









**DESBARATS
DRINKING WATER SYSTEM
WATERWORKS # 210001870**

**ANNUAL & SUMMARY
REPORTS 2025**

Introduction

This Annual and Summary report has been prepared in accordance with both schedule 22 and section 11 of Ontario Regulation 170/03. In this manner, the requirements by regulation for each report have been consolidated into a single document. This report is intended to brief the Owner and consumers of the Desbarats drinking water system on the system's performance over the past calendar year January 1 to December 31, 2025.

This report encompasses all elements as required by O. Reg. 170/03. Each section explains what is required for the category small municipal Residential DWS (as it pertains to the Desbarats DWS) and how limits were met or if shortfalls were revealed. The last section contains a list of tables and definitions of terms identified in this report.

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System Description

The Desbarats water treatment plant is rated as a class 2 water treatment subsystem, and for the purposes of O. Reg. 170/03 it is categorized as a small municipal residential system.

The treatment plant includes two (2) low lift centrifugal pumps, each pump rated at 4.24 L/s that deliver surface water from Lake Huron.

The treatment system includes an Ecodyne Monoplant complete with mechanical flocculation, sedimentation and dual media filtration compartments. The filter portion of the package plant involves a dual media of sand and anthracite and provides for filtering to waste after backwashing. Waste from the clarifier is drained at timed intervals to backwash settling tanks from which supernatant travels by gravity to a diffuser in Lake Huron, located downstream from the intake site.

Post chlorination using sodium hypochlorite is injected after filtration before the clearwell to achieve primary and secondary chlorination. There are three (3) cells to the clearwell (reservoir) with a total storage capacity of 142 cubic meters. There is standby power for continued pumping capacity and plant operations. The system also involves six (6) pre-charged pressure tanks for distribution pressure control.

- There are approximately 276 residents using the system with 110 service connections (93 private residences) and an elementary/secondary school with a total population of about 600 students. Water is provided to the distribution system through a submarine transmission main

Chemicals

Chemicals utilized at the Desbarats water treatment plant during 2025 include:

- Sodium hypochlorite for primary and secondary disinfection
- Aluminum sulphate for coagulation
- Polymer as a coagulant aid
- Soda ash for pH and alkalinity adjustment

2025 Expenditures

During the year 2025, expenses were incurred to maintain treatment and distribution functions:

- ESA services
- External audits (SAI Global)
- Eye wash
- Electrical & plumbing supplies for chemical room

2025 Drinking Water System Changes

Form 1 – Record of watermains authorized as a future alteration

- N/A

Form 2 – Record of minor modification or replacements

- N/A

Form 3 – Record of addition, modification or replacement of equipment discharging a contaminant of concern to the atmosphere

- N/A

Water Quality

Microbiological Sampling and Testing

Sampling is conducted weekly for the DWS at the frequencies and locations identified by schedule 11 of O. Reg 170/03 for small municipal residential systems.

Table 1: Microbiological sampling requirements

Location	Sample Analysis	# samples	Frequency
Raw	EC, TC	1 sample	monthly
Treated	N/A	-	-
Distribution	EC, Tc, HPC	1 sample	bi-weekly

Desbarats' raw samples are collected from a sample tap on the raw water header. Treated samples are collected from a sample tap on the treated discharge header prior to distribution. Distribution samples are rotated weekly at the following locations representing areas throughout the hamlet: Township Office, Baptist Church, Arena, and Central Algoma Secondary School. Other locations may be sampled as required.

Table 2: Microbiological Sample Results

Type	# samples	EC (range)	TC (range)	# samples	HPC (range)
Raw	12	0-5	2 - 200	0	n/a
Distribution	41	0	0 – 19	41	0

Operational Checks and Testing

Operational testing is completed as per schedules 6 & 7 of O. Reg. 170/03 for small municipal residential systems. Checks and testing are completed on site at the water treatment facility by licensed operators. Continuous monitoring analyzers (collecting 5-minute readings) are utilized for measurement of filter turbidity and chlorine residuals.

