

# Annual Report

## Marathon Drinking Water System



# 2025

Prepared by **Northern Waterworks Inc.**  
on behalf of the **Town of Marathon**



# Contents

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
	1.1 Annual Reporting Requirements .....	3
	1.2 Report Availability .....	3
<b>2</b>	<b>System Overview &amp; Expenses.....</b>	<b>4</b>
	2.1 System Description .....	4
	2.2 Water Treatment Chemicals .....	5
	2.3 System Expenses .....	6
<b>3</b>	<b>Water Quality.....</b>	<b>7</b>
	3.1 Overview .....	7
	3.2 Operational Parameters .....	7
	3.3 Microbiological Parameters .....	8
	3.4 Nitrate & Nitrite .....	10
	3.5 Trihalomethanes & Haloacetic Acids .....	11
	3.6 Lead Sampling .....	12
	3.7 Inorganic & Organic Parameters .....	13
<b>4</b>	<b>Water Production .....</b>	<b>16</b>
	4.1 Overview .....	16
	4.2 Flow Monitoring Results .....	16
	4.3 Recent Historical Flows.....	20
<b>5</b>	<b>Compliance .....</b>	<b>21</b>
	5.1 Overview .....	21
	5.2 Adverse Water Quality Incidents .....	21
	5.3 Regulatory Compliance.....	21

# 1 Introduction

## 1.1 Annual Reporting Requirements

This consolidated Annual Report (the Report) has been prepared in accordance with both section 11 (Annual Reports) and Schedule 22 (Summary Reports for Municipalities) of Ontario Regulation 170/03 (Drinking Water Systems Regulation). This Report is intended to inform both the public and Municipal Council about the operation of the system over the previous calendar year (January 1 to December 31, 2025).

Section 11 of O. Reg. 170/03 requires the development and distribution to the public of an annual report summarizing water quality monitoring results, adverse water quality incidents, system expenses and chemicals used in the water treatment process.

Schedule 22 of O. Reg. 170/03 requires the development and distribution to Council of an annual report summarizing incidents of regulatory non-compliance and associated corrective actions, in addition to providing flow monitoring results for the purpose of enabling the Owner to assess the capability of the system to meet existing and planned demand.

## 1.2 Report Availability

In accordance with section 11 of O. Reg. 170/03, this 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 at the Marathon Municipal Office and on the Town's website.

In accordance with Schedule 22 of O. Reg. 170/03, this Annual Report must be given to the members of Municipal Council. Section 19 (Standard of care, municipal drinking-water system) of Ontario's *Safe Drinking Water Act* (SDWA) also places certain responsibilities upon those municipal officials who oversee an accredited operating authority or exercise decision-making authority over a system. The examination of this Report is one of the methods by which municipal officials may fulfil the obligations required by section 19 of the SDWA.

System users and members of Council should contact a representative of NWI for assistance in interpreting this Report. Questions and comments may be directed to the local NWI Operations Manager or by email to [compliance@nwi.ca](mailto:compliance@nwi.ca).

## 2 System Overview & Expenses

### 2.1 System Description

The Marathon Drinking Water System must meet extensive treatment and testing requirements to ensure that human health is protected. The operation and maintenance of the system is governed by Ontario's *Safe Drinking Water Act* and the regulations therein, in addition to requirements within system-specific environmental approvals. Important system information is summarized in Table 1.

Table 1: System information	
Drinking-Water System (DWS) Name:	Marathon Drinking Water System
DWS Number:	220000255
DWS Category:	Large Municipal Residential
DWS Owner:	The Corporation of the Town of Marathon
DWS Operating Authorities:	<ul style="list-style-type: none"> <li>Northern Waterworks Inc. (treatment subsystem)</li> <li>The Corporation of the Town of Marathon (water distribution subsystem)</li> </ul>
DWS Components:	<ul style="list-style-type: none"> <li>Groundwater wells (wells 2, 3, 4, 5 &amp; 6)</li> <li>Industrial Park Booster Station</li> <li>Penn Lake Heights Reservoir &amp; Booster Station</li> <li>Marathon water distribution system</li> </ul>
Treatment Process:	<ul style="list-style-type: none"> <li>Free chlorine disinfection</li> </ul>

As a groundwater source, aquifer overburden and soil act as an effective filter that removes micro-organisms and other particles by straining and antagonistic effect to a level where the water supply may already be potable, but disinfection is required as an additional health risk barrier. The active groundwater wells 2, 3, 4, 5 and 6 are located throughout the community of Marathon; wells 1 and 7 were previously abandoned and decommissioned in 2002 and 2003, respectively. A single multi-stage vertical turbine pump at each active well is used to draw water from the aquifer, and disinfectant is injected as groundwater is pumped from the well and directed to a chlorine contact loop. The contact loops are designed to provide the necessary amount of time required to achieve primary disinfection and they are the last treatment step prior to water entering the distribution system.

