Ontario Clean Water Agency
Agence Ontarienne Des Eaux

Holtyre Drinking Water System

2024 Annual Summary Report

Prepared by the Ontario Clean Water Agency
On behalf of the Corporation of the Township of Black River-Matheson

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OVERVIEW

Municipalities throughout Ontario are required to comply with Ontario Regulation 170/03 made under the *Safe Drinking Water Act*, 2002. The Act was passed following recommendations made by Commissioner O'Connor after the Walkerton Inquiry. The Act's purpose is to protect human health through the control and regulation of drinking-water systems. O. Reg. 170/03 regulates drinking water testing, use of licensed laboratories, treatment requirements and reporting requirements.

Section 11 of O. Reg. 170/03 requires the owner to produce an Annual Report which must include the following:

- Description of system and chemical(s) used
- Summary of any adverse water quality reports and corrective actions
- Summary of all required testing
- Description of any major expenses incurred to install, repair or replace equipment

This Annual Report must be completed by February 28 of each year.

Schedule 22 of the regulation requires that a Summary Report for Municipalities be prepared which must be presented and accepted by Council by March 31 of each year for the preceding calendar year reporting period.

The report must list the requirements of the Act, its regulations, the system's Drinking Water Works Permit (DWWP), Municipal Drinking Water Licence (MDWL), Certificate of Approval (if applicable), and any Provincial Officer Order the system failed to meet during the reporting period. The report must also specify the duration of the failure, and for each failure referred to, describe the measures that were taken to correct the failure.

The *Safe Drinking Water Act*, 2002 and the drinking water regulations can be viewed at the following website: http://www.e-laws.gov.on.ca.

To enable the Owner to assess the rated capacity of their system to meet existing and future planned water uses, the following information is also required in the report.

- A summary of the quantities and flow rates of water supplied during the reporting period, including the monthly average and the maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the systems approval, drinking water works permit or municipal drinking water licence or a written agreement if the system is receiving all its water from another system under an agreement.

The Annual and Summary Reports have been combined and presented to council as the Holtyre Drinking Water System 2024 Annual Summary Report.

1.0 INTRODUCTION

Drinking-Water System Name:	**HOLTYRE DRINKING WATER SYSTEM**
Drinking-Water System No.:	**220002565**
Drinking-Water System Owner:	The Corporation of the Township of Black River - Matheson
DWS Operating Authority:	Ontario Clean Water Agency
Drinking-Water System Category:	Small Municipal, Residential System
Municipal Drinking Water Licence No.:	204-101 (Issue 6 - March 14, 2022)
Drinking Water Work Permit No.:	204-201 (Issue 3 - March 14, 2022)
Permit to Take Water No.:	P-300-6090341906 (Issued October 2, 2020)
Period being reported on:	January 1, 2024 to December 31, 2024

Does your Drinking Water System serve more than 10,000 people? No

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

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

Black River - Matheson Municipal Office
367 Fourth Ave,
Matheson ON P0K 1N0

Drinking Water Systems that receive drinking water from the Holtyre Drinking Water System

Drinking Water System Name	Drinking Water System Number
Holtyre Drinking Water System	220002565

The Annual Report was provided to all connected Drinking Water System owners

The Ontario Clean Water Agency prepared the 2024 Annual Summary Report for the Holtyre Drinking Water System and provided a copy to the system owner; the Township of Black River - Matheson. The Holtyre Drinking Water System is a stand-alone system that does not receive water from or send water to another system.

System users are notified that the Annual Report is available through:

- Public access/notice via newspaper/website

2.0 DESCRIPTION OF THE DRINKING WATER SYSTEM

Well No. 1 is located 17.5 metres south of Cain Street and 12 metres west of Euclid Street. It is a 200 mm diameter, 57 metre deep drilled groundwater well equipped with a 1.2 kW submersible deep well pump, rated at 47 litres per minute at a Total Dynamic Head of 50.7 metres with a 50 mm diameter discharge line connected to the pump header located in the pumphouse. It is considered the secondary production well for the Holtyre drinking water system.

