



+

2023 ANNUAL REPORT

<b>Drinking-Water System Number:</b>	W210000167
<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> , 2023 to December 31 <sup>st</sup> , 2023

<p><b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [ X ]</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>Corporation of the Town of Hanover 341 10<sup>th</sup> Street, Hanover Ontario N4N 1P5 Municipal Office- Reception Desk</p> </div>	<p><b><u>Complete for all other Categories.</u></b></p> <p>Number of Designated Facilities served:  <div style="border: 1px solid black; width: 100px; height: 20px; margin: 5px auto; text-align: center;">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; width: 100px; height: 20px; margin: 5px auto; text-align: center;">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>
--	---

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

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 8,200 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 odour 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 odour 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 \$210,604
- Hydro Cost Ruhl Lake \$29,694
- Hydro Cost Well 2 \$29,500
- Chlorine Gas \$104,896
- PAX-XL \$24,881
- UV System and Parts \$17,852
- Eramosa SCADA Service \$16,054
- Annual Generator Service \$2,233
- Annual Online and Benchtop Analyzer Service/Calibration \$9,594
- Annual Chlorinator Service \$12,281
- Annual Flow Meter Calibration \$3,846
- Filter Media \$2,129
- D.W.Q.M.S Audits and Consultant Fees \$7,444
- Analytical Costs(SGS) \$ 14,493



- Well #1 Spare Bowl \$ 4,237
- Water Main Repair \$40,959
- Hydrant Repair \$13,934
- New Well #1 and Well #2 Flow Meter \$11,390
- New Turbidity Analyzer \$5,127
- Ainley & Associates Water Hammer Review \$12,990

**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**

<b>Incident Date</b>	<b>Parameter</b>	<b>Result</b>	<b>Unit of Measure</b>	<b>Corrective Action</b>	<b>Corrective Action Date</b>
<b>April 21, 2023</b>	<b>Low Free Chlorine Residual at POE under minimum CT value</b>	<b>Below 0.5 mg/l</b>	<b>mg/L</b>	<b>Back flushed distribution system to plant until under chlorinated water was removed and chlorine residual was back to normal, collected bacti-samples from POE and first water service as per MOH instructions, both bacti-samples came back good with MOH and SAC notified of results on April 24</b>	<b>April 21, 2023</b>
<b>April 21, 2023</b>	<b>Filter turbidity exceeded 1NTU for more than 15min</b>	<b>Over 1 NTU for 15min</b>	<b>NTU</b>	<b>- Backwashed filter and dumped clearwell, no other actions were required</b>	<b>April 21, 2023</b>
<b>November 5, 2023</b>	<b>- Filter 3 Turbidity Analyzer froze reading for over 24hrs</b>	<b>unknown</b>	<b>NTU</b>	<b>- Restarted/reset turbidity analyzer to get reading again, calibrated analyzer, reviewed trends for UVT and UV dose to ensure turbidity from filter was OK while analyzer was froze, updated software on analyzer. No further actions were required</b>	<b>November 6, 2023</b>

**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	156	(2)-(280)	(12)-(2300)	N/A	N/A
Treated	52	0	0	52	(0)-(10)
Distribution	208	0	0	52	(<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	(0.13)-(1.90) -(9.99)	NTU
Effluent Turbidity	8760	(0.02)-(0.08) -(4.00)	NTU
Filter #1 Turbidity	8760	(0.03)-(0.08) -(3.03)	NTU
Filter #2 Turbidity	8760	(0.02)-(0.07) -(3.03)	NTU
Filter #3 Turbidity	8760	(0.01)-(0.07) -(2.75)	NTU
Influent Chlorine	8760	(0.00)-(1.87) -(5.00)	Mg/L
Clearwell Chlorine	8760	(0.05)-(1.75) -(3.98)	Mg/L
Effluent Chlorine	8760	(0.04)-(1.77) -(4.23)	Mg/L
Distribution Samples	365	(0.48)-(1.23) -(2.03)	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		