The Marathon water distribution system includes two substations and is comprised of various sized diameter water mains consisting of cast iron, ductile iron, high density polyethylene and PVC, totalling approximately 33 km in length and including over 200 fire hydrants. A 4,950 m<sup>3</sup> capacity in-ground storage reservoir at the Penn Lake Heights Reservoir & Booster Station (PLHR&BS) is filled by the active wells and is used to balance system pressure and provide water for emergency situations. Booster pumps at the facility are also used to supply water to and maintain system pressure in the Penn Lake Heights subdivision. The Industrial Park Booster Station is located on Peninsula Road and is used to supply water to Industrial Park using booster pumps. Secondary disinfection requirements in the water distribution system are achieved by maintaining a free chlorine residual at all locations.



**2.2 Water Treatment Chemicals**

In accordance with section 11 of O. Reg. 170/03, this Report must include a list of all water treatment chemicals used by the system during the period covered by the report (summarized in Table 2). All chemicals used in the treatment process are NSF/ANSI 60 certified for use in potable water, as required by system approvals.

**Table 2:** Water treatment chemicals used in 2025

Treatment Chemical	Application	Locations
sodium hypochlorite	disinfectant	Wells 2, 3, 4, 5 & 6

## 2.3 System Expenses

In accordance with section 11 of O. Reg. 170/03, this Report must describe any major expenses incurred during the reporting period to install, repair or replace required equipment. This Report also summarizes those expenses related to strengthening equipment inventories and to maintenance activities undertaken by subcontracted service providers. Major expenses incurred in 2025 are summarized in Table 3.

**Table 3:** Significant expenses incurred in 2025

Category	Description (Location)	Expense
Replace	IP Booster Pump #3 Replacement	\$14,608
Replace	Wet Location Emergency Lights Replacement	\$1,057
Inventory	Asco Valves Varies Sizes (Flow Control Valves)	\$2,907
Maintenance	TBay Tel Security Panel Replacement/Maintenance	\$4,595
Inventory	Spare Metering Pump Check Valve Inventory	\$7,829
Maintenance	Flow Meter Installations IP Booster / Reservoir	\$13,780
Security	Cyber Security	\$10,661
Replace	Annual Safety Inspections (Lifting Devices)	\$1,999
Maintenance	Annual Flow Meter Verifications	\$3,304
Maintenance	Annual Testing of Backflow Preventers	\$3,728
Maintenance	Hydro Power Lines Moved Underground Well #2	\$10,000
Maintenance	ESA Well Upgrades	\$24,600

## 3 Water Quality

### 3.1 Overview

Water quality monitoring is conducted to determine and confirm that drinking water delivered to the consumer is safe and aesthetically pleasing. Monitoring is also required to assess compliance with legislation and to control the treatment process. In accordance with section 11 of O. Reg. 170/03, this Report must summarize the results of water quality tests required by regulations, approvals, and orders. The following sections summarize the results of all required water quality tests and compare the results to applicable water quality standards.



### 3.2 Operational Parameters

In accordance with Schedule 7 (Operational checks) of O. Reg. 170/03, regulated operational parameters that must be monitored include raw groundwater turbidity and the free chlorine residuals associated with primary and secondary disinfection. Table 4 summarizes water quality results for regulated and selected unregulated operational parameters. In accordance with Schedule 6 (Operational checks, sampling and testing – general) of O. Reg. 170/03, certain operational parameters are continuously monitored. No Adverse Water Quality Incidents (AWQIs) pertaining to operational parameters occurred during the reporting period.

**Table 4:** Results summary for operational parameters

Parameter (Location)	Number of Samples	Units	Min. Result	Max. Result	Annual Avg.
Raw Water Turbidity (Well 2)	54	NTU	0.00	0.12	0.09
Raw Water Turbidity (Well 3)	54	NTU	0.05	0.24	0.09
Raw Water Turbidity (Well 4)	53	NTU	0.06	0.68	0.10
Raw Water Turbidity (Well 5)	54	NTU	0.06	0.13	0.09
Raw Water Turbidity (Well 6)	55	NTU	0.06	0.21	0.10
Treated Water pH (Well 2)	54	---	7.7	7.8	7.8
Treated Water pH (Well 3)	54	---	7.5	7.9	7.8
Treated Water pH (Well 4)	53	---	7.5	7.8	7.8
Treated Water pH (Well 5)	54	---	7.6	7.9	7.8
Treated Water pH (Well 6)	55	---	7.7	7.9	7.8
Treated Water FCR (Well 2)	Continuous	mg/L	0.95	N/A	N/A
Treated Water FCR (Well 3)	Continuous	mg/L	0.24	N/A	N/A
Treated Water FCR (Well 4)	Continuous	mg/L	0.11	N/A	N/A
Treated Water FCR (Well 5)	Continuous	mg/L	0.13	N/A	N/A
Treated Water FCR (Well 6)	Continuous	mg/L	0.91	N/A	N/A
Distribution Water FCR (IPBS)	365	mg/L	0.93	1.74	1.29
Distribution Water FCR (PLRH&BS)	365	mg/L	1.00	1.75	1.26
Distribution Water FCR (WWTP)	365	mg/L	1.34	0.93	1.81
1. FCR = Free Chlorine Residual; IPBS = Industrial Park Booster Station; PLRH&BS = Penn Lake Heights Reservoir & Booster Station; WWTP = Marathon Wastewater Treatment Plant.					