Table 3: Monthly Filter Turbidity Results

Month	Avg turbidity (NTU)	Range (NTU)	Monthly Filter Efficiency
January	0.06	0.02–3.12	99.87
February	0.04	0.02–1.19	99.91
March	0.04	0.02–0.51	99.91
April	0.07	0.02–1.43	98.98
May	0.09	0.04-4.99	99.28
June	0.06	0.01-0.34	100.00
July	0.06	0.03-2.19	100.00
August	0.05	0.04-0.71	99.66
September	0.06	0.04-1.57	99.88
October	0.05	0.04-1.12	99.90
November	0.07	0.04-4.99	99.76
December	0.08	0.04-0.48	99.85

Desbarats maintained filter compliance each month above 95%, (required limit) to achieve necessary filtration credits for primary disinfection.

Table 4: Chlorine Residuals

Month	Average Chlorine Residual (mg/L)	Chlorine Residual Range (mg/L)
January	1.78	1.48-2.23
February	1.69	0.79-2.57
March	1.59	0.42-2.65
April	1.47	0.75-1.82
May	1.57	0.71-4.75
June	1.43	1.01-1.74
July	1.48	0.83-2.37
August	1.43	1.19-2.53
September	1.43	0.64-1.99
October	1.46	0.73-1.95
November	1.44	1.24-1.72
December	1.54	0.93-1.92

Chlorine residuals are continuously monitored, and data is recorded on 5-minute intervals.

Chemical Sampling and Testing

Schedule 13 of O. Reg. 170/03 outlines chemical sampling requirements for Small municipal residential systems. Schedules 23 (inorganics) and 24 (organics) are collected every 60 months as well as sodium and fluoride. This system requires quarterly sampling for nitrites/nitrates, THMs and HAAs. Schedule 15.1 outlines the requirements for semi-annual lead testing (2 periods per year). Desbarats’ lead sampling follows the regulation’s plumbing exemption but monitors the distribution system water quality for changes that may impact lead corrosion.

Table 5: Schedule 23 - Inorganics

Parameter	Sample Date	Result (µg/L)	Units	ODWS
Antimony	03-May-24	<0.5	µg/L	6
Arsenic	03-May-24	<1	µg/L	25
Barium	03-May-24	9	µg/L	1000
Boron	03-May-24	<2	µg/L	5000
Cadmium	03-May-24	<0.1	µg/L	5
Chromium	03-May-24	<1	µg/L	50
Fluoride	03-May-24	<0.05	mg/L	1.5
Mercury	03-May-24	<0.1	µg/L	1
Selenium	03-May-24	<0.2	µg/L	10
Sodium	03-May-24	5.05	mg/L	20
Uranium	03-May-24	<1	µg/L	20

All results for inorganic parameters are within the maximum acceptable concentrations (MAC) of the Ontario Drinking Water Quality Standards as defined in O. Reg. 169/03.

Table 6: Nitrite/Nitrate Results

Date	ODWS	03-Jan-25	07-Apr-25	04-Jul-25	03-Oct-25
Unit	mg/L	mg/L	mg/L	mg/L	mg/L
Nitrite	1.0	<0.05	<0.05	<0.05	<0.05
Nitrate	10	0.31	0.29	0.2	0.16

All quarterly results for nitrites and nitrates are well below ODWS.

Table 7: Disinfection By-products Results (THM/HAA)

Date	ODWS	Q1 RAA	Q2 RAA	Q3 RAA	Q4 RAA
Unit	µg/L	µg/L	µg/L	µg/L	µg/L
THM	100	12.6	13.7	14.1	14.9
HAA	80	18.5	16.8	10.8	14.0

Compliance with ODWS for THM and HAA is determined by calculating the running annual average (RAA) on a quarterly basis.

Table 8: Community Lead Monitoring Results

Location Type	Lead, ug/L	Alkalinity, mg/L	pH
Distribution Round 1	1.7	38	6.96
Distribution Round 2		29	7.5

Based on historical results Desbarats DWS is exempt from the plumbing lead sampling program, however monitoring of distribution alkalinity and pH every winter and summer collection periods and lead sampling from distribution every 3 years is required.