*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 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	15-May-23	6	3	-	0.6	Ug/L	
Arsenic	15-May-23	10	5	-	0.3	Ug/L	
Barium	15-May-23	1000	500	-	27.2	Ug/L	
Boron	15-May-23	5000	2500	-	24	Ug/L	
Cadmium	15-May-23	5	2.5	-	0.018	Ug/L	
Chromium	15-May-23	50	25	-	0.24	Ug/L	
Mercury	15-May-23	1	0.5	-	0.01	Ug/L	
Selenium	15-May-23	50	25	-	0.18	Ug/L	
Uranium	15-May-23	20	10		0.002	Ug/L	
*Lead		10	-	-		Ug/L	
Sodium	13-Feb-23	20	10		12.6	Mg/L	
Fluoride	13-Feb-23	1.5	0.75		0.16	Mg/L	
Nitrite	15-May-23	1	-	-	0.003	Mg/L	
Nitrate	15-May-23	10	-	-	3.09	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			Ug/L	
Distribution			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	15-May-23	5	2.5	-	0.02	Ug/L	
Atrazine + N-dealkylated metabolites	15-May-23	5	2.5	-	0.01	Ug/L	
Azinphos-methyl	15-May-23	20	10		0.05	Ug/L	
Benzene	15-May-23	1	.5		0.32	Ug/L	
Benzo(a)pyrene	15-May-23	0.01	0.005		0.004	Ug/L	
Bromoxynil	15-May-23	5	2.5		0.33	Ug/L	
Carbaryl	15-May-23	90	45		0.05	Ug/L	
Carbofuran	15-May-23	90	45		0.01	Ug/L	
Carbon Tetrachloride	15-May-23	2	1		0.17	Ug/L	
Chlorpyrifos	15-May-23	90	45		0.02	Ug/L	
Diazinon	15-May-23	20	10		0.02	Ug/L	
Dicamba	15-May-23	120	60		0.20	Ug/L	
1,2-Dichlorobenzene	15-May-23	200	100		0.41	Ug/L	
1,4-Dichlorobenzene	15-May-23	5	2.5		0.36	Ug/L	
1,2-Dichloroethane	15-May-23	5	2.5		0.35	Ug/L	
1,1-Dichloroethylene (vinylidene chloride)	15-May-23	14	7		0.33	Ug/L	
Dichloromethane	15-May-23	50	25		0.35	Ug/L	
2-4 Dichlorophenol	15-May-23	900	450		0.15	Ug/L	
2,4-Dichlorophenoxy acetic acid (2,4-D)	15-May-23	100	50		0.19	Ug/L	
Diclofop-methyl	15-May-23	9	4.5		0.40	Ug/L	
Dimethoate	15-May-23	20	10		0.06	Ug/L	
Diquat	15-May-23	70	35		1.00	Ug/L	
Diuron	15-May-23	150	75		0.03	Ug/L	
Glyphosate	15-May-23	280	140		1.00	Ug/L	
Malathion	15-May-23	190	95		0.02	Ug/L	
MCPA (2-Methyl-4-chlorophenoxyacetic acid)	15-May-23	0.1	0.05		0.00012	Ug/L	
Metolachlor	15-May-23	50	25		0.01	Ug/L	
Metribuzin	15-May-23	80	40		0.02	Ug/L	
Monochlorobenzene	15-May-23	80	40		0.3	Ug/L	
Paraquat	15-May-23	10	5		1.0	Ug/L	
Pentachlorophenol	15-May-23	60	30		0.15	Ug/L	
Phorate	15-May-23	2	1		0.01	Ug/L	
Picloram	15-May-23	190	95		1.0	Ug/L	
Polychlorinated Biphenyls (PCB)	15-May-23	3	1.5		0.04	Ug/L	
Prometryne	15-May-23	1	.5		0.03	Ug/L	
Simazine	15-May-23	10	5		0.01	Ug/L	



Terbufos	15-May-23	1	0.5		0.01	Ug/L	
Tetrachloroethylene	15-May-23	10	5		0.35	Ug/L	
2,3,4,6-Tetrachlorophenol	15-May-23	100	50		0.20	Ug/L	
Triallate	15-May-23	230	115		0.01	Ug/L	
Trichloroethylene	15-May-23	5	2.5		0.44	Ug/L	
2,4,6-Trichlorophenol	15-May-23	5	2.5		0.25	Ug/L	
Trifluralin	15-May-23	45	22.5		0.02	Ug/L	
Vinyl Chloride	15-May-23	1	0.5		0.17	Ug/L	
<b>HAA5 (Note: Running annual average)</b>	2023	80	40		22	Ug/L	
<b>THM (NOTE: Running annual average)</b>	2023	100	50		45	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	12.6	Mg/L	02/13/2023