



MUNICIPALITY OF

**Huron
East**

**VANASTRA DRINKING WATER
SYSTEM**

WDS # 210001585

**2025 ANNUAL SUMMARY REPORT
OF OPERATIONS**

Managed, Operated and Maintained by:

Jacobs

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1.0 INTRODUCTION AND BACKGROUND

The purpose of the 2025 Annual Report is to document the operation and maintenance data for the Vanastra Drinking Water System for review by the Ministry of the Environment, Conservation and Parks (MECP) in accordance with O. Reg 170/03. This report covers the period from January 1, 2025, to December 31, 2025. A copy of this report is to be made available on the Municipalities website and/or provided to interested parties upon request.

2.0 DESCRIPTION OF WATER SYSTEM

A summary of the Vanastra Drinking Water System is outlined below:

Drinking Water System Number:	210001585
Drinking Water System Name:	Vanastra Drinking Water System
Drinking Water System Owner:	Municipality of Huron East
Drinking Water System Category:	Large Municipal Residential
Water Supply:	Clinton WDS
Population:	650
2025 Average Daily Demand:	155.12 m ³ /day
2025 Peak Day Demand:	622 m ³

The Vanastra Booster Station located at 12 5th Ave., Vanastra, Ontario receives treated groundwater from the Town of Clinton in the Municipality of Central Huron by way of a 150mm force main. The system provides re-chlorination and pressure boosting before entering the Vanastra Distribution Network. A 1135 m³ reservoir provides storage capacity for the Town and allows for the adequate re-chlorination to occur.

Primary disinfection is completed within the Clinton Water Distribution system, while secondary disinfection is completed prior to water entering the reservoir by injection 12% sodium hypochlorite into the feed pipe of the reservoir. An online continuous chlorine analyzer measures the free chlorine residual of the water leaving the reservoir as it is pumped into the distribution system. An online analyzer is placed at the Vanastra Sewage Treatment Plant and measures the distribution system free chlorine. Both analyzers are integrated into the SCADA (Supervisory Control and Data Acquisition) system and have alarm capabilities 24-hours a day.

The facility utilizes three (3) lift pumps to pump water from the reservoir into the Vanastra distribution system which are controlled by the system pressures. Pumps 1 and 2 are rated for 11.6 L/s, while pump 3 is rated for 105 L/s to allow for adequate fire flow rates.

The Vanastra Booster Station is equipped with a 125-kW diesel generator and automatic transfer switch to provide back-up power during utility power loss. This ensures that the distribution network pressures remain constant.

3.0 SUMMARY OF WATER QUALITY MONITORING

3.1 Water Treatment Equipment Operation and Monitoring

One (1) reservoir inlet sample is collected daily, Monday to Friday and analyzed in-house for free chlorine. For the reporting year a total of 251 samples were collected with all analysis within normal operating range for the supply. A summary of the results can be found in table 1 below.

Reservoir outlet and distribution water chlorine residuals are measured using continuous online analyzers which records data at 5-minute intervals as per the requirements of O. Reg 170/03. The regulations designate that a value of 8760 be used for number of samples when utilizing continuous monitors. A summary of the results can be found in table 1 below and were all within normal operating ranges. An additional 104 grab samples were collected in conjunction with the weekly bacteriological sample and tested for free chlorine within the distribution network and analyzed using a handheld colorimeter.

Table 1 – Vanastra Free Chlorine Results

Month	Resivoir Inlet	Resivoir Outlet Online	Distribution Online (76981 London Rd)	Distribution Grab
Jan	0.95	1.70	1.44	1.38
Feb	0.94	1.69	1.52	1.37
Mar	0.90	1.65	1.54	1.28
Apr	0.80	1.51	1.32	1.22
May	0.86	1.60	1.38	1.25
Jun	0.82	1.53	1.21	1.18
Jul	0.94	1.57	1.30	1.10
Aug	0.84	1.47	1.18	1.05
Sept	0.92	1.56	1.33	1.14
Oct	0.91	1.60	1.35	1.16
Nov	0.87	1.59	1.26	1.06
Dec	0.87	1.71	1.53	1.29
# of Samples	251	8760	8760	104
Annual Average	0.89	1.60	1.36	1.21
Annual Min	0.62	0	0	0.70
Annual Max	1.22	1.90	1.72	1.68

*Annual Minimum and Maximum values represent all 5-minute data for the year, and captures data while cleaning sensors, flushing units, performing calibrations and power outages.

