



Union Water Supply System

P.O. Box 340, 1615 Union Avenue, Ruthven, Ontario, N0P 2G0

Tele: 519-326-1668 Fax: 519-326-3490

Email: rbouchard@unionwater.ca

www.unionwater.ca

SENT BY: EMAIL

February 18, 2021

Town of Kingsville
2021 Division Road North
Kingsville, Ontario
N9Y 2Y9

Attention: Mr. John Norton, Chief Administrative Officer

Dear Mr. Norton,

RE: Annual Report (2020) Requirement Section 11, Reg. 170/03 and Summary Report (2020) Requirement Schedule 22, Reg. 170/03

Attached are the following items for the Kingsville Water Distribution System supplied by the UWSS:

1. Annual Report (Section 11, Reg. 170/03)
2. Summary Report (Schedule 22, Reg. 170/03).

Annual Report

The Annual Report must be prepared before February 28, 2021 which requirement is now satisfied. It must also be provided to all members of Council, given at no charge to the public on request and posted on the municipal website.

Summary Report

The Summary Report must be provided to all members of Council before March 31, 2021. Although the Report gives information for all parts of the UWSS, the information that refers to the Kingsville Water Distribution System satisfies the requirements of Schedule 22, Reg. 170/03.

Please call me if you have any questions or comments.

Yours truly,

Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management

kmj

CC: Andrew Plancke, Shaun Martinho

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Ontario Clean Water Agency
Agence Ontarienne Des Eaux



Annual Performance Report
Kingsville Distribution System
Drinking Water System # 220003403
2020

Prepared for the Corporation of the Town of Kingsville

By the Ontario Clean Water Agency
Sam Wen
Process & Compliance Technician
swen@ocwa.com
519-326-4447

ANNUAL REPORT

Drinking Water System Number:	220003403
Drinking Water System Name:	Kingsville Distribution System (Union WSS)
Drinking Water System Owner:	The Corporation of The Town of Kingsville
Drinking Water System Category:	Large Municipal Residential
Period being reported:	01-January-2020 to 31-December 2020

<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>Town of Kingsville Municipal Office 2021 Division Rd. North, Kingsville, Ontario</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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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 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 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

Distribution only. Water Distribution Class II serving approximately 22,000 people through approximately 7500 service connections fed from approximately 315 km of system infrastructure water main.

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

In 2020, Kingsville incurred approximately \$5,600,000.00 in operational expenses and a further \$1,000,000.00 in Capital works projects required to maintain the water system.

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
None					

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 Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	See annual report for the Union Water Supply System # 210000853				
Treated	See annual report for the Union Water Supply System # 210000853				

Distribution	467	0-0	0-0	208	<10 - <10
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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	Please see the Annual Report for the Union Water Supply System # 210000853		
Chlorine	624	1.26-2.03	mg/L
Fluoride (If the DWS provides fluoridation)	N/A	N/A	N/A

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

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 (N)	07-Jan-2020	<0.1	mg/L	No
Nitrate (N)		0.5	mg/L	No
Ammonia N-Total		0.04	mg/L	No
Nitrite (N)	06-Apr-2020	<0.1	mg/L	No
Nitrate (N)		0.5	mg/L	No
Ammonia N-Total		0.08	mg/L	No
Nitrite (N)	07-July-2020	< 0.1	mg/L	No
Nitrate (N)		0.4	mg/L	No
Ammonia N-Total		0.05	mg/L	No
Nitrite (N)	05-Oct-2020	<0.1	mg/L	No
Nitrate (N)		0.2	mg/L	No
Ammonia N-Total		0.06	mg/L	No

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	N/A	N/A	N/A	N/A
Distribution	24	0.1-3.56	Ug/L	No

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	29.75	ug/L	No
HAA (NOTE: show latest annual average)	Annual Average	15.45	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 2020

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 that is owned by a municipality, municipal board or municipal corporation must provide to its councillors or 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 is therefore subject to Schedule 22.

The Summary Report must list the following:

- Any requirements of the Safe Drinking Water Act, 2002 that the system failed to meet during the period covered by the Summary Report
- Any 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 2020.

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:

There were no non-compliances or Adverse Water Quality Incidents (AWQIs) identified for the portion of the Union Water common Distribution System that is supplied by Union Water Supply System.

