



**DORCHESTER
DRINKING WATER
SYSTEM**

**2021
ANNUAL REPORT**

**ONTARIO REGULATION 170/03
Part III Form 2
Section 11**

28 FEBRUARY 2022



ANNUAL REPORT – DORCHESTER DWS

Drinking-Water System Number:	220002146
Drinking-Water System Name:	Dorchester Drinking Water System
Drinking-Water System Owner:	Municipality of Thames Centre
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2021 to December 31, 2021

For Large Municipal Residential Water Systems

Does your Drinking-Water System serve more than 10,000 people?

Yes [] No [X]

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

Yes [X] No []

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

- Available by calling Thames Centre water department at (519) 268-7490 or on Thames Centre website at www.thamescentre.on.ca or at the municipal offices at 4305 Hamilton Road, Dorchester, ON N0L 1G3

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
None	N/A

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

- [X] Public access/notice via the web
- [X] Public access/notice via Government Office
- [X] Public access/notice via Public Request
- [X] Public access/notice via a Public Library

Describe your Drinking-Water System

The Dorchester Drinking Water System consists of 9 (nine) groundwater wells. The raw water from the production wells passes through a treatment system consisting of clear-wells, a chemical feed system, filtration system, ultraviolet disinfection, storage reservoirs, and high lift pumps. Operation of the treatment system is controlled based upon the liquid level condition within the elevated water storage tank in the village of Dorchester. The SCADA system indicates to the water treatment facility PLC when treated water is required to be pumped into the distribution system. During periods of low demand, the treatment system remains in the ready mode. The distribution system consists of approximately 46.73km of water main contained within the urban boundaries of the village of Dorchester.

List all water treatment chemicals used over this reporting period

- sodium hypochlorite

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

- install Water Tower bypass system = \$38,575
- repair production well 3PW-8 casing and screen = \$30,346
- Dorchester Well exploration program = \$53,591
- Dorchester WTF roof repair = \$66,733
- Backup highlift motor = \$18,023

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

Adverse Incident Date	Parameter	Corrective Action Taken	Adverse Water Quality Indicator # (AWQI)	Sample Result(s)	Maximum Allowable Concentration (MAC)
2021 03 30	Trihalomethanes (THM)	report to MECP / MLHU	153782	101.17µg/L RAA	100µg/L RAA
2021 06 18	Trihalomethanes (THM)	report to MECP / MLHU	154344	100.5µg/L RAA	100µg/L RAA
2021 10 04	Trihalomethanes (THM)	report to MECP / MLHU / resample	155787	102.42µg/L RAA	100µg/L RAA

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

Sample Source	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 Water	359	0 – 1	0 – 1	0	N/R
Treated Water	52	0 - 0	0 - 0	52	<10 - 20
Distribution Water	206	0 - 0	0 - 0	56	<10 - 30

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

Sample Analysis / Sample Source	Number of Samples	Range of Results (min #)-(max #)	Average Level recorded
Turbidity / Storage Reservoirs - treated water (TW)	524,228	0.00 – 10.20 ntu	0.07 ntu
Chlorine (free) / Storage Reservoirs – treated water (TW)	524,228	0.00 – 5.00 mg/L	1.57 mg/L
Fluoride (if the DWS provides fluoridation) / Storage Reservoirs – treated water (TW)	<i>Fluoride is not added to this system</i>	—	
Chlorine (free) / Hamilton Road – Distribution water (DW)	365	0.45 – 1.79 mg/L	1.18 mg/L

Turbidity levels recorded below 0.04 ntu and above 0.25 ntu were instantaneous results directly caused by composite analyzer failure or maintenance activities and are not indicative of actual water system levels. Chlorine levels recorded in the storage reservoirs below 1.06 mg/L or above 2.12 mg/L were instantaneous results directly caused by composite analyzer or chemical dosing pump maintenance activities and are not indicative of actual water system levels.

Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help set the water softener at the level recommended by the manufacturer. The most recent Hardness (CaCO₃) sample (February 19th, 2021) returned with a result of 276 mg/L (equivalent to 16.14 grains).