Well No. 3 is the main production well and is located 19.6 metres west of the road allowance between Concessions 1 and 2, Township of Hislop and 594 metres south of the intersection with Highway 572. It is a 150 mm diameter, 37 metre deep drilled groundwater well equipped with a 1.2 kW submersible deep well pump, rated at 100.8 litres per minute at a Total Dynamic Head of 34 metres with a 50 mm diameter discharge line connected to the pump header located in the pumphouse.

The water treatment plant is located within the village of Holtyre at 644 Euclid Avenue. It receives raw groundwater from Wells 1 & 3. Within the water treatment plant, the individual well discharge pipes are metered for flow and then join one common header. An iron and manganese sequestering agent is added to the water prior to being injected with 12% sodium hypochlorite. Treated water is then discharged to the clearwell. The disinfection system consists of two chemical metering pumps (one duty and one on standby) and one chemical solution tank. The iron sequestering system consists of two chemical metering pumps (one duty and one on standby) and one chemical solution tank.

Other equipment located within the water treatment plant: 12.5 kW diesel generator and associated fuel tank, three 3HP submersible high lift pumps (2 duty, 1 standby) each with variable frequency drives and a capacity of 3 L/second, two 0.45m3 pressure tanks and one 2255 litre chlorine contact tank (to be utilized when the clearwell is not in operation).

Located under the floor slab of the water treatment plant, the clearwell is a 151 m^3 un-baffled storage reservoir. The high lift pumps transfer the treated water from the reservoir to the pressure tank and subsequently to the distribution system.

The system serves an approximate population of 255 persons in 75 private residences with an estimated total of 99 service connections. The distribution system itself consists primarily of four inch asbestos concrete constructed water main. There is no elevated storage in this system. There are three hydrants which are used only for distribution system flushing, not fire protection.

In late 2007 the municipality installed two automatic flushing devices in strategic locations in the distribution system as a measure to improve the aesthetic water quality.

Note: The other hydrants located within the village are not part of the drinking water system. Prior to the establishment of the drinking water system, the Ross Mine provided water for fire protection through a system of hydrants. With the closure of the mine, this water system was abandoned. These non-functional hydrants and associated water mains were/are not connected to the existing drinking water system.

3.0 LIST OF ALL WATER TREATMENT CHEMICALS USED

- Sodium Hypochlorite - disinfection
- ENV PROQUEST (tetrapotassium pyrophosphate solution) - Iron & Manganese Sequestering

4.0 SIGNIFICANT EXPENSES INCURRED

- Purchasing of enhanced sequestering chemical
- Emergency Generator Transfer Panel
- Generator Servicing
- Main well#3 pump removal and replacement
- Additional sampling for iron and manganese
- hypo pump spare parts

6.0 MICROBIOLOGICAL TESTING

Sample Type	No. of Samples	*E. coli* Results *(min to max)*	Total Coliform Results *(min to max)*	# of HPC Samples	HPC Results *(min to max)*
Raw - Well 1	14	0 to 0	0 to 0	N/A	N/A
Raw - Well 3	22	0 to 0	0 to 9	N/A	N/A
Distribution	28	0 to 0	0 to 0	27	<10 to 30

Maximum Allowable Concentration (MAC) for distribution samples: *E. coli* = 0 Counts/100 mL and Total Coliforms = 0 Counts/100 mL
"<" denotes less than the laboratory's method detection limit.

Note: One microbiological sample is collected and tested each month from the raw water supply and one every two weeks from the distribution system.