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 #150851 on July 21, 2020 - sample taken at distribution station SS-L-14 with a TC count of 5. A BWA was issued on July 21, 2020. Staff flushed and resampled the affected area upstream and downstream on July 22, 2020 and 24 hours later. Those samples were returned clean.

Kingsville Water Distribution System

Non-Compliance Item:

There were no non-compliances or Adverse Water Quality Incidents (AWQIs) identified for the portion of the Kingsville Distribution System that is supplied by the Union Water Supply System.

Essex Water Distribution System

Non-Compliance Item:

There were no non-compliances or Adverse Water Quality Incidents (AWQIs) identified for the portion of the Essex Distribution System that is supplied by the Union Water Supply System.

Lakeshore Water Distribution System

Non-Compliance Item:

There were no non-compliances or Adverse Water Quality Incidents (AWQIs) identified for the portion of the Lakeshore Distribution System that is supplied by the Union Water Supply System

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 2020 (see Table 1 below) are as follows:

- Maximum Amount Taken per Minute in 2020 (Litres/Min) 88,304
- Maximum Amount Taken Per Day in 2020 (Litres/Day) 109,548,000

The system did not exceed the PTTW limits in 2020.

Drinking Water License

The UWSS operates under Municipal Drinking Water Licence 041-101; issue Number 7 which has been issued for the period July 18, 2020 to July 17, 2024. 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 97,115m³ (21.37 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
2020 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	37,015	53,328	53,328,000	113,650	39,327
February	163,656	49,162	61,784	61,784,000	113,650	54,153
March	163,656	49,790	62,419	62,419,000	113,650	56,430
April	163,656	56,648	72,729	72,729,000	113,650	68,639
May	163,656	65,811	89,261	89,261,000	113,650	70,877
June	163,656	87,655	102,430	102,430,000	113,650	88,304
July	163,656	89,066	109,548	109,548,000	113,650	85,443
August	163,656	80,258	95,148	95,148,000	113,650	81,234
September	163,656	70,016	83,782	83,782,000	113,650	65,909
October	163,656	53,097	70,882	70,882,000	113,650	57,231
November	163,656	45,276	55,625	55,625,000	113,650	44,825
December	163,656	39,059	50,225	50,225,000	113,650	38,658

Table 1B
2020 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	8.14	11.73	25,000	8,651
February	36.00	10.81	13.59	25,000	11,912
March	36.00	10.95	13.73	25,000	12,413
April	36.00	12.46	16.00	25,000	15,098
May	36.00	14.48	19.63	25,000	15,591
June	36.00	19.28	22.53	25,000	19,424
July	36.00	19.59	24.10	25,000	18,795
August	36.00	17.65	20.93	25,000	17,869
September	36.00	15.40	18.43	25,000	14,498
October	36.00	11.68	15.59	25,000	12,589
November	36.00	9.96	12.24	25,000	9,860
December	36.00	8.59	11.05	25,000	8,504

Table 2A
2020 Treated Water Flow Into Distribution System in Metric Units

	Maximum Allowed Flow Rate (m3/Day)	Average Daily Flow (m3/Day)	Maximum Daily Flow (m3/Day)	Peak Instantaneous Flow (Litres/ Second)
January	124,588	30,367	34,881	692
February	124,588	35,813	43,409	991
March	124,588	40,043	51,603	1,281
April	124,588	48,283	60,293	1,415
May	124,588	57,150	80,559	1,432
June	124,588	78,083	94,982	1,680
July	124,588	79,103	97,115	1,668
August	124,588	71,457	86,082	1,574
September	124,588	61,282	75,349	1,384
October	124,588	46,019	62,831	1,265
November	124,588	39,226	46,742	1,247
December	124,588	33,815	42,260	740

Table 2B
2020 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	6.68	7.67	152
February	27.4	7.88	9.55	218
March	27.4	8.81	11.35	282
April	27.4	10.62	13.26	311
May	27.4	12.57	17.72	315
June	27.4	17.18	20.90	370
July	27.4	17.40	21.37	367
August	27.4	15.72	18.94	346
September	27.4	13.48	16.58	304
October	27.4	10.12	13.82	278
November	27.4	8.63	10.28	274
December	27.4	7.44	9.30	163