### 3.3 Microbiological Parameters

Microbiological sampling and testing requirements are provided in Schedule 10 of O. Reg. 170/03. In 2025, a total of 738 source, treated and distribution water samples were collected for microbiological analysis by an accredited laboratory. Samples were collected on a weekly basis and included tests for E. coli (EC), total coliforms (TC) and heterotrophic plate counts (HPC). Results from microbiological analyses are summarized in Table 5. All results were below the Ontario Drinking Water Quality Standards.

**Table 5:** Results summary for microbiological parameters<sup>1, 2</sup>

Sample Type (Location)	No. of Samples	EC Results Range (MPN/100mL)	TC Results Range (MPN/100mL)	# of HPC Samples	HPC Results Range (CFU/mL)
Raw Water (Well 2)	57	0	0	n/a	n/a
Raw Water (Well 3)	56	0	0	n/a	n/a
Raw Water (Well 4)	57	0	0	n/a	n/a
Raw Water (Well 5)	57	0	0	n/a	n/a
Raw Water (Well 6)	57	0	0	n/a	n/a
Treated Water (Well 2)	57	absent	absent	57	0-3
Treated Water (Well 3)	56	absent	absent	53	0 - 2
Treated Water (Well 4)	57	absent	absent	53	0 - 4
Treated Water (Well 5)	57	absent	absent	54	0 - 4
Treated Water (Well 6)	57	absent	absent	53	0 - 15
Distribution	170	absent	absent	57	0 - 5

1. The Ontario Drinking Water Quality Standard for E. Coli and Total Coliforms in a treated or distribution sample is 'not detectable'. The presence of either parameter in a treated or distribution sample is considered an exceedance.
2. Wells 2, 3 & 6 were not in continuous production in 2025.



### 3.4 Nitrate & Nitrite

Treated water is tested at each production well for nitrate and nitrite concentrations on a quarterly basis in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Nitrate and nitrite results are provided in Table 6. All results were below the Ontario Drinking Water Quality Standards.

Table 6: Nitrate and nitrite results						
Parameter	ODWQS (mg/L)	Well 2 (mg/L)	Well 3 (mg/L)	Well 4 (mg/L)	Well 5 (mg/L)	Well 6 (mg/L)
Sample Date		19-Feb-2025				
Nitrate	10	0.512	0.730	0.464	0.786	0.499
Nitrite	1	<0.010	<0.010	<0.010	<0.010	<0.010
Sample Date		15-May-2025				
Nitrate	10	0.532	0.453	0.476	0.743	0.528
Nitrite	1	<0.010	<0.010	<0.010	<0.010	<0.010
Sample Date		19-Aug-2025				
Nitrate	10	0.600	0.876	0.558	0.867	0.609
Nitrite	1	<0.010	<0.010	<0.010	<0.010	<0.010
Sample Date		18-Nov-2025				
Nitrate	10	0.525	0.524	0.526	0.936	0.559
Nitrite	1	<0.010	<0.010	<0.010	<0.010	<0.010

### 3.5 Trihalomethanes & Haloacetic Acids

Trihalomethanes (THMs) and haloacetic acids (HAAs) are sampled on a quarterly basis from a distribution system location that is likely to have an elevated potential for their formation, in accordance with Schedule 13 (Chemical sampling and testing) of O. Reg. 170/03. Total THM and HAA results are provided in Table 7 and Table 8, respectively. Compliance with the provincial standards for trihalomethane and haloacetic acid concentrations is determined by calculating a running annual average (RAA). The 2025 running annual averages for THMs and HAAs were below the respective Ontario Drinking Water Quality Standards.

