



Kincardine Drinking Water System

2025 Annual Water Summary Report

1. INTRODUCTION AND BACKGROUND

The municipality owns and operates drinking water systems to provide residents with safe, potable water. These municipal drinking water systems are regulated under various legislation and legal documents including the Safe Drinking Water Act and Ontario Regulation 170/03 Drinking Water Systems. O. Reg. 170 requires that the municipality complete an annual water report (Section 11) and an annual summary report (Schedule 22). The information required for each of these reports has been combined into this one report. This annual water summary report will be made available for inspection as per O. Reg. 170 subsection 12 (4).

The reports are available free of charge on the municipal website at www.kincardine.ca or by contacting the Environmental Services Department at waterservice@kincardine.ca. Requests will also be received in person or by telephone at the Municipal Administration Centre (1475 Concession 5, 519-396-3468) or the Environmental Services Office (155 Durham Street, Kincardine, 519-396-4660).

1.1. System Description

Drinking-Water System Number:	220002716
Drinking-Water System Name:	Kincardine Drinking Water System
Drinking-Water System Owner:	Municipality of Kincardine
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	Year 2025

The Kincardine Drinking Water System (DWS) takes water from Lake Huron and treats it using a surface water treatment plant. The water treatment plant provides conventional filtration and consists of two Actiflo clarifiers, four filters, a chlorination system, and an underground reservoir. The intake capacity is 18,750 m³/d and the treatment plant rated capacity is 11,563 m³/d. The chemicals used for treatment are Clar+ion A5, Norfloc 127H (formerly Magnafloc LT27AG), Actisand and chlorine gas. The distribution system serves the town of Kincardine and residents north of the town via a pipeline, plus the Huronville Subdivision Distribution System owned by the Township of Huron-Kinloss, with a total of over 4000 connections. There is a 3,360 m³ standpipe to provide water storage, pressure, and fire protection for the distribution system. A Booster Chlorination Facility is located at the north end of the distribution system for the Inverhuron Provincial Park. In 2018, a Booster Station was commissioned for monitoring and increasing pressure and chlorination for lands to the north of Gary Street.

1.2. Major Expenses

The system incurred expenses necessary to install, repair or replace required equipment as follows:

Raw Water Line Expenses	\$206,470
Treatment Equipment	\$42,519
KWTP Building Maintenance	\$65,505
Distribution Repairs and Upgrades	\$2,581,429
Consultants	\$4,579

2. WATER QUALITY MONITORING

Each municipal drinking water system is required to do testing to ensure that the water supplied to consumers is safe for consumption. Some of these tests such as chlorine residuals are done on site while others, like microbiological testing, must be performed by a licenced laboratory.

2.1. Microbiological Testing

O. Reg. 170 Schedule 10, requires the Kincardine DWS to take a minimum of one sample per week of raw, treated and distribution water with a minimum of eighteen distribution samples required every month. All raw, treated and distribution samples must be tested for *Escherichia coli* (E. coli) and total coliforms (TC). All the treated samples and twenty five percent of the distribution samples must also be tested for heterotrophic plate count (HPC). Our internal sampling schedule exceeds the minimum requirements by having operations staff collect one treated and six distribution samples every week and have them tested for E. coli, total coliform and HPC, with 1 raw sample taken each week tested for E. coli and total coliforms.

Any E. coli or total coliform results above zero (0) in treated or distribution water must be reported to the Ministry of Environment, Conservation and Parks (MECP) and the Medical Officer of Health (MOH).

Heterotrophic plate count is a colony count of general bacteria population. There is no adverse limit for HPC samples. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water.

The results from the 2025 sampling program are shown in the Kincardine Water Source table. Samples taken in addition to our sampling program for things like watermain repairs or construction projects are not included here.