Table 3A
2020 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	475,832	15,349	334,112	10,778	60,333	1,946	64,841	2,092
February	545,669	18,816	375,337	12,943	58,335	2,012	47,709	1,645
March	685,087	22,100	484,097	15,616	64,133	2,069	53,252	1,718
April	790,081	26,336	567,939	18,931	60,936	2,031	50,449	1,682
May	908,541	29,308	616,542	19,888	67,187	2,167	54,170	1,747
June	1,313,910	43,797	958,039	31,935	112,973	3,766	74,235	2,475
July	1,358,244	43,814	942,699	30,410	95,680	3,086	69,744	2,250
August	1,237,242	39,911	884,356	28,528	93,561	3,018	68,871	2,222
September	1,019,718	33,991	706,956	23,565	75,854	2,528	61,189	2,040
October	788,481	25,435	472,507	15,242	72,606	2,342	61,197	1,974
November	677,214	22,574	363,478	12,116	62,862	2,095	64,841	2,161
December	549,454	17,724	373,269	12,041	61,576	1,986	64,483	2,080
Total	10,349,473	28,263	7,079,331	19,333	886,036	2,421	734,981	2,007

Table 3A
2020 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	104,668,407	3.38	73,494,365	2.37	13,271,405	0.43	14,263,026	0.46
February	120,030,400	4.14	82,562,598	2.85	12,831,906	0.44	10,494,513	0.36
March	150,698,072	4.86	106,486,453	3.44	14,107,288	0.46	11,713,802	0.38
April	173,793,524	5.79	124,929,115	4.16	13,404,046	0.45	11,097,229	0.37
May	199,851,081	6.45	135,620,280	4.37	14,779,074	0.48	11,915,734	0.38
June	289,019,795	9.63	210,739,119	7.02	24,850,586	0.83	16,329,417	0.54
July	298,771,912	9.64	207,364,790	6.69	21,046,658	0.68	15,341,535	0.49
August	272,155,193	8.78	194,531,125	6.28	20,580,543	0.66	15,149,502	0.49
September	224,306,602	7.48	155,508,580	5.18	16,685,547	0.56	13,459,698	0.45
October	173,441,573	5.59	103,937,010	3.35	15,971,087	0.52	13,461,458	0.43
November	148,966,255	4.97	79,953,982	2.67	13,827,707	0.46	14,263,026	0.48
December	120,862,983	3.90	82,107,701	2.65	13,544,826	0.44	14,184,277	0.46
Total	2,276,565,796	6.22	1,557,235,119	4.25	194,900,673	0.53	161,673,218	0.44



Union Water Supply System

P.O. Box 340, 1615 Union Avenue, Ruthven, Ontario, N0P 2G0

Tele: 519-326-1668 Fax: 519-326-3490

Email: rbouchard@unionwater.ca

www.unionwater.ca

SENT BY: EMAIL

February 18, 2021

Municipality of Leamington

111 Erie St. N.

Leamington, Ontario

N8H 2Z9

Attention: Mr. Peter Neufeld, Chief Administrative Officer

Town of Kingsville

2021 Division Road North

Kingsville, Ontario

N9Y 2Y9

Attention: Mr. John Norton, Chief Administrative Officer

Town of Essex

33 Talbot Street South

Essex, Ontario

N8M 1A8

Attention: Mr. Chris Nepszy, Chief Administrative Officer

Town of Lakeshore

419 Notre Dame Street

Belle River, Ontario

N0R 1A0

Attention: Mr. Truper McBride, Chief Administrative Officer

RE: Union Water Supply System Annual Report for 2020 in accordance with Section 11 O. Reg. 170/03

At its meeting on February 17, 2021, the Joint Board of Management of the UWSS received the Annual Report for 2020 prepared in accordance with Section 11 of O. Reg. 170/03. By this letter and as required by O. Reg. 170/03 I am providing the owners of the drinking water systems that obtain water from the UWSS with a copy of the UWSS Annual Report for 2020.

I request that you do the following:

1. Provide each member of your municipal council with the report on or before February 28, 2021.
2. Provide a copy of the report to anyone who requests it, free of charge (Section 11 (8) O. Reg. 170/03) (Copies will also be made available free of charge at the Ruthven WTP).

3. Post a copy of the report on your municipal website (Section 11(10), O. Reg. 170/03).
4. Include a notice that the report is available at your municipal office and at the Ruthven Water Treatment Plant in any newsletter or other notice that you issue to your residents (Section 11(9.1) O. Reg. 170/03).