Table 7: Total THM results		
Sample Date	Result (µg/L)	Quarterly Average (µg/L)
19-Feb-25	3.4	6.0
Q1 Regulatory Average (RAA)		<b>6.0</b>
15-May-25	8.3	7.0
Q2 Regulatory Average (RAA)		<b>7.0</b>
19-Aug-25		6.1
Q3 Regulatory Average (RAA)		<b>6.5</b>
18-Nov-25		6.6
Q4 Regulatory Average (RAA)		<b>6.1</b>
ODWQS Limit (RAA)		<b>100</b>

Table 9: Total HAA results		
Sample Date	Result (µg/L)	Quarterly Average (µg/L)
19-Feb-25	<5	<5
Q1 Regulatory Average (RAA)		<b>&lt;5</b>
15-May-25	<5	<5
Q2 Regulatory Average (RAA)		<b>&lt;5</b>
19-Aug-25	<5	<5
Q3 Regulatory Average (RAA)		<b>&lt;5</b>
18-Nov-25	<5	<5
Q4 Regulatory Average (RAA)		<b>&lt;5</b>
ODWQS Limit (RAA)		<b>80</b>

### 3.6 Lead Sampling

Based upon favourable sampling results and a lack of lead exceedances in drinking-water in the community, the Marathon DWS previously qualified for reduced lead sampling and ultimately became exempt from sampling at plumbing locations in accordance with Schedule 15.1 (Lead) of O. Reg. 170/03. Six (6) distribution samples must now be collected every year and analyzed for pH and alkalinity. Additionally, these distribution system samples must be analyzed for lead in every third 12-month period after the plumbing sample exemption was activated. Lead testing will next be required beginning in the Winter 2026/27 sampling period. Table 9 summarizes the results of community lead sampling and related required tests.

Sample Date	Distribution Sample Location	pH	Alkalinity (mg/L)	Lead Result <sup>1</sup> (µg/L)
6-Feb-2024	Hydrant 19	8.84	189	2.8
6-Feb-2024	Hydrant 56	8.33	196	<1.0
6-Feb-2024	Hydrant 115	8.75	197	<1.0
23-Jul-2024	Hydrant 19	7.14	196	<1.0
23-Jul-2024	Hydrant 56	7.50	182	<1.0
23-Jul-2024	Hydrant 115	7.47	197	<1.0
23-Jul-2025	Hydrant 19	7.67	172	lead analyses not required <sup>2</sup>
23-Jul-2025	Hydrant 56	7.65	170	
23-Jul-2025	Hydrant 115	7.76	170	

1. The Ontario Drinking Water Quality Standard for lead in drinking-water is 10 µg/L.
2. Distribution samples were last collected and tested for lead during Summer 2024 sampling period and will begin again in Winter 2026-27 sampling period.

### 3.7 Inorganic & Organic Parameters

Most inorganic parameters are sampled every three (3) years in treated water from each production well in accordance with Schedules 13 (Chemical sampling and testing) and 23 (Inorganic parameters) of O. Reg. 170/03. The inorganic parameters sodium and fluoride are sampled every five (5) years in treated water from each well in accordance with Schedules 13 and 23 of O. Reg. 170/03. The most recent inorganic parameter sampling results are provided in Table 10. All results were below the associated Ontario Drinking Water Quality Standards, except sodium.

Parameter (Units)	Sample Location	Well 2	Well 3	Well 4	Well 5	Well 6
	Sample Date	18-Mar-25	18-Mar-25	18-Mar-25	18-Mar-25	18-Mar-25
	ODWQS					
Antimony (µg/L)	6	<0.60	<0.60	<0.60	<0.60	<0.60
Arsenic (µg/L)	10	<1.0	<1.0	<1.0	<1.0	<1.0
Barium (µg/L)	1000	21	21	21	21	21
Boron (µg/L)	5000	<50	<50	<50	<50	<50
Cadmium (µg/L)	5	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (µg/L)	50	<1.0	<1.0	<1.0	<1.0	<1.0
Mercury (µg/L)	1	<0.100	<0.100	<0.100	<0.100	<0.100
Selenium (µg/L)	50	<1.0	<1.0	<1.0	<1.0	<1.0
Uranium (µg/L)	20	<2.0	<2.0	<2.0	<2.0	<2.0
Fluoride (mg/L) <sup>2</sup>	1.5	0.095	0.098	0.098	0.057	0.089
Sodium (mg/L) <sup>2</sup>	20 <sup>1</sup>	22.9	23.0	22.2	16.4	21.3

1. The parameter sodium is not considered a toxic element and is not associated with a Standard as prescribed in O. Reg. 169/03, although an exceedance of 20 mg/L requires reporting and corrective actions. The sodium result for Wells 2, 3, 4, & 6 is associated with Adverse Water Quality Incident No. 164540. Refer to section 5.2 of this report.
2. Sodium and fluoride were tested on 20 February 2024.

Organic parameters are sampled every three (3) years in treated water from each production well in accordance with Schedules 23 (Chemical sampling and testing) and 24 (Organic parameters) of O. Reg. 170/03. These parameters include various organic acids, pesticides, herbicides, PCBs and other organic chemicals. The most recent organic parameter sampling results are provided in Table 11. All results were below the associated Ontario Drinking Water Quality Standards.