3.2 Microbiological Sampling and Testing

One (1) reservoir outlet sample and two (2) distribution samples are collected weekly and sent out for analysis of Total Coliforms, E. Coli and HPC (Heterotrophic Plate Count) in accordance with

Schedule 10 of O. Reg 170/03. A total of 156 samples were collected in the reporting year for the Vanastra WDS. A summary of the results can be found in table 2 and 3 below.

Table 2 – Reservoir Outlet Microbiological Results

Month	Total Coliforms			E. Coli			HPC	
	# Samples	# Samples "0"	# Samples ≥ 1	# Samples	# Samples "0"	# Samples ≥ 1	# Samples	# Samples > 10
Jan	4	4	0	4	4	0	4	0
Feb	4	4	0	4	4	0	4	0
Mar	4	4	0	4	4	0	4	0
Apr	5	5	0	5	5	0	5	0
May	4	4	0	4	4	0	4	0
Jun	4	4	0	4	4	0	4	0
Jul	5	5	0	5	5	0	5	1
Aug	4	4	0	4	4	0	4	0
Sept	5	5	0	5	5	0	5	0
Oct	4	4	0	4	4	0	4	0
Nov	4	4	0	4	4	0	4	0
Dec	5	5	0	5	5	0	5	0
TOTAL	52	52	0	52	52	0	52	1

Table 3 – Distribution System Microbiological Results

Month	Total Coliforms			E. Coli			HPC	
	# Samples	# Samples "0"	# Samples ≥ 1	# Samples	# Samples "0"	# Samples ≥ 1	# Samples	# Samples > 10
Jan	8	8	0	8	8	0	4	0
Feb	8	8	0	8	8	0	4	0
Mar	8	8	0	8	8	0	4	0
Apr	10	10	0	10	10	0	5	0
May	8	8	0	8	8	0	4	0
Jun	8	8	0	8	8	0	4	0
Jul	10	10	0	10	10	0	5	0
Aug	8	8	0	8	8	0	4	0
Sept	10	10	0	10	10	0	5	0
Oct	8	8	0	8	8	0	4	0
Nov	8	8	0	8	8	0	4	0
Dec	10	10	0	10	10	0	5	1
TOTAL	104	104	0	104	104	0	52	1

3.3 Chemical Sampling and Testing

3.3.1 – Schedule 13 Sampling

Two (2) distribution samples are collected quarterly in accordance with Schedule 13 and analyzed for THMs (Trihalomethanes) and HAAs (Haloacetic Acids). The samples collected during the 2025 calendar year were collected Jan, Apr, Jul and Oct. The results can be found in table 4 below.

Table 4 – THM and HAA Results

Month	Distribution	
	THMs (ug/L)	HAAs (ug/L)
Jan	15	5.3 <MDL
Apr	13	5.3 <MDL
Jul	19	5.3 <MDL
Oct	17	5.3 <MDL
Average	16.00	5.30
MAC	100	80

**MDL- Minimum Detection Limit*

3.3.2 – Schedule 15.1 Sampling (Lead)

Two (2) distribution water samples are collected per sample season and sent out for Lead analysis in accordance with Schedule 15.1 of O. Reg 170/03. Samples were collected April 9th and October 3rd during the reporting year. All results were under the Maximum Allowable Concentration (MAC) for Lead in the distribution system. A summary of results can be found in table 5 below.

Table 5 – Lead and Alkalinity Results

Season	Alkalinity (mg/L)	pH	Lead (ug/L)
Dec - Apr	282	7.5	0.06
	282	7.61	0.08
Jun - Oct	276	7.47	0.35
	285	7.20	0.19
MAC			10

**MAC - Maximum Allowable Concentration*

4.0 WATER AND CHEMICAL USE

4.1 Chemical Usage

As per the Municipal Drinking Water License, all chemicals and materials used in the operation of a drinking water system shall meet all applicable standards set by both the American Water Works Association (AWWA) and the American National Standards Institute (ANSI) safety criteria stands NSF/60, NSF/61, and NSF/372.

