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2022 ANNUAL REPORT

<b>Drinking-Water System Number:</b>	<b>W210000167</b>
<b>Drinking-Water System Name:</b>	Town of Hanover Drinking Water System
<b>Drinking-Water System Owner:</b>	The Corporation of the Town of Hanover
<b>Drinking-Water System Category:</b>	Large Municipal (Level 2 Treatment and Distribution)
<b>Period being reported:</b>	January 1 <sup>st</sup> , 2022 to December 31 <sup>st</sup> , 2022

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p><b>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [ X ]</b></p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet? Yes [ X] No [ ]</b></p> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b></p> <div><p><b>Corporation of the Town of Hanover 341 10<sup>th</sup> Street, Hanover Ontario N4N 1P5 Municipal Office- Reception Desk</b></p></div>	<p><b><u>Complete for all other Categories.</u></b></p> <p><b>Number of Designated Facilities served:</b></p> <div><p>N/A</p></div> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [ ] No [ ]</b></p> <p><b>Number of Interested Authorities you report to:</b></p> <div><p>N/A</p></div> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [ ] No [ ]</b></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 of their drinking water from your system:

<b>Drinking Water System Name</b>	<b>Drinking Water System Number</b>

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 \_\_\_\_\_

**Describe your Drinking-Water System**

The Hanover Water Treatment Plant is a combination of ground water and surface water serving a population of 7,650 residents. Treatment process includes raw water pumped to a central treatment facility; Source water Ruhl Lake, Well #1 and Well #2 receives chemically aided filtration pretreatment. This combined water is disinfected with U.V. and chlorine gas. Seasonally, enhanced U.V. and hydrogen peroxide is used for taste and odor control. The treated water is combined in the storage clearwell and then pumped to the distribution system and stored in two elevated water towers.

**List all water treatment chemicals used over this reporting period**

PAX XL 52 – Coagulant to assist filtration.

Chlorine gas – To inactivate disease causing organisms.

Hydrogen Peroxide – Strong oxidant to control taste and odor issues.

**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**

- Hydro Cost Water Plant/Well 1 \$201,018.74
- Hydro Cost Ruhl Lake \$27,659.27
- Hydro Cost Well 2 \$29,987.81
- Chlorine Gas \$84,836.02
- PAX-XL \$30,027.75
- UV System and Parts \$23,690.42
- Lakeside Process Controls SCADA New Trends and Service Agreement \$17,808.00
- Annual Generator Service \$3339.15
- Annual Online and Benchtop Analyzer Service/Calibration \$6874.00
- Annual Chlorinator Service \$11,744.59
- Annual Flow Meter Calibration \$909.65
- Actuated Valves \$19,183.79
- Filter Media \$1850
- D.W.Q.M.S Audits and Consultant Fees \$5006.43



- Analytical Costs \$ 15,266.60
- Well #1 Rehabilitation \$ 52,603.96
- Water Main Repair \$8125.42
- Hydrant Repair \$17,561.48
- New UV Flow Meter \$11,145.86
- New Turbidity Analyzer \$7490.66
- Well #2 MCC work \$12,505.39
- Surface Wash Pipe Replacement \$22065.13

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
March 22, 2022	Lead Exceedance	12	Ug/L	Re-sampled, second sampled was under MAC	March 29, 2022
June 7, 2022	UV flow meter controller stopped working cause incorrect UV dose calculation for approximately 30min	Incorrect dose for 30min	Mj/cm2	Replaced controller for UV flow meter	June 7, 2022
September 14, 2022	Lead Exceedance	14.6	Ug/L	Re-sampled, second sampled was under MAC	September 21, 2022

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	159	(2)-(126)	(38)-(790)	N/A	N/A
Treated	53	0	0	53	(0)-(10)
Distribution	212	0	0	53	(<10)-(10)

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 #)-(Avg)-(max #)	Unit of Measure
Influent Turbidity	8760	(0.14)-(3.98)-(9.99)	NTU

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



Effluent Turbidity	8760	(0.02) -(0.08) -(2.74)	NTU
Filter #1 Turbidity	8760	(0.02) -(0.08) -(2.06)	NTU
Filter #2 Turbidity	8760	(0.02) -(0.06) -(2.32)	NTU
Filter #3 Turbidity	8760	(0.00) -(0.05) -(1.68)	NTU
Influent Chlorine	8760	(0.00) -(1.86) -(5.00)	Mg/L
Clearwell Chlorine	8760	(0.08) -(1.78) -(3.18)	Mg/L
Effluent Chlorine	8760	(0.08) -(1.76) -(4.92)	Mg/L
Distribution Samples	365	(0.52) -(1.31) -(1.86)	Mg/L
Waste Water	Quarterly	(7.0) -(10.50) -(15.0)	Mg/L
Trojan UV Swift 24 ECT System 4.0 Log Crypto Reduction at peak flow 180 l/s	Disinfection UV Transmittance 93% Contaminant (T&O) Design 93%0/0/cm	Disinfection Dose 40 mJ/cm2	
Fluoride (If the DWS provides fluoridation)	N/A		

**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 April 15 2016	Parameter Blue Green Algae	Date Sampled June to October	Result (min)-(max)	Unit of Measure Ug/L
Ruhl Lake	Blue Green Algae	June to October 23 Samples	(0.1) -(0.1)	Ug/L
Treated Water	Blue Green Algae	June to October 23 samples	(0.1)-(0.1)	Ug/L