Parameter (Units)	Sample Location	Well 2	Well 3	Well 4	Well 5	Well 6
	Sample Date	18-Mar-2025	18-Mar-2025	18-Mar-2025	18-Mar-2025	18-Mar-2025
	ODWQS					
Alachlor (µg/L)	5	<0.05	<0.05	<0.05	<0.05	<0.05
Atrazine & Metabolites (µg/L)	5	<0.14	<0.14	<0.14	<0.14	<0.14
Azinphos-methyl (µg/L)	20	<0.10	<0.10	<0.10	<0.10	<0.10
Benzene (µg/L)	1	<0.50	<0.50	<0.50	<0.50	<0.50
Benzo(a)pyrene (µg/L)	0.01	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Bromoxynil (µg/L)	5	<0.05	<0.05	<0.05	<0.05	<0.05
Carbaryl (µg/L)	90	<0.05	<0.05	<0.05	<0.05	<0.05
Carbofuran (µg/L)	90	<0.025	<0.025	<0.025	<0.025	<0.025
Carbon Tetrachloride (µg/L)	2	<0.20	<0.20	<0.20	<0.20	<0.20
Chlorpyrifos (µg/L)	90	<0.10	<0.10	<0.10	<0.10	<0.10
Diazinon (µg/L)	20	<0.025	<0.025	<0.025	<0.025	<0.025
Dicamba (µg/L)	120	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene (µg/L)	200	<0.50	<0.50	<0.50	<0.50	<0.50
1,4-Dichlorobenzene (µg/L)	5	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane (µg/L)	5	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene (µg/L)	14	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloromethane (µg/L)	50	<1.0	<1.0	<1.0	<1.0	<1.0
2,4 -Dichlorophenol (µg/L)	900	<0.20	<0.20	<0.20	<0.20	<0.20
2,4-D (µg/L)	100	<0.05	<0.05	<0.05	<0.05	<0.05

**Table 11:** Organic parameter sampling results

Parameter (Units)	Sample Location	Well 2	Well 3	Well 4	Well 5	Well 6
	Sample Date	18-Mar-2025	18-Mar-2025	18-Mar-2025	18-Mar-2025	18-Mar-2025
	ODWQS					
Diclofop-methyl (µg/L)	9	<0.10	<0.10	<0.10	<0.10	<0.10
Dimethoate (µg/L)	20	<0.050	<0.050	<0.050	<0.050	<0.050
Diquat (µg/L)	70	<1.0	<1.0	<1.0	<1.0	<1.0
Diuron (µg/L)	150	<0.05	<0.05	<0.05	<0.05	<0.05
Glyphosate (µg/L)	280	<1.0	<1.0	<1.0	<1.0	<1.0
Malathion (µg/L)	190	<0.025	<0.025	<0.025	<0.025	<0.025
MCPA (µg/L)	100	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Metolachlor (µg/L)	50	<0.025	<0.025	<0.025	<0.025	<0.025
Metribuzin (µg/L)	80	<0.10	<0.10	<0.10	<0.10	<0.10
Monochlorobenzene (µg/L)	80	<0.50	<0.50	<0.50	<0.50	<0.50
Paraquat (µg/L)	10	<1.0	<1.0	<1.0	<1.0	<1.0
Pentachlorophenol (µg/L)	60	<0.50	<0.50	<0.50	<0.50	<0.50
Phorate (µg/L)	2	<0.25	<0.25	<0.25	<0.25	<0.25
Picloram (µg/L)	190	<0.10	<0.10	<0.10	<0.10	<0.10
Total PCBs (µg/L)	3	<0.030	<0.030	<0.030	<0.030	<0.030
Prometryne (µg/L)	1	<0.025	<0.025	<0.025	<0.025	<0.025
Simazine (µg/L)	10	<0.10	<0.10	<0.10	<0.10	<0.10
Terbufos (µg/L)	1	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethylene (µg/L)	10	<0.50	<0.50	<0.50	<0.50	<0.50
2,3,4,6-Tetrachlorophenol (µg/L)	100	<0.50	<0.50	<0.50	<0.50	<0.50
Triallate (µg/L)	230	<0.10	<0.10	<0.10	<0.10	<0.10
Trichloroethylene (µg/L)	5	<0.50	<0.50	<0.50	<0.50	<0.50
2,4,6-Trichlorophenol (µg/L)	5	<0.20	<0.20	<0.20	<0.20	<0.20
Trifluralin (µg/L)	45	<0.10	<0.10	<0.10	<0.10	<0.10
Vinyl Chloride (µg/L)	1	<0.20	<0.20	<0.20	<0.20	<0.20