Sodium Hypochlorite 12% (NaOCl) is used as a secondary disinfectant for the treated water and boosts the residual within the distribution system. A total of chemicals used can be found below in table 6.

Table 6 – Chemical Use and Average Dosage

Month	Vanastra Resivoir	
	Chlorine Used L	Average Dose mg/L
Jan	40	0.95
Feb	40	1.02
Mar	20	0.47
Apr	45	1.08
May	20	0.35
Jun	40	0.92
Jul	20	0.42
Aug	60	1.20
Sept	40	0.81
Oct	40	0.68
Nov	15	0.34
Dec	40	0.79
Yearly	420	0.75

4.2 Summary of Flow Rates, Annual Volumes and Capacities

A summary of water supplied to the Vanastra Water Distribution System in 2025 can be found in table 7 below. All volumes recorded are taken from the SCADA system and the daily operations printouts.

Table 7 –Vanastra Reservoir Flow Rates

Month	Vanastra Resivoir		
	Total Flow (m3)	Daily Average (m3/day)	Daily Max (m3)
Jan	4195	135.30	155
Feb	3925	140.18	197
Mar	4247	137.00	196
Apr	4152	138.40	194
May	5644	182.06	622
Jun	4357	145.23	220
Jul	4796	154.71	250
Aug	5019	161.90	202
Sept	4933	164.43	214
Oct	5897	190.23	502
Nov	4447	148.23	178
Dec	5077	163.77	611
Total	56689	-	-
Average	-	155.12	-
Min	3925	135.3	155
Max	5897	190.23	622

5.0 IMPROVEMENTS TO SYSTEM AND ROUTINE / PREVENTATIVE MAINTENANCE

A Computerize Maintenance Management System (CMMS) is utilized to predict and track regular maintenance tasks associated with the Water Treatment and Distribution System in conjunction with the Municipalities Maintenance Management System. It is noted that Jacobs is the Operating Authority and deals directly with the Water Treatment and Point of Entry Systems, while the Municipality operates and maintains the distribution system.

The Operating Authority and the Municipality work together to complete all distribution flushing twice a year, spring and fall. It is noted that flow is maintained at each distribution flushing point until a free chlorine residual of 1.00 mg/L and attempt to achieve a turbidity of less than 1 NTU to ensure the overall health of the distribution system is maintained.

6.0 MINISTRY INSPECTION AND REGULATORY ISSUES

The MECP was onsite to complete its annual regulatory inspection October 22nd, 2025. A final report was issued by the MECP inspector November 28th, 2025. A final inspection rating of 94.93% was given. It was noted that one (1) non-compliance was identified by the inspector for the inspection period.

NC-1

It was noted that there was no evidence of continuous monitoring equipment being examined over the periods from February 14 – 18, May 16 – 20 and Aug. 1 -5. Operations staff were monitoring the water system remotely during these periods, but it was not logged or recorded. Update to the 72-hour review SOP was made and staff are now entering remote monitoring sessions in the logbook over long weekends/holidays.

ANNUAL REPORT

Drinking-Water System Number:	210001585
Drinking-Water System Name:	Vanastra Water Distribution System
Drinking-Water System Owner:	The Corporation of the Municipality of Huron East
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	Jan 1st – Dec 31st, 2025

<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 [] 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; margin-top: 10px;"> <p>Municipality of Huron East Town Office 72 Main St. S Box 610 Seaforth, ON N0K 1W0</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 2px; width: 100px; margin: 5px auto;">n/a</div> <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:</p> <div style="border: 1px solid black; padding: 2px; width: 100px; margin: 5px auto;">n/a</div> <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 of 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 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

Water Distribution System Class 2.

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The facility utilizes three lift pumps to pump water from the reservoir into the Vanastra Distribution System which are controlled by the system pressures. Pump 1 and 2 are rated for 11.6 L/s, while pump 3 is rated for 105 L/s to allow for adequate fire flow rates.