*1 Distribution lead sample was taken from the Bolten blowoff for monitoring purposes.

Table 9: TSS – MDWL Requirement for Plant Process Wastewater

Quarter	Result Value	Unit
Q1	7.0	mg/L
Q2	13.3	mg/L
Q3	0.67	mg/L
Q4	1	mg/L

The 2025 annual average suspended solids concentration is 5.5 mg/L for plant service water (backwash and instrumentation flows) released back to the environment.

Table 10: Schedule 24 - Organics

Parameter	Date	Result	Unit	ODWS
Alachlor	03-May-24	<0.254	µg/L	5
Atrazine + N-dealkylated metabolites	03-May-24	<0.5	µg/L	5
Azinphos-methyl	03-May-24	<0.191	µg/L	20
Benzene	03-May-24	<0.1	µg/L	5
Benzo(a)pyrene	03-May-24	<0.01	µg/L	0.01
Bromoxynil	03-May-24	<0.0931	µg/L	5
Carbaryl	03-May-24	<3	µg/L	90
Carbofuran	03-May-24	<4	µg/L	90
Carbon Tetrachloride	03-May-24	<0.2	µg/L	2
Chlorpyrifos	03-May-24	<0.191	µg/L	90
Diazinon	03-May-24	<0.191	µg/L	20
Dicamba	03-May-24	<0.0815	µg/L	120
1,2-Dichlorobenzene	03-May-24	<0.2	µg/L	200
1,4-Dichlorobenzene	03-May-24	<0.3	µg/L	5
1,2-Dichloroethane	03-May-24	<0.2	µg/L	5
1,1-Dichloroethylene (vinylidene chloride)	03-May-24	<0.3	µg/L	14
Dichloromethane	03-May-24	<1	µg/L	50
2-4 Dichlorophenol	03-May-24	<0.2	µg/L	900
2,4-Dichlorophenoxy	03-May-24	<0.349	µg/L	100
Diclofop-methyl	03-May-24	<0.116	µg/L	9
Dimethoate	03-May-24	<0.191	µg/L	20
Diquat	03-May-24	<0.2	µg/L	70

Parameter	Date	Result	Unit	ODWS
Diuron	03-May-24	<10	µg/L	150
Glyphosate	03-May-24	<20	µg/L	280
Malathion	03-May-24	<0.191	µg/L	190
2-Methyl-4-Chlorophenoxyacetic Acid (MCPA)	03-May-24	<5.82	µg/L	100
Metolachlor	03-May-24	<0.127	µg/L	50
Metribuzin	03-May-24	<0.127	µg/L	80
Monochlorobenzene	03-May-24	<0.5	µg/L	80
Paraquat	03-May-24	<0.2	µg/L	10
Pentachlorophenol	03-May-24	<0.3	µg/L	60
Phorate	03-May-24	<0.127	µg/L	2
Picloram	03-May-24	<0.0815	µg/L	190
Polychlorinated Biphenyl	03-May-24	<0.06	µg/L	3
Prometryne	03-May-24	<0.0635	µg/L	1
Simazine	03-May-24	<0.191	µg/L	10
Terbufos	03-May-24	<0.127	µg/L	1
Tetrachloroethylene	03-May-24	<0.3	µg/L	10
2,3,4,6-Tetrachlorophenol	03-May-24	<0.2	µg/L	100
Triallate	03-May-24	<0.127	µg/L	230
Trichloroethylene	03-May-24	<0.2	µg/L	5
2,4,6-Trichlorophenol	03-May-24	<0.2	µg/L	5
Trifluralin	03-May-24	<0.127	µg/L	45
Vinyl Chloride	03-May-24	<0.1	µg/L	1

All results for the required organic sampling of schedule 24 are below the MAC.

Compliance

Adverse Water Quality Incidents

During 2025, the Desbarats DWS reported 3 incidents of adverse water quality.