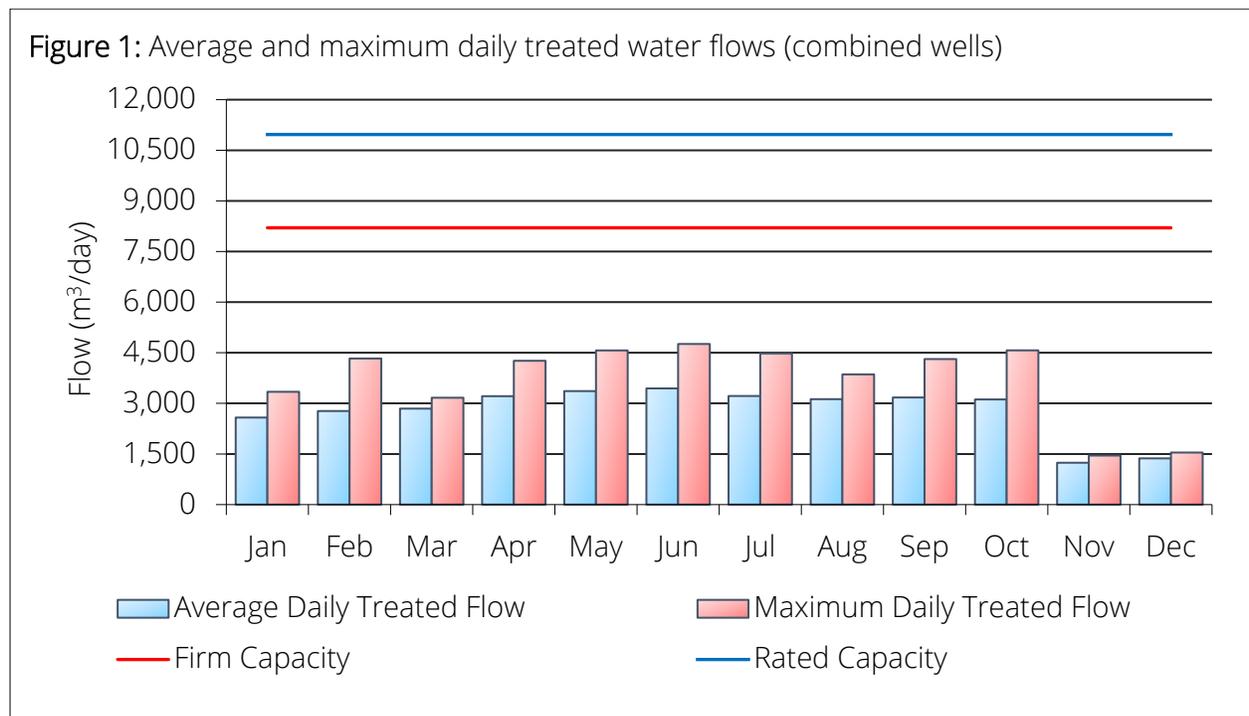
## 4 Water Production

### 4.1 Overview

In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Annual Report must include certain information for the purpose of enabling the Owner to assess the capability of the system to meet existing and planned uses. Specifically, this Report must include a summary of the quantities and flow rates of the water supplied during the reporting period, including monthly average and maximum daily flows. The Report must also include a comparison of flow monitoring results to the rated capacity and flow rates approved in the system's *Municipal Drinking Water Licence*.

### 4.2 Flow Monitoring Results

Throughout the reporting period the Marathon Drinking Water System operated within its rated capacity and supplied a total of 1,017,973 m<sup>3</sup> of treated water. On an average day in 2025, 2,789 m<sup>3</sup> of treated water was supplied to the community, which represents 25% of the rated capacity of the system (10,968.64 m<sup>3</sup>/day). The maximum daily flow in 2025 was 4,760 m<sup>3</sup>/day, which represents 43% of the rated capacity. Flow monitoring results are summarized in Figure 1 and Table 12.



The combined 'rated capacity' represented in Figure 1 refers to the maximum daily volume of treated water that is permitted to flow from the treatment subsystem to the distribution subsystem under normal operating conditions. This value is the sum of the rated capacities for all wells, and flow rates may exceed this value for the purposes of fighting a large fire or for the maintenance of the system. In accordance with the Design Guidelines for Drinking-Water Systems, the 'firm capacity' represented in Figure 1 refers to the capacity of the system with the largest unit out of service (i.e., well 6), if the system supplies a pressure zone with adequate storage available for fire protection and balancing. The firm capacity of the system is 8,202.84 m<sup>3</sup>/day; the provision of firm capacity is a general design consideration for treated water and booster pumping stations.