Kincardine Water Source	Number of Samples	Range of Total Coliform Results (#-#)	Range of E. coli Results (#-#)	Number of HPC Samples	Range of HPC Results (#-#)
Raw	52	0 – 1340	0 – 20	0	
Treated	52	0 – 0	0 – 0	52	0 – 10
Distribution	312	0 – 0	0 – 0	312	0 – 10

Notes: Raw water samples-1 sample in November and 3 samples in December indicated No Data Overgrown with Target Bacteria (NDOGT).

2.2. Chemical Testing

O. Reg. 170 Schedule 13 requires periodic testing of the water for chemical parameters. The Kincardine DWS is required to test for nitrite/nitrate, trihalomethanes and haloacetic acids on a quarterly basis. The tables below outline these as well as other inorganic and organic parameters that are required to be tested annually and include the date and result of the most recent test. Any result displayed as less than (<) are below the method detection limit of the licenced lab.

Sodium and fluoride are not found in significant levels in the treated water and fluoride is not added to the drinking water. Sodium and fluoride are only required to be tested every five years.

If the concentration of a parameter is above half of the Maximum Acceptable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by O. Regulation 170. There were no parameters above the half MAC that were required to be tested for quarterly in 2025.

Inorganic Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	October 6/25	<0.6	µg/L	No
Arsenic	October 6/25	0.3	µg/L	No
Barium	October 6/25	13.7	µg/L	No
Boron	October 6/25	14	µg/L	No
Cadmium	October 6/25	<0.003	µg/L	No
Chromium	October 6/25	0.8	µg/L	No
Mercury	October 6/25	<0.01	µg/L	No
Selenium	October 6/25	0.11	µg/L	No
Sodium	October 10/23	5.09	mg/L	No
Uranium	October 6/25	0.028	µg/L	No
Fluoride	October 10/23	0.06	mg/L	No
Nitrite	January 13/25 April 14/25 July 14/25 October 6/25	<0.003 <0.003 <0.003 <0.003	mg/L	No
Nitrate	January 13/25 April 14/25 July 14/25 October 6/25	0.416 0.356 0.322 0.240	mg/L	No

Organic Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	October 6/25	< 0.02	µg/L	No
Atrazine + N-dealkylated metabolites	October 6/25	0.02	µg/L	No
Azinphos-methyl	October 6/25	< 0.05	µg/L	No
Benzene	October 6/25	< 0.32	µg/L	No
Benzo(a)pyrene	October 6/25	< 0.004	µg/L	No
Bromoxynil	October 6/25	< 0.33	µg/L	No
Carbaryl	October 6/25	< 0.05	µg/L	No
Carbofuran	October 6/25	< 0.01	µg/L	No
Carbon Tetrachloride	October 6/25	< 0.17	µg/L	No
Chlorpyrifos	October 6/25	< 0.02	µg/L	No
Diazinon	October 6/25	< 0.02	µg/L	No
Dicamba	October 6/25	< 0.20	µg/L	No
1,2-Dichlorobenzene	October 6/25	< 0.41	µg/L	No
1,4-Dichlorobenzene	October 6/25	< 0.36	µg/L	No
1,2-Dichloroethane	October 6/25	< 0.35	µg/L	No
1,1-Dichloroethylene (vinylidene chloride)	October 6/25	< 0.33	µg/L	No
Dichloromethane	October 6/25	< 0.35	µg/L	No
2,4 Dichlorophenol	October 6/25	< 0.15	µg/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	October 6/25	< 0.19	µg/L	No
Diclofop-methyl	October 6/25	< 0.40	µg/L	No
Dimethoate	October 6/25	< 0.06	µg/L	No
Diquat	October 6/25	< 1	µg/L	No
Diuron	October 6/25	< 0.03	µg/L	No
Glyphosate	October 6/25	< 1	µg/L	No
Malathion	October 6/25	< 0.02	µg/L	No
2 methyl-4-chlorophenoxyacetic acid	October 6/25	<0.00012	µg/L	No
Metolachlor	October 6/25	<0.01	µg/L	No
Metribuzin	October 6/25	< 0.02	µg/L	No
Monochlorobenzene	October 6/25	< 0.3	µg/L	No
Paraquat	October 6/25	< 1	µg/L	No
Pentachlorophenol	October 6/25	< 0.15	µg/L	No
Phorate	October 6/25	< 0.01	µg/L	No
Picloram	October 6/25	< 1	µg/L	No
Polychlorinated Biphenyls (PCB)	October 6/25	< 0.04	µg/L	No
Prometryne	October 7/25	< 0.03	µg/L	No
Simazine	October 6/25	< 0.01	µg/L	No
Terbufos	October 6/25	< 0.01	µg/L	No
Tetrachloroethylene	October 6/25	< 0.35	µg/L	No
2,3,4,6-Tetrachlorophenol	October 6/25	< 0.20	µg/L	No
Triallate	October 6/25	< 0.01	µg/L	No
Trichloroethylene	October 6/25	< 0.44	µg/L	No
2,4,6-Trichlorophenol	October 6/25	< 0.25	µg/L	No
Trifluralin	October 6/25	< 0.02	µg/L	No
Vinyl Chloride	October 6/25	< 0.17	µg/L	No