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



Parameter	Sample Date	MAC	Half MAC	AO/OG	Result Value	Unit of Measure	Exceedance
Antimony	11-May-22	6	3	-	0.6	Ug/L	
Arsenic	11-May-22	10	5	-	0.3	Ug/L	
Barium	11-May-22	1000	500	-	39.3	Ug/L	
Boron	11-May-22	5000	2500	-	47	Ug/L	
Cadmium	11-May-22	5	2.5	-	0.003	Ug/L	
Chromium	11-May-22	50	25	-	0.20	Ug/L	
Mercury	11-May-22	1	0.5	-	0.01	Ug/L	
Selenium	18-May-21	50	25	-	0.07	Ug/L	
Uranium	18-May-21	20	10		0.303	Ug/L	
*Lead		10	-	-		Ug/L	
Sodium	9-Nov-20	20	10		12.2	Mg/L	
Fluoride	23-Jul-18	1.5	0.75		0.17	Mg/L	
Nitrite	7-Nov-22	1	-	-	0.003	Mg/L	
Nitrate	7-Nov-22	10	-	-	2.34	Mg/L	

\*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 #)	Unit of Measure	Number of Exceedances
Plumbing	92	0.2 – 14.6	Ug/L	2
Distribution	9	0.1 - 0.89	Ug/L	

## Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	MAC	Half MAC	AO/OG	Result Value	Unit of Measure	Exceedance
Alachlor	11-May-22	5	2.5	-	0.02	Ug/L	
Atrazine + N-dealkylated metabolites	11-May-22	5	2.5	-	0.01	Ug/L	
Azinphos-methyl	11-May-22	20	10		0.05	Ug/L	
Benzene	11-May-22	1	.5		0.32	Ug/L	
Benzo(a)pyrene	11-May-22	0.01	0.005		0.004	Ug/L	
Bromoxynil	11-May-22	5	2.5		0.33	Ug/L	
Carbaryl	11-May-22	90	45		0.05	Ug/L	
Carbofuran	11-May-22	90	45		0.01	Ug/L	
Carbon Tetrachloride	11-May-22	2	1		0.17	Ug/L	
Chlorpyrifos	11-May-22	90	45		0.02	Ug/L	
Diazinon	11-May-22	20	10		0.02	Ug/L	



Dicamba	11-May-22	120	60		0.20	Ug/L	
1,2-Dichlorobenzene	11-May-22	200	100		0.41	Ug/L	
1,4-Dichlorobenzene	11-May-22	5	2.5		0.36	Ug/L	
1,2-Dichloroethane	11-May-22	5	2.5		0.35	Ug/L	
1,1-Dichloroethylene (vinylidene chloride)	11-May-22	14	7		0.33	Ug/L	
Dichloromethane	11-May-22	50	25		0.35	Ug/L	
2,4-Dichlorophenol	11-May-22	900	450		0.15	Ug/L	
2,4-Dichlorophenoxy acetic acid (2,4-D)	11-May-22	100	50		0.19	Ug/L	
Diclofop-methyl	11-May-22	9	4.5		0.40	Ug/L	
Dimethoate	11-May-22	20	10		0.06	Ug/L	
Diquat	11-May-22	70	35		1.00	Ug/L	
Diuron	11-May-22	150	75		0.03	Ug/L	
Glyphosate	11-May-22	280	140		1.00	Ug/L	
Malathion	11-May-22	190	95		0.02	Ug/L	
MCPA (2-Methyl-4- chlorophenoxyacetic acid)	11-May-22	0.1	0.05		0.00012	Ug/L	
Metolachlor	11-May-22	50	25		0.01	Ug/L	
Metribuzin	11-May-22	80	40		0.02	Ug/L	
Monochlorobenzene	11-May-22	80	40		0.3	Ug/L	
Paraquat	11-May-22	10	5		1.0	Ug/L	
Pentachlorophenol	11-May-22	60	30		0.15	Ug/L	
Phorate	11-May-22	2	1		0.01	Ug/L	
Picloram	11-May-22	190	95		1.0	Ug/L	
Polychlorinated Biphenyls (PCB)	11-May-22	3	1.5		0.04	Ug/L	
Prometryne	11-May-22	1	.5		0.03	Ug/L	
Simazine	11-May-22	10	5		0.01	Ug/L	
Terbufos	11-May-22	1	0.5		0.01	Ug/L	
Tetrachloroethylene	11-May-22	10	5		0.35	Ug/L	
2,3,4,6-Tetrachlorophenol	11-May-22	100	50		0.20	Ug/L	
Triallate	11-May-22	230	115		0.01	Ug/L	
Trichloroethylene	11-May-22	5	2.5		0.44	Ug/L	
2,4,6-Trichlorophenol	11-May-22	5	2.5		0.25	Ug/L	
Trifluralin	11-May-22	45	22.5		0.02	Ug/L	
Vinyl Chloride	11-May-22	1	0.5		0.17	Ug/L	
<b>HAA5 (Note: Running annual average)</b>	2022	80	40		17.2	Ug/L	
<b>THM (NOTE: Running annual average)</b>	2022	100	50		35	Ug/L	

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
Sodium	12.2	Mg/L	11/09/2020