**Table 12: 2025 water production summary**

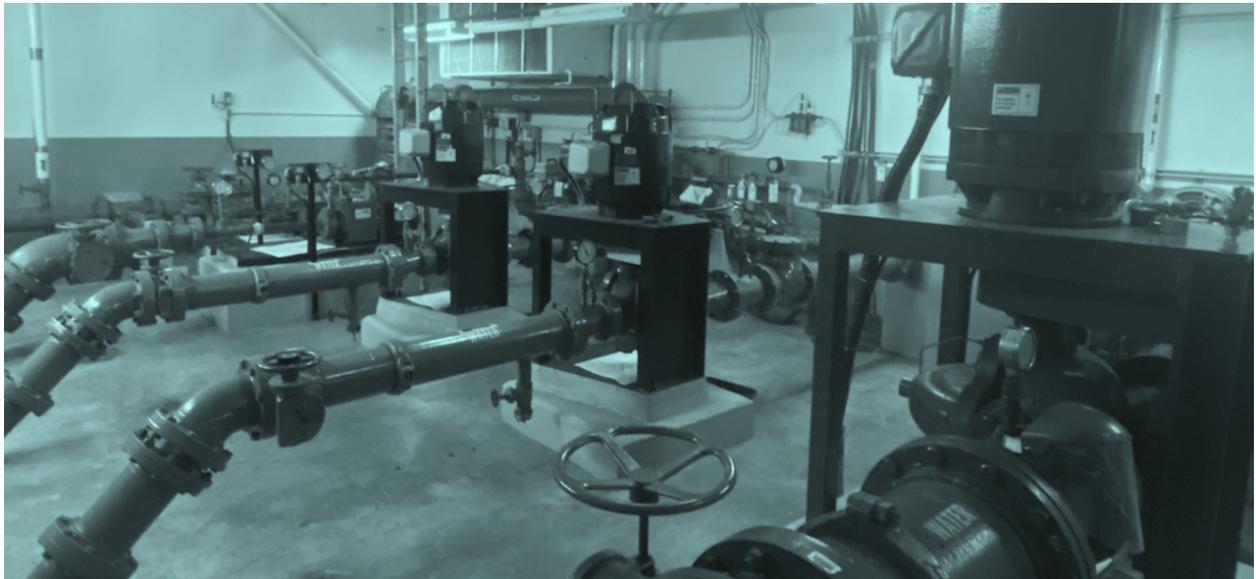
Month	Total Volumes <sup>1</sup> (m <sup>3</sup> )		Daily Flows (m <sup>3</sup> /day)		Capacity Assessments <sup>2</sup>	
	Raw Water	Treated Water	Average - Treated Water	Maximum - Treated Water	Average - Treated Water	Maximum - Treated Water
Jan	79,997	79,976	2,580	3,343	24%	30%
Feb	77,680	77,656	2,773	4,330	25%	39%
Mar	88,201	88,187	2,845	3,167	26%	29%
Apr	96,407	96,392	3,213	4,262	29%	39%
May	104,291	104,275	3,364	4,569	31%	42%
Jun	103,305	103,294	3,443	4,760	31%	43%
Jul	99,797	99,785	3,219	4,479	29%	41%
Aug	96,878	96,865	3,125	3,859	28%	35%
Sep	95,253	95,241	3,175	4,313	29%	39%
Oct	96,617	96,606	3,116	4,571	28%	42%
Nov	37,233	37,219	1,241	1,454	11%	13%
Dec	42,493	42,477	1,370	1,543	12%	14%
Total	1,018,152	1,017,973	---	---	---	---
Average	84,846	84,831	2,789	---	25%	---

1. The difference between raw water and treated water volumes corresponds to the amount of water that is automatically directed to waste at the beginning of a well production cycle. In 2025, this difference accounted for approximately 0.02% of the total volume of withdrawn groundwater.
2. Capacity assessments compare the average and maximum daily treated water flows to the rated capacity of the system.

Throughout the reporting period wells 2, 3, 4, 5 and 6 contributed approximately <1%, 36.8%, 57.7%, 61.8.6% and <1% to overall water production, respectively. All treatment stations operated within their respective capacity limits in 2025. Table 13 summarizes flow monitoring results by location.

**Table 13: 2025 water production summary – results by location**

Location	Total Volumes (m <sup>3</sup> )		Daily Flows (m <sup>3</sup> /day)			Capacity Assessments	
	Treated Water	% of Total	Rated Capacity	Average - Treated Water	Maximum - Treated Water	Average - Treated Water	Maximum - Treated Water
Well 2	413	0.04%	1,962.28	7	11	0.4%	1%
Well 3	80,038	7.9%	1,662.36	612	1,463	36.8%	88%
Well 4	442,496	43.5%	2,289.60	1,320	1,904	57.7%	83%
Well 5	494,465	48.6%	2,289.60	1,416	1,991	61.8%	87%
Well 6	561	0.1%	2,764.80	9	18	0.3%	1%
All Wells	1,017,973	100%	10,968.64	2,789	4,760	25.4%	43%



### 4.3 Recent Historical Flows

Table 14 summarizes recent historical flow monitoring results for the Marathon DWS. There was a decrease in the amount of treated water supplied in 2025 when compared to 2024. The Town of Marathon has a leak detection program in place to identify and correct leaks. Since 2020 the flows have significantly decreased due to this program.