Please call me if you have any questions.

Yours truly,



Rodney Bouchard, Manager
Union Water Supply System Joint Board of Management

kmj

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CC: Robert Sharon, Shannon Belleau, Nelson Carvalho, Andrew Plancke, Shaun Martinho, Andy Graf, Kevin Girard, Albert Dionne, Krystal Kalbol, Dale Dillen, Ken Penney, Sam Wen, Dave Jubenville



Ontario Clean Water Agency
Agence Ontarienne Des Eaux



Annual Performance Report

Union Area Water Supply System

Drinking Water System # 210000853

2020

**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
Sam Wen
Process & Compliance Technician
swen@ocwa.com
519-326-4447

ANNUAL REPORT

Drinking Water System Number:	210000853
Drinking Water System Name:	Union Water Supply System
Drinking Water System Owner:	Union 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-2020 to 31-December-2020

<u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u>	<u>Complete for all other Categories</u>
<p>Does your Drinking Water System serve more than 10,000 people? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></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>Union Water Supply System P.O. Box 340, 1615 Union Ave., Ruthven, Ont. N0P 2G0</p> </div>	<p>Number of Designated Facilities served: <div style="border: 1px solid black; padding: 2px;">N/A</div></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Number of Interested Authorities you report to: <div style="border: 1px solid black; padding: 2px;">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 <input type="checkbox"/> No <input type="checkbox"/></p>

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 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

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 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 _____

Describe your Drinking Water System

The Union Water Supply System (UWSS) includes one water treatment plant, the Ruthven Water Treatment Plant (RWTP) that is located in the hamlet of Ruthven in the Town of Kingsville, Ontario. The RWTP is a chemically assisted conventional filtration plant that draws water from Lake Erie.

The UWSS 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 66,600.

The treatment process includes raw water pH control, chemically assisted up-flow clarification, filtration with dual media filters, primary disinfection using Chlorine gas and secondary disinfection using Chlorine gas and Sodium Hypochlorite.

Seasonally, the RWTP 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:

- DelPac 2020 – Coagulant
- DelPac XG-15 - Coagulant
- Magnafloc LT22S (polymer) - Coagulant Aid
- Powdered Activated Carbon – Taste and Odor Control
- CO₂ – PH adjustment

Filtration:

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

Disinfection:

- Primary: Chlorine Gas
- Secondary: Chlorine Gas and Sodium Hypochlorite

Were any significant expenses incurred to?

- ☒ Install required equipment
☒ Repair required equipment

[X] Replace required equipment

Please provide a brief description and a breakdown of monetary expenses incurred

	<u>Item Description</u>	<u>Expenditures to 2020 Year End</u>
	<u>Capital Works and Major Maintenance</u>	
1	SCADA System Upgrades	\$554,317
2	Raw Water pH Adjustment System	\$186,300
3	Distribution Pressure/Temperature Monitoring System	\$170,299
4	Chlorine Gas System Upgrades	\$110,060
5	DAF System for Clarifier #2	\$138,378
6	Residuals Management	\$136,031
7	New Security and Access Control System	\$108,100
8	Kingsville Water Tower Rehabilitation	\$84,808
9	Treatment Plant Building and Grounds Improvements	\$52,900
10	Low Lift Electrical Upgrades	\$52,754
11	Clarifier #1 Raw Water Pipe—New Flow Meter, Valve & Rotork	\$26,320
12	Clarifier #2 Raw Water Pipe – New Flow Meter	\$18,113
13	New Laboratory	\$15,400
14	High Lift #9 Soft Start	\$9,677
15	Meter Pit #13 Flow Meter	\$8,170
16	Spare Actuator for Filters #5-8	\$5,410
17	Spare Powdered Activated Carbon Feed Pump	\$5,020
18	Clarifier #1 Blow off Valve	\$4,724
	Total Capital Works/Major Maintenance:	\$1,686,781

	<u>New Capital Works in 2021</u>	
1	DAF System for Clarifier #2	\$4,500,000
2	Kingsville Water Tower Rehabilitation	\$1,650,000
3	Filter #2 Rehabilitation	\$360,000
4	Filter #4 Rehabilitation	\$360,000
5	Low Lift Electrical Upgrades	\$200,000
6	High Lift #7 Pump - New	\$175,000
7	Grounds Improvements	\$170,000
8	PLC Upgrades (Low Lift, Cottam Booster, Generator B)	\$150,000
9	New Utility Building – Kingsville Water Tower	\$150,000
10	Distribution System Upgrades – Valves, Monitoring, etc.	\$150,000