Trihalomethane (THM) distribution sampling is required quarterly and must also be expressed as a running annual average. The limit as set in the Ontario Drinking Water Quality Standards is 100 ug/L. Trihalomethanes are a by-product of the disinfection process.

Date Sampled	THM Result Value (µg/L)	Running Annual Average (µg/L)	Exceedance
January 13/25	24	22.5	No
April 14/25	20	21.0	No
July 14/25	24	22.8	No
October 6/25	26	23.5	No

Sampling and testing for haloacetic acids (HAA) in the distribution system was a new requirement as of 2017. The limit as set in the Ontario Drinking Water Quality Standards is 80 ug/L and starting in 2020 must also be expressed as a running annual average. Haloacetic acids are a by-product of the disinfection process.

Date Sampled	HAA Result Value (µg/L)	Running Annual Average (µg/L)	Exceedance
January 13/25	5.5	5.7	No
April 14/25	< 5.3	5.4	No
July 14/25	5.6	5.4	No
October 6/25	7.6	6.0	No

The Kincardine DWS does not have significant levels of lead and so is currently under a reduced-sampling program. Under this sampling program, O. Reg 170 Schedule 15.1 requires sampling for lead every three years and lead-related parameters (pH and alkalinity) every year. Only PH and Alkalinity sampling was completed in 2025. Below are the results:

Date Sampled	Location Type	Number of Samples	Parameter	Range of Results
March 24, 2025	Distribution	4	Lead (ug/L)	--
			pH	7.4 – 7.5
			Alkalinity (mg/L)	74 – 77
August 11, 2025	Distribution	4	Lead (ug/L)	--
			pH	6.9 – 7.2
			Alkalinity (mg/L)	68 – 71

2.3. Operational Monitoring

The free chlorine residual must be monitored continuously on the treated water at the point of entry into the distribution system. A minimum of seven distribution grab samples are taken weekly and tested for free chlorine residual. In addition, free chlorine levels are monitored continuously within the treatment process and at three locations in the distribution system.

As a target, free chlorine residual within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported to the Ministry of the Environment, Conservation and Parks Spills Action Centre and corrective action taken.

At the Kincardine Water Treatment Plant, turbidity is monitored continuously on the raw water, after each Actiflo unit, after each filter and at the point of entry into the distribution system. Turbidity is measured in nephelometric turbidity units (NTU).

Filter effluent turbidity is reported to the ministry's Spills Action Centre if it is greater than 1 NTU for a period of 15 minutes or more, or if there are two spikes above 1 NTU within a 15-minute period.

