877	20,663	74,901	2,497	46,108	1,537
October	680,504	21,952	385,759	12,444	58,142	1,876	34,937	1,127
November	548,265	18,276	312,427	10,414	63,862	2,129	37,901	1,263
December	379,001	12,226	282,547	9,114	47,088	1,519	33,181	1,070
Total	8,642,342	23,609	6,261,234	17,100	795,813	2,175	479,773	1,311

Table 3A
2018 Treated Flow to Local Municipalities in Imperial Units

	<u>Leamington</u>		<u>Kingsville</u>		<u>Essex</u>		<u>Lakeshore</u>	
	Monthly Total (Imperial Gallons)	Average Day (MGD)	Monthly Total (Imperial Gallons)	Average Day (MGD)	Monthly Total (Imperial Gallons)	Average Day (MGD)	Monthly Total (Imperial Gallons)	Average Day (MGD)
January	98,774,111	3.19	67,602,929	2.18	13,083,771	0.42	8,337,054	0.27
February	100,079,849	3.45	71,855,815	2.48	11,874,820	0.41	7,029,557	0.24
March	119,448,361	3.85	92,307,455	2.98	11,538,487	0.37	6,796,610	0.22
April	142,914,461	4.76	147,602,665	4.92	15,568,983	0.52	8,788,651	0.29
May	161,609,427	5.21	147,713,310	4.76	13,533,608	0.44	7,729,939	0.25
June	218,354,894	7.28	158,417,673	5.28	17,676,949	0.59	11,465,237	0.38
July	256,410,234	8.27	205,778,812	6.64	20,637,295	0.67	12,547,486	0.40
August	214,155,021	6.91	133,915,299	4.32	17,469,518	0.56	9,377,509	0.30
September	235,643,157	7.85	136,353,878	4.55	16,475,917	0.55	10,142,342	0.34
October	149,689,953	4.83	84,855,117	2.74	12,789,452	0.41	7,685,066	0.25
November	120,601,440	4.02	68,724,332	2.29	14,047,676	0.47	8,337,054	0.28
December	83,368,565	2.69	62,151,651	2.00	10,357,912	0.33	7,298,800	0.24
Total	1,901,049,473	5.19	1,377,278,936	3.76	175,054,387	0.48	105,535,306	0.29