



Ontario Clean Water Agency
Agence Ontarienne Des Eaux



Annual Performance Report

Union Area Water Supply System

Drinking Water System # 210000853

2016

Prepared for the Corporation of the Town of Kingsville, the Corporation of the Town of Essex,
the Town of Lakeshore & the Municipality of Leamington

By the Ontario Clean Water Agency
Ken Penney
Process & Compliance Technician
kpenney@ocwa.com
519-326-4447



ANNUAL REPORT

Drinking-Water System Number:	210000853
Drinking-Water System Name:	Union Area Water Supply System
Drinking-Water System Owner:	Union Area Water Supply System Joint Board of Management (Municipality of Leamington, Town of Kingsville, Town of Essex, Town of Lakeshore)
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	01-January-2016 to 31-December-2016

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 ☐

Is your annual report available to the public at no charge on a web site on the Internet? Yes ☒ No ☐

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

*Union Water Treatment Plant
P.O. Box 340,
1615 Union Ave.,
Ruthven, Ont.
N0P 2G0*

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
Municipality of Leamington	220004992
Town of Kingsville	220003403
Town of Essex	220003680
Town of Lakeshore	260004995



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

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
[☐] Public access/notice via Government Office
[☐] Public access/notice via a newspaper
[X] Public access/notice via Public Request
[☐] Public access/notice via a Public Library
[X] Public access/notice via other method: Municipal Offices

Describe your Drinking-Water System

The Union Water Treatment Plant (UWTP) is a chemically assisted conventional filtration plant, which draws water from Lake Erie.

The UWTP supplies potable water to the Town of Kingsville, Municipality of Leamington, a portion of the Town of Essex and a portion of the Town of Lakeshore with an estimated service population of 60,000.

The treatment process includes chemically assisted up-flow clarification, filtration with dual media filters, primary disinfection using chlorine gas and secondary disinfection using chloramination.

Seasonally, the UWTP uses sodium hypochlorite at its intakes to control Zebra Mussel formation.

There are also four water towers and a booster/storage station located on the Union Water Supply System.

List all water treatment chemicals used over this reporting period

Zebra Mussel Control:

- Sodium Hypochlorite – (Seasonal)

Clarification Chemicals:

- Aluminum Sulfate – Coagulant (used for building a blanket during clarifier start up)
- DelPAC – Coagulant
- Hyper+Ion 1090 – Coagulant
- Magnafloc LT22 (polymer)-Coagulant Aid
- Magnafloc LT22S (polymer)-Coagulant Aid
- Powdered Activated Carbon – Taste and Odor Control

Filtration:

- Cat-Floc 8103 Plus (polymer) – Filter Aid (Seasonal)

Disinfection:

- Primary: Chlorine Gas
- Secondary: Aqua Ammonia & Chlorine (to form chloramines)



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

Item	Cost
Low Lift Pump #3 Major Maintenance	\$19,640
New Zebra Mussel Control System – Intake #1	\$100,218
Carbon Feed Pump Replacements (2)	\$17,354
Clarifier #2 Inlet Valve Replacement	\$8,833
Filter Meter Replacements – Filters #2, 3 and 4	\$19,347
Filter Inlet/Outlet Valve Replacements – Filters #2 and 4	\$27,914
Filter Inlet Valve Cylinders Rehab – Filters #5-8	\$5,237
Coagulant Feed System Monitoring Equipment	\$2,558
Boiler System Upgrades	\$9,650
Turbidity Meter Replacements	\$18,477
Chlorine Analyzer Replacements	\$17,397
Main Wash #1 Pump VFD	\$6,993
High Lift #1 Diesel Pump – Vent System Upgrades/Clutch Drive Upgrades	\$5,910
High Lift Pump #3 Rehabilitation	\$28,174
High Lift Reservoir #2 Repairs	\$50,955
Treatment Pond Residuals Materials Management	\$103,341
LED Lighting Upgrades – Treatment Plant	\$5,193
Window Replacements	\$27,395
Maintenance Shop – New cement pad staging area	\$22,084
Pole Barn Roof Replacement	\$15,800
Cottam Booster Pump #3 - Rehabilitation	\$5,609
SCADA System – New Server and PLC upgrades	\$21,491
Security System Upgrades	\$727
Communication System Improvements	\$10,451
Transmission System Valves and Components	\$40,646
Albuna Water Tower – Electric Heater Replacements	\$1,686
High Lift Transfer Switch Spare Breaker Reconditioning	\$6,869
Ammonia System – Water Softener Rehabilitation	\$5,626
Master Water Meter Replacements/Upgrades	\$55,478
Portable 250hp Backup Generator for High Lift, Low Lift, Towers, etc	\$132,161
Treatment Plant Roof Repairs	\$1,221
Cottam Booster Roof Repairs	\$1,883
Chlorine Building Roof Liner Replacement	\$12,181
Treatment Plant – Operator's Area Ceiling Tile Replacement	\$3,100