7.0 OPERATIONAL TESTING

Raw Water Turbidity

Location	No. of Samples	Range of Results *(min to max)*	Unit of Measure
Well 1	14	0.26 to 0.97	NTU
Well 3	14	0.22 to 1.84	NTU

Continuous Monitoring in the Treatment Process

Parameter	No. of Samples	Range of Results *(min to max)*	Unit of Measure	Standard
Free Chlorine	8760	0.27 to 2.01	mg/L	N/A

Notes: For continuous monitors 8760 is used as the number of samples.

Chlorine Residuals from the Distribution System

Parameter	No. of Samples	Range of Results *(min to max)*	Unit of Measure	Standard
Free Chlorine	246	0.60 to 1.60	mg/L	0.05

Note: in the distribution system, at least two samples for free chlorine residual testing must be taken at least 48-hours apart and taken during the same week, each week.

Nitrate & Nitrite Results from the Water Treatment Plant

Date of Sample	Nitrate Result Value (mg/L)	Nitrite Result Value (mg/L)	Exceedance
January 15	< 0.05	< 0.05	No
April 8	< 0.05	< 0.05	No
July 15	< 0.05	< 0.05	No
October 7	< 0.1	< 0.01	No

Maximum Acceptable Concentration> MDL 0.05 (MAC) for Nitrate = 10 mg/L MAC for Nitrite = 1.0 mg/L

Total Trihalomethane (THM's) Results from the Distribution System

Date of Sample (2023)	Result Value (ug/L)	Four Quarter Running Average	Exceedance
January 3	21.5	26.2	No
April 3	23.6	29.1	No
July 4	27.3	29	No
October 10	23.4	33.6	No

Maximum Acceptable Concentration (MAC) = 100 ug/L (Four Quarter Running Average)

Note: Reduced sampling for small systems applies to the Holtyre DWS in 2024.
Most recent sampling completed in 2023.

Total Haloacetic Acid (HAA's) Results from the Distribution System

Date of Sample (2023)	Result Value (ug/L)	Four Quarter Running Average	Exceedance
January 3,	15	17.5	No
April 3	26	22	No
July 4	18	21	No
October 10	27	21.5	No

Maximum Acceptable Concentration (MAC) = 80 ug/L (Four Quarter Running Average)

Note: Reduced sampling for small systems applies to the Holtyre DWS in 2024.
Most recent sampling completed in 2023.

Lead (most recent), pH & Alkalinity Results (from the distribution system)

Date of Sample	# of Samples	Range of Results (min to max)		
		pH Results	Alkalinity Results (mg/L)	Lead Results (ug/L)
April 2	1	7.80	274	Due in 2026
October 2	1	8.46	294	Due in 2026

MAC for Lead -10 ug/L

Note: *The system is required to test for total alkalinity and pH in one distribution sample collected during the period of December 15 to April 15 and one distribution sample during the period of June 15 to October 15. This testing is required in every 12-month period with lead testing in every third 12-month period. The next round of lead sampling will be completed in April and October of 2026.*

Summary of Most Recent Schedule 23 Inorganic Results from the Water Treatment Plant

Sample Date: September 21, 2020

Parameter (ug/L)	Result Value	Maximum Acceptable Concentration	Exceedance
Antimony	<0.5	6	No
Arsenic	2	10	No
Barium	47	1000	No
Boron	142	5000	No
Cadmium	<0.1	5	No
Chromium	<1	50	No
Mercury	<0.1	0.001	No
Selenium	<0.2	10	No
Uranium	<1	20	No

Note: Sampling required once every 60 months (next sample scheduled for October 2025)

Summary of Most Recent Schedule 24 Organic Results from the Water Treatment Plant