**Table 14:** Recent historical water production summary

Year	Total Volumes (m <sup>3</sup> )		Daily Flows (m <sup>3</sup> /day)	
	Treated Water	Annual % Change	Average – Treated Water	Maximum – Treated Water
2014	881,333	+31.0%	2,415	3,962
2015	1,103,323	+25.2%	3,023	4,646
2016	1,137,539	+3.1%	3,108	5,314
2017	1,162,053	+2.2%	3,184	4,852
2018	1,308,340	+12.6%	3,584	5,366
2019	1,353,743	+3.5%	3,709	6,564
2020	1,137,440	-16.0%	3,108	5,942
2021	767,935	-32.5%	2,104	3,927
2022	868,048	13.0%	2,378	4,307
2023	752,218	-13.3%	2,061	4539
2024	716,607	-4.7%	1,958	3,278
2025	1,017,973	+42.1%	2,789	4,760

## 5 Compliance

### 5.1 Overview

Northern Waterworks Inc. and the Town of Marathon employ an operational strategy that is committed to achieving the following goals:

- Providing a safe and reliable supply of drinking water to the community of Marathon;
- Meeting or exceeding all applicable legislative and regulatory requirements; and,
- Maintaining and continually improving the operation and maintenance of the system.

The following sections will summarize incidents of regulatory noncompliance and adverse water quality that occurred during the reporting period. NWI is committed to employing timely and effective corrective actions to prevent recurrence of all identified incidents of adverse water quality and noncompliance.

### 5.2 Adverse Water Quality Incidents

In accordance with section 11 (Annual Reports) of O. Reg. 170/03, this Report must summarize any reports made to the Ministry under subsection 18(1) (Duty to report adverse test results) of *the Act* or section 16-4 (Duty to report other observations) of Schedule 16 of O. Reg. 170/03. Additionally, this Report must describe any corrective actions taken under Schedule 17 of O. Reg. 170/03 during the period covered by the report.

There were zero (0) adverse water quality incidents (AWQIs) that occurred during the reporting period.

### 5.3 Regulatory Compliance

In accordance with Schedule 22 (Summary Reports for Municipalities) of O. Reg. 170/03, this Report must list any requirements of the *Act*, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report (i.e., an incident of regulatory noncompliance). Additionally, this Report must specify the duration of the failure and the measures that were taken to correct the failure.

The most recent inspection by Ontario's Ministry of the Environment, Conservation and Parks was initiated on November 7, 2025 and the final report was received on January 14, 2026.. The

final inspection rating was 95.71% and two (2) incidents of regulatory noncompliance were identified.

- **Noncompliance item no. 1**

An overall responsible operator (ORO) was not designated for all subsystems. The Town of Marathon shall ensure that an overall responsible operator is designated at all times for the linear infrastructure associated with the water distribution subsystem. The Town has responded to this non-compliance by updating the method for identifying and recording the distribution ORO. Copies of these records for February and March 2026 will be provided to the Ministry Inspector.

- **Noncompliance item no. 2**

Incomplete or illegible records made it difficult to confirm that all parts of the drinking water system were disinfected in accordance with a procedure listed in Schedule B of the Drinking Water Works Permit (DWWP). The corresponding disinfection records did not consistently include all information required under Section 3.1 of the Watermain Disinfection Procedure (WDP).

During the inspection period, the replacement of a pump between December 16 and 18, 2024, at the Penn Lake Reservoir and Booster Station required adherence to a disinfection protocol. No details about disinfection were recorded in the facility logbook or any other records. Following the field inspection, the certified operator providing contractor oversight reported that the pump, pipe sections and tools were disinfected with 12% sodium hypochlorite.

By May 1, 2026, Northern Waterworks Inc. shall develop a standardized form to record all required information related to the disinfection of drinking water pumps, piping, and appurtenances located within water treatment facilities and distribution outstations. For clarity, this form does not apply to the disinfection of drinking water storage facilities or wells. The form shall be submitted by email to the Ministry Water Compliance Officer for review and approval by the same date. Upon ministry approval, the form shall be implemented.

In the distribution subsystem, work requiring adherence to a disinfection protocol included new and temporary watermain installations, emergency watermain repairs, and planned maintenance of appurtenances and fittings. New and temporary watermains must be disinfected in accordance with the Watermain Disinfection Procedure (WDP). During the

inspection period, two temporary watermain sections and two new watermain sections were installed as part of the Trailer Court and Howe Street reconstruction project. The corresponding disinfection records did not consistently include all information required under Section 3.1 of the WDP. Specifically, several records lacked the exact start and end times of disinfection, and the percentage loss following disinfection was not consistently documented. Additionally, issues with record legibility were noted. Other required information was present, including details on the use and testing of a backflow preventer, flushing activities, and microbiological sample results. In all cases, the continuous feed method of super-chlorination was used.

By May 1, 2026, the Town of Marathon shall develop a standardized form to record all information required under Section 3.1 of the Watermain Disinfection Procedure. This form shall apply to the disinfection of new, temporary, and relined watermains. The completed form shall be submitted by email to the Ministry Water Compliance Officer for review and approval by the same date. Upon ministry approval, the form shall be implemented.