Expenses incurred continued



Laboratory Equipment	\$5,250
New Above Ground Waste Oil Tank	\$2,009
Essex Water Tower Ladder Safety Upgrade	\$3,688
Total Capital Works/Major Maintenance	\$822,545

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	Incident description	Corrective Action	AWQI #	Corrective Action Date
April 15, 2016	Loss of coagulant	Re-initialized coagulant	129180	April 15, 2016

Note: Corrective action Date is Date of resolution.

Microbiological testing is done under Schedule 10 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of Ecoli Or Fecal Results (min #)-(max #) (ct/100 mL)	Range of Total Coliform Results (min #)-(max #) (ct/100 mL)	Number of HPC Samples	Range of HPC Results (min #)-(max #) (ct/mL)
Raw	52	<2 - 86	2 - 400	0	N/A
Treated	52	0 - 0	0 - 0	52	<10 - 10
Distribution	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).				

Operational testing is done under Schedule 7 of Regulation 170/03 during the period Covered by this annual report.

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity	8760	0.02 – 0.72 NTU
Chlorine - Free	8760	1.43 – 2.58 mg/L
Fluoride (If the DWS provides fluoridation)	N/A	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: (Suspended Solids)	Date Sampled	Result	Unit of Measure
21- July- 2014 Municipal Drinking Water Licence Number: 041-101	South Settling Pond	Jan 18/16	<3.0	mg/L
	South Settling Pond	Feb 09/16	4.0	mg/L
	South Settling Pond	Mar 07/16	4.0	mg/L
	South Settling Pond	Apr 04/16	14.0	mg/L
	South Settling Pond	May 09/16	3.0	mg/L
	North Settling Pond	June 14/16	<3.0	mg/L
	South Settling Pond	June 14/16	<3.0	mg/L
	North Settling Pond	July 04/16	<3.0	mg/L
	South Settling Pond	July 04/16	<3.0	mg/L
	North Settling Pond	Aug 09/16	<3.0	mg/L
	South Settling Pond	Aug 09/16	3.0	mg/L
	North Settling Pond	Sept 12/16	<3.0	mg/L
	South Settling Pond	Sept 12/16	<3.0	mg/L
	North Settling Pond	Oct 03/16	<3.0	mg/L
	South Settling Pond	Oct 03/16	6.0	mg/L
	North Settling Pond	Nov 07/16	3.0	mg/L
	South Settling Pond	Nov 07/16	5.0	mg/L
	North Settling Pond	Dec 02/16	3.0	mg/L
	South Settling Pond	Dec 02/16	4.0	mg/L
Limit 25.0 mg/L		Annual Average:		4.0 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	January 12, 2016	0.02	ug/L	No
Arsenic	January 12, 2016	0.2	ug/L	No
Barium	January 12, 2016	12.3	ug/L	No
Boron	January 12, 2016	17.9	ug/L	No
Cadmium	January 12, 2016	0.005	ug/L	No