Sample Date: September 21, 2020

Parameter	Result Value	Unit of Measure	Standard	Exceedance
1,1-Dichloroethylene	<0.3	ug/L	14	No
1,2-Dichlorobenzene	<0.3	ug/L	200	No
1,2-Dichloroethane	<0.3	ug/L	5	No
1,4-Dichlorobenzene	<0.3	ug/L	5	No
2,3,4,6-Tetrachlorophenol	<0.3	ug/L	100	No
2,4,6-Trichlorophenol	<0.3	ug/L	100	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	<0.325	ug/L	100	No
2-4 Dichlorophenol	<0.3	ug/L	900	No
Alachlor	<0.233	ug/L	5	No
Atrazine + N-dealkylated metobolites	<0.5	ug/L	5	No
Azinphos-methyl	<0.175	ug/L	20	No
Benzene	<0.1	ug/L	1	No
Benzo(a)pyrene	<0.01	ug/L	0	No
Bromoxynil	<0.0866	ug/L	5	No
Carbaryl	<2	ug/L	90	No
Carbofuran	<3	ug/L	90	No
Carbon Tetrachloride	<0.2	ug/L	2	No
Chlorobenzene	<0.5	ug/L	80	No
Chlorpyrifos	<0.175	ug/L	90	No
Diazinon	<0.175	ug/L	20	No
Dicamba	<0.0758	ug/L	120	No
Dichloromethane	<1	ug/L	50	No
Diclofop-methyl	<0.108	ug/L	9	No
Dimethoate	<0.175	ug/L	20	No
Diquat	<0.2	ug/L	70	No
Diuron	<9	ug/L	150	No

Parameter	Result Value	Unit of Measure	Standard	Exceedance
Glyphosate	<20	ug/L	280	No
Malathion	<0.175	ug/L	190	No
MCPA	<5.41	ug/L	230	N/A
Metolachlor	<0.117	ug/L	50	No
Metribuzin	<0.117	ug/L	80	No
Paraquat	<0.2	ug/L	10	No
Pentachlorophenol	<0.4	ug/L	3	No
Phorate	<0.117	ug/L	60	No
Picloram	<0.0758	ug/L	2	No
Prometryne	<0.0583	ug/L	1	No
Simazine	<0.175	ug/L	10	No
Terbufos	<0.117	ug/L	1	No
Tetrachloroethylene	<0.3	ug/L	10	No
Total PCB's	<0.06	ug/L	190	No
Triallate	<0.117	ug/L	5	No
Trichloroethylene	<0.2	ug/L	5	No
Trifluralin	<0.117	ug/L	45	No
Vinyl Chloride	<0.1	ug/L	1	No

Note: Sampling required once every 60 months (next sample scheduled for October 2025)

Most Recent Sodium Results from the Water Treatment Plant

Date of Sample	# of Samples	Result Value	Unit of Measure	Standard	Exceedance
September 21, 2020	1	24.2 mg/L	mg/L	20	Yes - **AWQI 152286**
October 2, 2020	1	22.1 mg/L			Yes - Re-sample

Note: Sample required every 60 months. Next sampling scheduled for October 2025

Most Recent Fluoride Results from the Water Treatment Plant

Date of Sample	No. of Samples	Result Value	Unit of Measure	Standard	Exceedance
September 21, 2020	1	0.17	mg/L	1.5	No

Note: Sample required every 60 months. Next sampling scheduled for October 2025

Inorganic or Organic Results that Exceeded Half the Standard

No inorganic or organic parameter(s) listed in Schedule 23 and 24 of Ontario Regulation 170/03 exceeded half the standard found in Schedule 2 of the Ontario Drinking Water Standard (O. Reg. 169/03) during the reporting period.

Additional Testing Performed in Accordance with a Legal Instrument

In May 2023 the Porcupine Health Unit requested that bi-monthly manganese sampling be completed in the distribution system to get more data regarding the high levels of manganese. This sampling has been ongoing in 2024. Results are provided to the Porcupine Health Unit as they become available provide directly to the PHU for ongoing analysis.