11	Former Ammonia Building Retrofit to Maintenance Shop	\$125,000
12	Low Lift Roof Replacement	\$75,000
13	Cottam Booster Mixing System	\$75,000
14	New Laboratory Construction	\$75,000
15	Electrical Upgrades – New Capacitors, etc.	\$70,000
16	Filter Aid System Upgrades	\$60,000
17	Wastewater System – New Backup Pump	\$50,000
18	Billing Meters Upgrades	\$50,000
19	Essex Water Tower New Cathodic Protection System	\$40,000
20	Low Lift Pump #3 Rehabilitation	\$35,000
21	Communication System Upgrades	\$35,000
22	Treatment Plant Admin Area Improvements	\$30,000
23	Clearwell #1 Inlet Rotork	\$20,000
24	New Fencing–Treatment Plant and Leamington Water Tower	\$20,000
	Total Approve New Capital Works for 2021:	\$8,625,000

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
July 21, 2020	TC	count 5	cfu/100ml	Flushing affected area and resampling. BWA was issued on July 21, 2020.	July 24, 2020

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 Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw	52	1 - 54	2-2000	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 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	Unit of Measure
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		(min #)-(max #)	
Turbidity	8760	0.00- 1.998	NTU
Chlorine - Free	8760	0.975-1.698	Mg/L

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

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
July 18, 2019	Suspended Solids	Jan 06/20	3	mg/L
	Suspended Solids	Feb 03/20	3	mg/L
	Suspended Solids	Mar 02/20	3	mg/L
	Suspended Solids	April 06/20	3	mg/L
	Suspended Solids	May 04/20	3	mg/L
	Suspended Solids	June 01/20	3	mg/L
	Suspended Solids	July 06/20	4	mg/L
	Suspended Solids	Aug 04/20	4	mg/L
	Suspended Solids	Sept 08/20	4	mg/L
	Suspended Solids	Oct 05/20	4.5	mg/L
	Suspended Solids	Nov 02/20	3	mg/L
	Suspended Solids	Dec07 /20	3	mg/L

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
July 18, 2019	Total Chlorine residuals	Jan 03/20	0.13	mg/L
	Total Chlorine residuals	Feb 03/20	0.08	mg/L
	Total Chlorine residuals	Mar 02/20	0.06	mg/L
	Total Chlorine residuals	April 06/20	0.09	mg/L
	Total Chlorine residuals	May 05/20	0.12	mg/L
	Total Chlorine residuals	June 01/20	0.14	mg/L
	Total Chlorine residuals	July 06/20	0.06	mg/L
	Total Chlorine residuals	Aug 04/20	0.09	mg/L
	Total Chlorine residuals	Sept 09/20	0.19	mg/L
	Total Chlorine residuals	Oct 06/20	0.12	mg/L
	Total Chlorine residuals	Nov 02/20	0.02	mg/L
	Total Chlorine residuals	Dec10 /20	0.04	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	2020/01/07	0.13	Ug/L	No
Arsenic	2020/01/07	0.2	Ug/L	No
Barium	2020/01/07	16.3	Ug/L	No
Boron	2020/01/07	16.0	Ug/L	No
Cadmium	2020/01/07	0.01	Ug/L	No

Chromium	2020/01/07	0.19	Ug/L	No
*Lead	N/A	N/A	N/A	N/A
Mercury	2020/01/07	0.01<MDL	Ug/L	No
Selenium	2020/01/07	0.07	Ug/L	No
Sodium	2020/01/07	7.83	Mg/L	No
Uranium	2020/01/07	0.166	Ug/L	No
Fluoride	2020/01/07	0.09	Mg/L	No
Nitrite	N/A	N/A	N/A	N/A
Nitrate	N/A	N/A	N/A	N/A

*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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite (N)	06-Jan-2020	<0.1	mg/L	No
Nitrate (N)		0.4	mg/L	No
Ammonia N-Total		0.04	mg/L	No
Nitrite (N)	06-Apr-2020	<0.1	mg/L	No
Nitrate (N)		0.6	mg/L	No
Ammonia N-Total		0.03	mg/L	No
Nitrite (N)	07-July-2020	< 0.1	mg/L	No
Nitrate (N)		0.4	mg/L	No
Ammonia N-Total		0.03	mg/L	No
Nitrite (N)	05-Oct-2020	<0.1	mg/L	No
Nitrate (N)		0.2	mg/L	No
Ammonia N-Total		0.03	mg/L	No