Chromium	January 12, 2016	0.28	ug/L	No
*Lead	n/a			
Mercury	January 12, 2016	0.01	ug/L	No
Sodium	January 12, 2016	6.38	mg/L	No
Selenium	January 12, 2016	0.13	ug/L	No
Uranium	January 12, 2016	0.055	ug/L	No
Fluoride	January 12, 2016	0.09	mg/L	No
Nitrite (N)	December 28, 2016	< 0.1	mg/L	No
Nitrate (N)	December 28, 2016	0.4	mg/L	No
Nitrite + Nitrate (N)	December 28, 2016	0.4	mg/L	No
Ammonia + Ammonium (N)	December 28, 2016	0.33	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	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).		
Distribution	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).		

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	January 12, 2016	0.02	ug/L	No
Atrazine + N-dealkylated metabolites	January 12, 2016	0.01	ug/L	No
Atrazine	January 12, 2016	0.01	ug/L	No
Azinphos-methyl	January 12, 2016	0.05	ug/L	No
Benzene	January 12, 2016	0.32	ug/L	No
Benzo(a)pyrene	January 12, 2016	0.004	ug/L	No
Bromoxynil	January 12, 2016	0.33	ug/L	No
Carbaryl	January 12, 2016	0.05	ug/L	No
Carbofuran	January 12, 2016	0.01	ug/L	No
Carbon Tetrachloride	January 12, 2016	0.16	ug/L	No
Chlorpyrifos	January 12, 2016	0.02	ug/L	No
Desethyl atrazine	January 12, 2016	0.01	ug/L	No
Diazinon	January 12, 2016	0.02	ug/L	No
Dicamba	January 12, 2016	0.20	ug/L	No
1,2-Dichlorobenzene	January 12, 2016	0.41	ug/L	No



1,4-Dichlorobenzene	January 12, 2016	0.36	ug/L	No
1,2-Dichloroethane	January 12, 2016	0.35	ug/L	No
1,1-Dichloroethene (vinylidene chloride)	January 12, 2016	0.33	ug/L	No
Dichloromethane	January 12, 2016	0.35	ug/L	No
2,4-Dichlorophenol	January 12, 2016	0.15	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 12, 2016	0.19	ug/L	No
Diclofop-methyl	January 12, 2016	0.40	ug/L	No
Dimethoate	January 12, 2016	0.03	ug/L	No
Diquat	January 12, 2016	1.0	ug/L	No
Diuron	January 12, 2016	0.03	ug/L	No
Glyphosate	January 12, 2016	1.0	ug/L	No
Malathion	January 12, 2016	0.02	ug/L	No
MCPA	January 12, 2016	0.12	ug/L	No
Metolachlor	January 12, 2016	0.01	ug/L	No
Metribuzin	January 12, 2016	0.02	ug/L	No
Monochlorobenzene	January 12, 2016	0.3	ug/L	No
Paraquat	January 12, 2016	1.0	ug/L	No
Pentachlorophenol	January 12, 2016	0.15	ug/L	No
Phorate	January 12, 2016	0.01	ug/L	No
Picloram	January 12, 2016	1.0	ug/L	No
Polychlorinated Biphenyls(PCB)	January 12, 2016	0.04	ug/L	No
Prometryne	January 12, 2016	0.03	ug/L	No
Simazine	January 12, 2016	0.01	ug/L	No
THM (NOTE: show latest annual average)	Please See Individual Annual Reports for Distribution System Information: Leamington (220004992), Kingsville (220003403), Essex (220003680), and Lakeshore (260004995).			
Terbufos	January 12, 2016	0.01	ug/L	No
Tetrachloroethylene	January 12, 2016	0.35	ug/L	No
2,3,4,6-Tetrachlorophenol	January 12, 2016	0.20	ug/L	No
Triallate	January 12, 2016	0.01	ug/L	No
Trichloroethylene	January 12, 2016	0.44	ug/L	No
2,4,6-Trichlorophenol	January 12, 2016	0.25	ug/L	No
Trifluralin	January 12, 2016	0.02	ug/L	No
Vinyl Chloride	January 12, 2016	0.17	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			