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
Dorchester Drinking Water System MDWL Issue Number: 4 Schedule C, table 5 (2017 12 12)	Trihalomethanes THM	monthly	99.3 (running annual average)	µg/L

Summary of INORGANIC parameters tested during this reporting period or the most recent sample results (required sampling frequency = every 12 months)

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	19 Feb 2021	0.90 <MDL	µg/L	no
Arsenic	19 Feb 2021	0.4	µg/L	no
Barium	19 Feb 2021	81.7	µg/L	no
Boron	19 Feb 2021	21	µg/L	no
Cadmium	19 Feb 2021	0.003	µg/L	no
Chromium	19 Feb 2021	0.54	µg/L	no
*Lead	see summary below			
Mercury	19 Feb 2021	0.01 <MDL	µg/L	no
Selenium	19 Feb 2021	0.19	µg/L	no
Sodium (every 5 years)	14 Feb 2020	28.2	mg/L	yes
Uranium	19 Feb 2021	1.04	µg/L	no
Fluoride (every 5 years)	14 Feb 2020	0.15	mg/L	no
Nitrite	19 Feb 2021	0.003 <MDL	mg/L	no
	18 May 2021	0.003 <MDL	mg/L	no
	17 Aug 2021	0.003 <MDL	mg/L	no
	17 Nov 2021	0.003 <MDL	mg/L	no
Nitrate	19 Feb 2021	1.07	mg/L	no
	18 May 2021	1.52	mg/L	no
	17 Aug 2021	1.47	mg/L	no
	17 Nov 2021	1.18	mg/L	no

**Summary of LEAD testing under Schedule 15.1 during this reporting period –
Summer: (June 15/2021 – October 15/2021) Winter: (December 15/2021 – April 15/2022)**

Sampling Period	Residential Samples LEAD range of results (µg/L) acceptable level <10 µg/L	Non-Residential Samples LEAD range of results (µg/L) acceptable level <10 µg/L	Distribution System Samples LEAD range of results (µg/L) acceptable level <10 µg/L	Any Change in Water Chemistry? (ie. variance in Alkalinity sample results)	Distribution System Samples ALKALINITY range of results (mg/L) acceptable level 30-500mg/L
Summer	N/R	N/R	N/R	no	221 - 227
Winter	N/R	N/R	N/R	no	234 - 235

❖ N/R = not required - water system qualified for MECP Reduced Sampling (O.Reg170/03 schedule 15.1-5)

Summary of ORGANIC parameters sampled during this reporting period or the most recent sample results (required sampling frequency = every 12 months)

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	19 Feb 2021	0.020 <MDL	µg/L	no
Atrazine + N-dealkylated metabolites	19 Feb 2021	0.010 <MDL	µg/L	no
Azinphos-methyl	19 Feb 2021	0.050 <MDL	µg/L	no
Benzene	19 Feb 2021	0.320 <MDL	µg/L	no
Benzo(a)pyrene	19 Feb 2021	0.004 <MDL	µg/L	no
Bromoxynil	19 Feb 2021	0.330 <MDL	µg/L	no
Carbaryl	19 Feb 2021	0.050 <MDL	µg/L	no
Carbofuran	19 Feb 2021	0.010 <MDL	µg/L	no
Carbon Tetrachloride	19 Feb 2021	0.170 <MDL	µg/L	no
Chlorpyrifos	19 Feb 2021	0.020 <MDL	µg/L	no
Diazinon	19 Feb 2021	0.020 <MDL	µg/L	no
Dicamba	19 Feb 2021	0.200 <MDL	µg/L	no
1,2-Dichlorobenzene	19 Feb 2021	0.410 <MDL	µg/L	no
1,4-Dichlorobenzene	19 Feb 2021	0.360 <MDL	µg/L	no
1,2-Dichloroethane	19 Feb 2021	0.350 <MDL	µg/L	no
1,1-Dichloroethylene (vinylidene chloride)	19 Feb 2021	0.330 <MDL	µg/L	no
Dichloromethane	19 Feb 2021	0.350 <MDL	µg/L	no
2-4 Dichlorophenol	19 Feb 2021	0.150 <MDL	µg/L	no
2,4-Dichlorophenoxy acetic acid (2,4-D)	19 Feb 2021	0.190 <MDL	µg/L	no
Diclofop-methyl	19 Feb 2021	0.400 <MDL	µg/L	no
Dimethoate	19 Feb 2021	0.060 <MDL	µg/L	no
Diquat	19 Feb 2021	1.000 <MDL	µg/L	no
Diuron	19 Feb 2021	0.030 <MDL	µg/L	no
Glyphosate	19 Feb 2021	1.000 <MDL	µg/L	no
Malathion	19 Feb 2021	0.020 <MDL	µg/L	no