2024 Summary of Manganese Sampling in the Distribution System

Manganese (ug/L)	Jan 30	Mar 20	May 21	Jun 17	Jul 15	Aug 12	Oct 7
Well 1	951	694	857	681	617	835	810
Well 3	251	-	258	283	260	298	262
Treated POE	248	557	213	243	269	1670	223
638 Euclid Ave	31	154	16	4	16	62	59
726 Gleason Ave	162	238	149	155	140	460	109
Security Bldg	118	417	143	147	116	876	93
Rink Shack	179	504	176	185	211	612	132

No Provincial MAC for manganese

8.0 REQUIREMENTS THE SYSTEM FAILED TO MEET

Incident #1 – Proquest Dosage Exceedance

Legislation	**Section 14.1 of Schedule B of the Municipal Drinking Water Licence (MWDL)** *"All chemicals and materials used in the alteration or operations of the drinking water system that come into contact with water within the system shall meet all applicable standards set by both the American Water Works Association ("AWWA") and the American National Standards Institute ("ANSI") safety criteria standards NSF/60, NSF/61 and NSF/372."*
Requirement(s) the System Failed to Meet	The Holtyre WTP currently uses Proquest (Tetrapotassium Pyrophosphate) as a sequestering agent for iron and manganese removal. The maximum treatment dosage concentration is 29 mg/L, which is specified by NSF. The maximum concentration dosage was exceeded on the following occasions during 2024: - January 11 and 12, 2024: 29.81 mg/L - February 15 and 16, 2024: 47.89 mg/L - February 17, 18, 19 and 20 2024: 123.86 mg/L - March 22, 2024: 271.37 mg/L
Corrective Action	The pipe that links the anti-siphon valve reportedly caused the exceedances and the vacuum breaker was completely clogged causing siphoning of the Proquest agent and overdosing. The operating authority shall continue to ensure proper function of the Proquest equipment to prevent future overdosing.
Status	Resolved

Incident #2 - Treated Chlorine Residual Analyzer Alarm Not Functioning

Legislation	Section 31(1) of the Safe Drinking Water Act (SDWA)
Requirement(s) the System Failed to Meet	All disinfections of equipment within the water treatment process must be properly documented. Below are the non-compliances noted: -No proper documentations for the disinfection procedures on March 8, 2024 and March 18, 2024. -No total chlorine residual was documented during the flushing on March 11, 2024 -No documentation as to when the well was returned online.
Corrective Action	By no later than March 31, 2025, the operating authority shall provide training to all operators of the Holtyre Water Treatment Plant on the "Disinfection Plan" document from OCWA. The training shall cover how to properly document all required information, what information is required. The training record shall be provided to Ministry's Water Compliance Officer Rachel Hamelin by email.
Status	Resolved

9.0 SUMMARY OF FLOW RATES AND QUANTITIES

The following tables and graphs indicate the quantities and flow rates of water taken and produced during the reporting period, including monthly average flows, maximum daily flows and the total monthly volumes. A comparison of the water data is made to the rated capacity and flow rates specified in the system's Permit to Take Water and the Municipal Drinking Water License.

Any raw water flow rate exceedances in 2024 were checked and determined to be inflated numbers due to momentary spikes on pump start up/shutdown that lasted less than 5 minutes and are not representative. The actual maximum flow rates have been depicted in the tables below.

Well 1 - Summary of Water Taking

Regulated by Permit to Take Water (PTTW) P-300-6090341906, Issued October 2, 2020

	Jan	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*	*Year to Date*
Total Volume (m^3)	3.07	181.7	1115	1.34	1.37	203	306.1	547.1	182.8	23.9	23.72	225.4	2814.63
Average Volume (m^3/d)	0.1	6.27	35.97	0.04	0.04	6.77	9.87	17.65	6.09	0.77	0.79	7.27	7.64
Maximum Volume (m^3/d)	1.37	60.85	79.83	1.34	1.37	26.3	52.6	42.9	76.97	22.81	22.49	25.75	79.63
PTTW - Maximum Allowable Volume (m^3/day)	100.8	100.8	100.8	100.8	100.8	100.8	100.8	100.8	100.8	100.8	100.8	100.8	100.8
Maximum Flow Rate (L/min)	0.0	64.4	63.4	64.0	64.3	64.8	63.9	63.1	63.8	64.3	63.0	64.3	64.8
PTTW - Maximum Allowable Flow Rate (L/min)	70	70	70	70	70	70	70	70	70	70	70	70	70

The system's Permit to Take Water #P-300-6090341906 allows the municipality to withdraw a maximum volume of 100.8 cubic meters from Well 1 each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 79.6 m^3

The Permit also allows a maximum flow rate of 70 L/minute. The maximum flow rate in 2024 was 64.8 L/s which is within the compliance range.