The Vanastra Booster Station is equipped with a 125-kW diesel generator and automatic transfer switch to provide back-up power during utility power loss. This ensures that the distribution network pressures remain constant.

List all water treatment chemicals used over this reporting period

12% Sodium Hypochlorite Solution

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment

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

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Reservoir Outlet	52	0	0	52	0 - 60
Distribution	104	0	0	52	0 - 70

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
Treated Chlorine Online	8760	0 – 1.90	mg/l
Distribution Chlorine Online	8760	0 – 1.72	mg/l

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

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

(<MDL: Below Minimum Detection Limit)				
Note: Sodium + Fluoride sampling required every 60 months. Inorganic sampling required every 36 months.				
Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	N/A		ug/L	
Arsenic	N/A		ug/L	
Barium	N/A		ug/L	
Boron	N/A		ug/L	
Cadmium	N/A		ug/L	

Chromium	N/A		ug/L	
Mercury	N/A		ug/L	
Selenium	N/A		ug/L	
Uranium	N/A		ug/L	
Sodium	N/A		mg/L	
Fluoride	N/A		mg/L	
Haloacetic Acids (HAA) (Running Annual Ave)	Q1 – Q4 2025 (Distribution)	5.30		Ug/L
Trihalomethanes (THM's) (Running Annual Ave)	Q1 – Q4 2025 (Distribution)	16.00		Ug/L

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)

Sampling Period	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Dec/24 – Apr/25	2	0.06 – 0.08	ug/L	No
Jun/25 – Oct/25	2	0.19 – 0.35	ug/L	No
Lead Sampling Conducted by Municipality				

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

(<MDL: Below Minimum Detection Limit) Note: Sampling required every 36 months.				
Parameter	Sample Date	Result Value Well #1	Unit of Measure	Exceedance
Alachlor	N/A		ug/L	
Atrazine + N-dealkylated metabolites	N/A		ug/L	
Atrazine	N/A		ug/L	
Azinphos-methyl	N/A		ug/L	

Benzene	N/A		ug/L	
Benzo(a)pyrene	N/A		ug/L	
Bromoxynil	N/A		ug/L	
Carbaryl	N/A		ug/L	
Carbofuran	N/A		ug/L	
Carbon Tetrachloride	N/A		ug/L	
Chlorpyrifos	N/A		ug/L	
Desethyl atrazine	N/A		ug/L	
Diazinon	N/A		ug/L	
Dicamba	N/A		ug/L	
1,2-Dichlorobenzene	N/A		ug/L	
1,4-Dichlorobenzene	N/A		ug/L	
1,2-Dichloroethane	N/A		ug/L	
1,1-Dichloroethylene (vinylidene	N/A		ug/L	
Dichloromethane	N/A		ug/L	
2-4 Dichlorophenol	N/A		ug/L	
2,4-Dichlorophenoxy acetic acid (2,4-	N/A		ug/L	
Diclofop-methyl	N/A		ug/L	
Dimethoate	N/A		ug/L	
Diquat	N/A		ug/L	
Diuron	N/A		ug/L	
Glyphosate	N/A		ug/L	
Malathion	N/A		ug/L	
MCPA	N/A		ug/L	
Metolachlor	N/A		ug/L	
Metribuzin	N/A		ug/L	
Monochlorobenzene	N/A		ug/L	
Paraquat	N/A		ug/L	
Pentachlorophenol	N/A		ug/L	
Phorate	N/A		ug/L	
Picloram	N/A		ug/L	
Polychlorinated Biphenyls(PCB's)	N/A		ug/L	
Prometryne	N/A		ug/L	
Simazine	N/A		ug/L	
Terbufos	N/A		ug/L	
Tetrachloroethylene	N/A		ug/L	
2,3,4,6-Tetrachlorophenol	N/A		ug/L	
Triallate	N/A		ug/L	
Trichloroethylene	N/A		ug/L	
2,4,6-Trichlorophenol	N/A		ug/L	
Trifluralin	N/A		ug/L	



Vinyl Chloride	N/A		ug/L	
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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	ODWQS limit