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 (yyyy/mm/dd)	Sample Result	Unit of Measure	Exceedance
Alachlor (ug/L)	2020/01/07	<MDL 0.02	Ug/L	No
Atrazine + N-dealkylated metabolites (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No
Azinphos-methyl (ug/L)	2020/01/07	<MDL 0.05	Ug/L	No
Benzene (ug/L)	2020/01/07	<MDL 0.32	Ug/L	No
Benzo(a)pyrene (ug/L)	2020/01/07	<MDL 0.004	Ug/L	No
Bromoxynil (ug/L)	2020/01/07	<MDL 0.33	Ug/L	No
Carbaryl (ug/L)	2020/01/07	<MDL 0.05	Ug/L	No
Carbofuran (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No
Carbon Tetrachloride (ug/L)	2020/01/07	<MDL 0.17	Ug/L	No
Chlorpyrifos (ug/L)	2020/01/07	<MDL 0.02	Ug/L	No
Diazinon (ug/L)	2020/01/07	<MDL 0.02	Ug/L	No
Dicamba (ug/L)	2020/01/07	<MDL 0.2	Ug/L	No
1,2-Dichlorobenzene (ug/L)	2020/01/07	<MDL 0.41	Ug/L	No
1,4-Dichlorobenzene (ug/L)	2020/01/07	<MDL 0.36	Ug/L	No
1,2-Dichloroethane (ug/L)	2020/01/07	<MDL 0.35	Ug/L	No
1,1-Dichloroethylene (ug/L)	2020/01/07	<MDL 0.33	Ug/L	No
Dichloromethane (Methylene Chloride) (ug/L)	2020/01/07	<MDL 0.35	Ug/L	No
2,4-Dichlorophenol (ug/L)	2020/01/07	<MDL 0.15	Ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)	2020/01/07	<MDL 0.19	Ug/L	No
Diclofop-methyl (ug/L)	2020/01/07	<MDL 0.4	Ug/L	No
Dimethoate (ug/L)	2020/01/07	<MDL 0.06	Ug/L	No
Diquat (ug/L)	2020/01/07	<MDL 1.0	Ug/L	No
Diuron (ug/L)	2020/01/07	<MDL 0.03	Ug/L	No
Glyphosate (ug/L)	2020/01/07	<MDL 1.0	Ug/L	No
HAAs (Note: show latest running annual average)		7.55	Ug/L	No
Malathion (ug/L)	2020/01/07	<MDL 0.02	Ug/L	No
Metolachlor (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No
Metribuzin (ug/L)	2020/01/07	<MDL 0.02	Ug/L	No
Monochlorobenzene (Chlorobenzene) (ug/L)	2020/01/07	<MDL 0.3	Ug/L	No
Paraquat (ug/L)	2020/01/07	<MDL 1.0	Ug/L	No
PCB (ug/L) - TW	2020/01/07	<MDL 0.04	Ug/L	No
Pentachlorophenol (ug/L)	2020/01/07	<MDL 0.15	Ug/L	No
Phorate (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No
Picloram (ug/L)	2020/01/07	<MDL 1.0	Ug/L	No
Prometryne (ug/L)	2020/01/07	<MDL 0.03	Ug/L	No
Simazine (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No
Terbufos (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No

Tetrachloroethylene (ug/L)	2020/01/07	<MDL 0.35	Ug/L	No
2,3,4,6-Tetrachlorophenol (ug/L)	2020/01/07	<MDL 0.2	Ug/L	No
THMs (Note: show latest running annual average)		18.42	Ug/L	No
Triallate (ug/L)	2020/01/07	<MDL 0.01	Ug/L	No
Trichloroethylene (ug/L)	2020/01/07	<MDL 0.44	Ug/L	No
2,4,6-Trichlorophenol (ug/L)	2020/01/07	<MDL 0.25	Ug/L	No
Trifluralin (ug/L)	2020/01/07	<MDL 0.02	Ug/L	No
Vinyl Chloride (ug/L)	2020/01/07	<MDL 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			