Well 3 - Summary of Water Taking

Regulated by Permit to Take Water (PTTW) # P-300-6090341906, Issued October 2, 2020

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	1804	1638	852	1866	1989	1985	2013	1944	1826	1834	1561	1594	20907
Average Volume (m^3/d)	58	56	27	62	64	66	65	63	61	59	52	51	57
Maximum Volume (m^3/d)	67	64	71	71	70	68	67	64	64	63	64	62	71
PTTW - Maximum Allowable Volume (m^3/day)	129.6	129.6	129.6	129.6	129.6	129.6	129.6	129.6	129.6	129.6	129.6	129.6	129.6
Maximum Flow Rate (L/min)	72	62	90	88	90	77	75	72	73	72	69	75	90
PTTW - Maximum Allowable Flow Rate (L/min)	90	90	90	90	90	90	90	90	90	90	90	90	90

The system's Permit to Take Water #P-300-6090341906 allows the municipality to withdraw a maximum volume of 129.6 cubic meters from Well 3 each day. A review of the raw water flow data indicates that the system never exceeded this allowable limit having a maximum volume of 71 m^3.

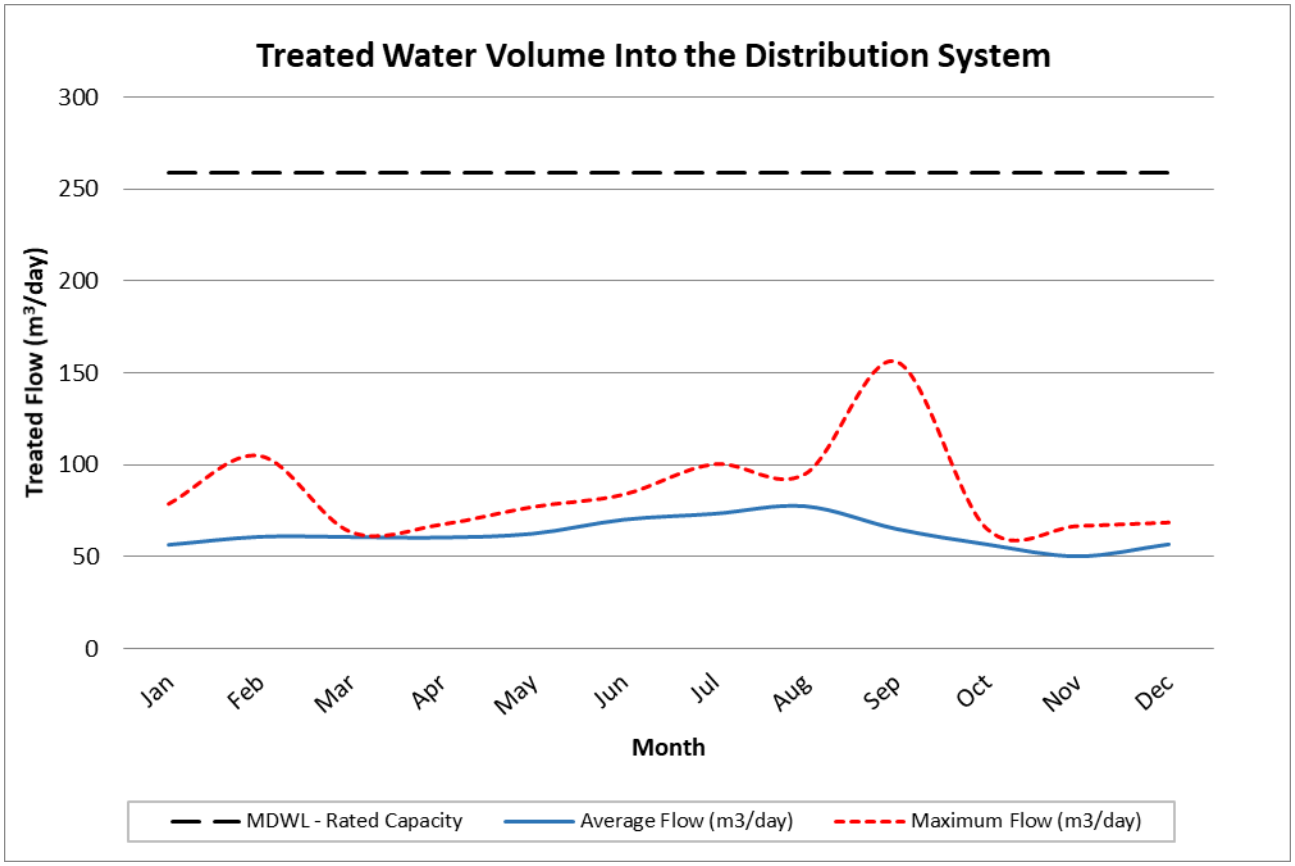
The Permit also allows a maximum flow rate of 90 L/minute. The maximum flow rate in 2024 was 90 L/min during pump start up, which is within the compliance range.