HAA (running annual average)	19 Feb 2021 18 May 2021 17 Aug 2021 16 Nov 2021	75.78	µg/L	no
Metolachlor	19 Feb 2021	0.010 <MDL	µg/L	no
Metribuzin	19 Feb 2021	0.020 <MDL	µg/L	no
Monochlorobenzene	19 Feb 2021	0.300 <MDL	µg/L	no
Paraquat	19 Feb 2021	1.000 <MDL	µg/L	no
Pentachlorophenol	19 Feb 2021	0.150 <MDL	µg/L	no
Phorate	19 Feb 2021	0.010 <MDL	µg/L	no
Picloram	19 Feb 2021	1.000 <MDL	µg/L	no
Polychlorinated Biphenyls(PCB)	19 Feb 2021	0.040 <MDL	µg/L	no
Prometryne	19 Feb 2021	0.030 <MDL	µg/L	no
Simazine	19 Feb 2021	0.010 <MDL	µg/L	no
THM (running annual average)	19 Feb 2021 18 May 2021 17 Aug 2021 16 Nov 2021	99.33	µg/L	no
Terbufos	19 Feb 2021	0.010 <MDL	µg/L	no
Tetrachloroethylene	19 Feb 2021	0.350 <MDL	µg/L	no
2,3,4,6-Tetrachlorophenol	19 Feb 2021	0.200 <MDL	µg/L	no
Triallate	19 Feb 2021	0.010 <MDL	µg/L	no
Trichloroethylene	19 Feb 2021	0.440 <MDL	µg/L	no
2,4,6-Trichlorophenol	19 Feb 2021	0.250 <MDL	µg/L	no
Trifluralin	19 Feb 2021	0.020 <MDL	µg/L	no
Vinyl Chloride	19 Feb 2021	0.170 <MDL	µg/L	no

- ❖ MDL = the method detection limit - the minimum concentration of a substance that can be measured and reported with 99% confidence that the concentration is greater than zero.

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

Parameter	Sample Date	Result Value	Unit of Measure	ODWS MAC maximum allowable concentration
Sodium (Na)	14 Feb 2020 (every 60 months)	28.2	mg/L	20 mg/L
Sodium (Na) re-sample	21 Feb 2020	26.6	mg/L	20 mg/L
Trihalomethanes (THM)	running annual average (RAA)	99.3	µg/L	100 µg/L
Haloacetic Acids (HAA)	running annual average (RAA)	75.8	µg/L	80 µg/L

Sodium

Sodium levels in drinking water are every 57 months. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of the water. When sodium levels are above 20 mg/L the MECP and MOH are notified. Middlesex London Health Unit (MLHU) provides a "Fact Sheet" on sodium in drinking water which is included annually in January water bills and is available at:

<https://www.thamescentre.on.ca/sites/default/files/2019-05/MLHUSodiumDorchester.pdf> in



order to help people on sodium restricted diets control their sodium intake. The most recent sodium sample (February 21st, 2020) returned with a resulting concentration of 26.6 mg/L.

Trihalomethanes (THMs)

A Trihalomethane (THM) sample is required monthly from the distribution system. THMs are a by-product of the disinfection process. Chlorine is used to protect the water supply from microorganisms such as bacteria and viruses. When natural occurring organic material is present, chlorine can produce THMs. The current maximum allowable concentration, as a running annual average, for THMs in a drinking water supply in Ontario is 100 micrograms per litre ($\mu\text{g/L}$).

Haloacetic Acids (HAA)

A Haloacetic Acid (HAA) sample is required quarterly from the distribution system. HAAs are a recently added sample requirement listed in the MECP Ontario Regulation 169/03 and level exceedances are reportable beginning January 1, 2020. Similar to THMs, HAAs are a by-product of the disinfection process. Chlorine is used to protect the water supply from microorganisms such as bacteria and viruses. When natural occurring organic material is present, chlorine can produce HAAs. The current maximum allowable concentration, as a running annual average, for HAAs in a drinking water supply in Ontario is 80 micrograms per litre ($\mu\text{g/L}$).