Table 11: Adverse Water Quality Incidents

Date	Incident Reported
26-Mar-2025	TC Distribution Sample
22-Sep-2025	Loss of Distribution Pressure (Scheduled Valve Replacement)
20-Nov-2025	Loss of Distribution Pressure (Generator Failure)

Annual Drinking Water System Inspection

The annual DWS inspection took place on July 11, 2025, by MECP drinking water inspector Kristy Mitchell. Zero non-compliance and zero additional recommendations and best practice were identified.

The DWS received a final inspection rating of 100.00%.

Flows

The permit to take water authorizes the municipality to draw water from Lake Huron at a volume that shall not exceed 547.2 m³/d.

The maximum daily volume taken was 211 m³/d, 38.6% of the permit limit.

Municipal Drinking Water License: 275-201 specifies a maximum daily volume of treated water that flows to the distribution system shall not exceed 366 m³/d.

The max daily treated water volume reported was 192.6 m³/d on August 24, 52.6% of the rated capacity.

The Desbarats WTP treated and distributed a total of 44,537 m³ during the year 2025. The average daily treated flow demand was 122 m³/d.

Chart 1: 5-year Flow Comparison

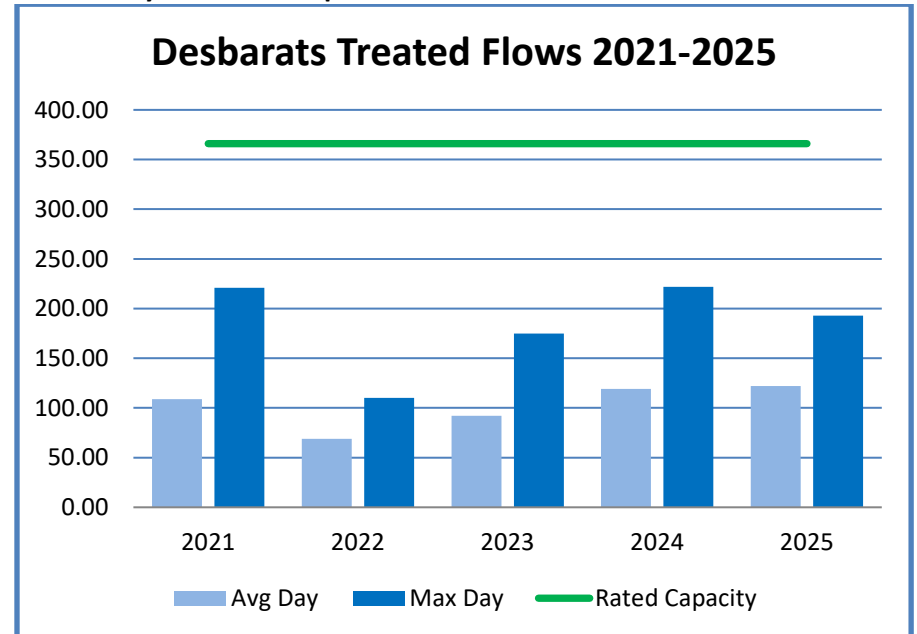
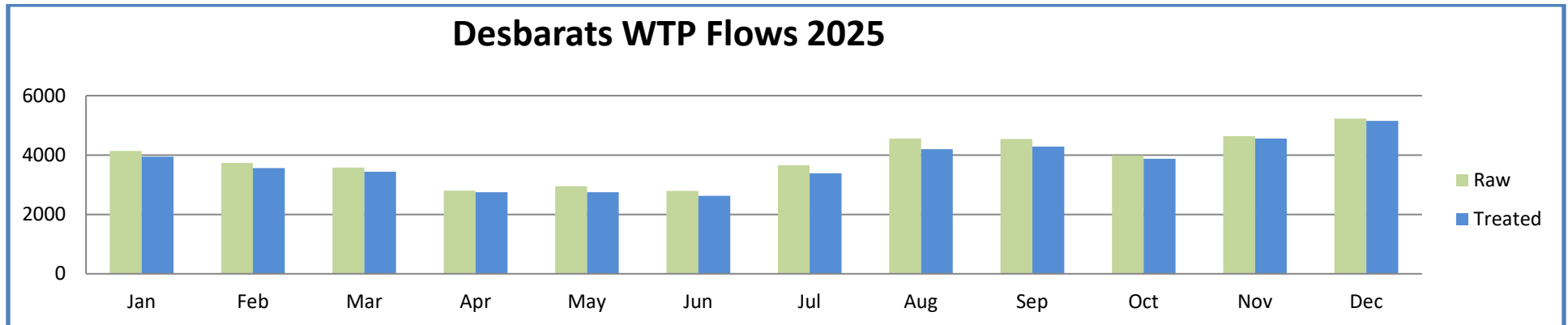