Treated Water Supplied to the Distribution System

*Regulated by Municipal Drinking Water Licence (MDWL) #*204-201 (Issue 6 - March 14, 2022)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year to Date
Total Volume (m^3)	1746	1760	1878	1808	1933	2099	2196	2396	1950	1753	1503	1755	22777.5
Average Volume (m^3/d)	56.34	60.69	60.59	60.25	62.36	69.97	73.2	77.29	64.99	56.55	50.11	56.61	62.41
Maximum Volume (m^3/d)	78.96	105.1	63.75	67.76	77.3	84.01	100.5	95.18	156.3	65.39	66.95	68.86	156.29
MDWL - Rated Capacity (m^3/day)	259	259	259	259	259	259	259	259	259	259	259	259	259
% Rated Capacity	30	41	25	26	30	32	39	37	60	25	26	27	60

Schedule C, Section 1.1 of MDWL No. 204-101 states that the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed a maximum flow rate of 259 m^3 on any calendar day. The Holtyre DWS complied with this limit having a recorded maximum volume of 156.3 m^3, which is 60 % of the rated capacity.



Volume of Treated Water Supplied to the Distribution System. A comparison of the rate specified in the system's Municipal Drinking Water Licence to the average and maximum volumes entering the distribution system.

Comparison of the Flow Summary to Systems Licence & Permit

Rated Capacity of the Plant (MDWL)	259 m^3/day	
Average Daily Flow for 2024	62.4 m^3/day	24 % of the rated capacity
Maximum Daily Flow for 2024	156.3 m^3/day	60 % of the rated capacity
Total Treated Water Produced in 2024	22,778 m^3	

The Holtyre water treatment plant is rated to 259 cubic meters of water per day as specified in the system's Municipal Drinking Water Licence. The average daily flow was 40.4 m^3 per day, which is 16% of the rated capacity. This information clearly shows that the plant is well within its rated capacity and is able to meet current demands of consumers.

10.0 CONCLUSION

The Holtyre Drinking Water System was able to meet the community's demand for drinking water while complying with the terms and conditions outlined in its Drinking Water Works Permit and Municipal Drinking Water Licence and the regulatory requirements of the Safe Drinking Water Act and its Regulations with the exception of the incidents mentioned in section 8.0 of this report.