Table 12: Raw and Treated Water Flows 2025

2025	Raw Water Flows					Treated Water Flows				
Month	Raw Water (m ³)	Minimum Day (m ³ /d)	Maximum Day (m ³ /d)	Average Day (m ³ /d)	% Max Flow Day of PTTW	Treated Water (m ³)	Minimum Day (m ³ /d)	Maximum Day (m ³ /d)	Average Day (m ³ /d)	% Max Flow Day of Rated Capacity
January	4,134	95	170	133.4	31.1	3,947.5	96.44	164.2	127.3	44.9
February	3,737	114	155	133.5	28.3	3,562.3	104.4	146.3	127.2	40.0
March	3,579	87	153	115.5	28.0	3,436.8	87.2	142.0	110.9	38.8
April	2,804	74	109	93.5	19.9	2,751.9	74.5	102.4	91.7	28.0
May	2,948	70	125	95.1	22.8	2,751.2	63.9	112.0	88.7	30.6
June	2,792	73	117	93.1	21.4	2,627.6	67.7	109.1	87.6	29.8
July	3,652	91	152	117.8	27.8	3,387.6	85.4	136.3	109.3	37.2
August	4,556	112	211	147.0	38.6	4,200.8	104.8	192.6	135.5	52.6
September	4,542	74	193	151.4	35.3	4,286.7	81.4	177.1	142.9	48.4
October	3,986	69	164	128.6	30.0	3,873.3	79.2	159.8	124.9	43.7
November	4,637	103	202	154.6	36.9	4,558.9	106.6	187.6	152.0	51.3
December	5,228	145	193	168.6	35.3	5,152.8	146.7	189.2	166.2	51.7

Chart 2: Desbarats WTP Flows 2025



Report Availability

Annual Report

Section 11 of O. Reg. 170/03 defines that this annual report must be given, without charge, to every person who requests a copy. Effective steps must also be taken to advise users of water from the system that copies of the report are available, without charge, and of how a copy may be obtained. This annual report shall be made available for inspection by the public in the town office.

Township of Johnson
1 Johnson Drive
Desbarats, ON
P0R 1E0

Summary Report

This summary report for the Desbarats drinking water system for the period from January 1st to December 31st, 2025 has been prepared in accordance to schedule 22 of O. Reg. 170/03.

In accordance with schedule 22 of O. Reg. 170/03, this summary report has been provided to The Township of Johnson.

Tables, Definition of Terms

Appendix A: List of Tables/ Charts

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Appendix B: Definition of Terms

Acronym	Definition
DWS	Drinking water system
EC	E. Coli
HAA	Haloacetic acids
HPC	Heterotrophic plate count
MAC	Maximum Acceptable Concentration
MECP	Ministry of the Environment, Conservation and Parks
m³	Cubic metres
m³/d	Cubic metres per day
mg/L	Milligram per litre (part per million)
ML	Megalitre (1000 m ³)
NTU	Nephelometric turbidity unit
ODWS	Ontario Drinking Water Standards
O. Reg. 170/03	Ontario Regulation 170/03
PTTW	Permit to take water
TC	Total coliforms
THM	Trihalomethane
µg/L	Microgram per litre (part per billion)
WTP	Water treatment plant