Treated Water at the Point of Entry into the Distribution System	Number of Grab Samples	Range of Results (#-#)
Turbidity	Continuous monitoring	0.10 – 2.00
Chlorine	Continuous monitoring	0.00 – 2.00

Note: Minimum Chlorine residuals of 0 are recorded during power interruptions and equipment maintenance.

1. True minimum c12 (chlorine) residual for Point of Entry was 1.10mg/L
2. June 27-Power Blip at KWTP caused false min and max data on the POE Chlorine analyzer
3. December 3- Power Blip at KWTP caused false min and max data on the POE Chlorine analyzer
4. December 27- Power Blip at KWTP caused false min and max data on the POE Chlorine analyzer

Distribution Water	Number of Grab Samples	Range of Results (#-#)
Free Chlorine Residual	365	0.67 – 1.72
Inverhuron Booster Station Free Chlorine Residual	Continuous Monitoring	0.00 – 2.00
Gary Street Booster Station Free Chlorine Residual	Continuous Monitoring	0.00 – 9.99
Kincardine Water Tower Free Chlorine Residual	Continuous Monitoring	0.16 – 2.00

Notes: Minimum cl₂ (chlorine) residuals of 0 are recorded during power interruptions and equipment maintenance.

1. January 8-Kincardine Tower analyzer maintenance caused a false min residual of 0.16mg/L to be recorded
2. January 18-Inverhuron Booster Low chlorine alarm recorded a min residual of 0.48mg/L
3. January 24-Inverhuron Booster Low chlorine alarm recorded a min residual of 0.42mg/L
4. March 31-Inverhuron Booster Station alarm testing caused a false min residual of 0mg/L to be recorded
5. April 30-Gary Booster station analyzer maintenance cause a false min residual of 0mg/L to be recorded
6. July 4-Inverhuron Booster Station alarm testing caused a false min residual of 0mg/L to be recorded
7. October 23-Inverhuron Booster Station analyzer maintenance caused a false min residual of 0mg/L to be recorded
8. Nov 7-Inverhuron Booster Station analyzer maintenance caused a false min residual of 0mg/L to be recorded
9. December 3-Inverhuron Booster Station analyzer maintenance caused a false min residual of 0.45 to be recorded

The Ministry of the Environment, Conservation and Parks *Procedure for Disinfection of Drinking Water in Ontario* requires that the turbidity on each filter effluent line is less than or equal to 0.3 NTU at least 95% of the time each month. All water directed to users met the filter effluent criteria below 1NTU.

Month	Filter #1	Filter #2	Filter #3	Filter #4
January	99.51%	99.48%	99.46%	97.64%
February	99.70%	99.83%	99.81%	99.66%
March	98.67%	99.41%	99.43%	99.32%
April	99.00%	98.89%	98.05%	99.36%
May	99.93%	99.98%	99.76%	99.88%
June	100.00%	99.98%	99.87%	99.98%
July	99.98%	100.00%	100.00%	100.00%
August	100.00%	99.98%	100.00%	100.00%
September	100.00%	99.99%	100.00%	99.99%
October	100.00%	100.00%	100.00%	99.99%
November	100.00%	99.99%	98.84%	100.00%
December	99.97	99.96%	98.77%	99.98%

Notes:

1. January 23-Filter #1 was above 1NTU for 6 minutes then filter turned off
2. February 26-Filter #3 had a spike of 1 point above 1NTU then filter locked out
3. February 27-Filter #2 was above 1NTU for 10 minutes then filter locked out
4. August 15-Filter #2 had a spike above 1NTU for 1 data point then filter turned off
5. October 12-Filter #4 had a spike above 1NTU for 1 data point then filter locked out
6. November 17- Filter #2 had a spike above 1NTU for 1 data point then filter locked out

3. WATER QUANTITY

The following tables list the quantities and flow rates of the water supplied to the distribution system during the reporting period covered by this report, including monthly average and maximum daily flows, and a comparison to the rated capacity specified in the system Municipal Drinking Water Licence. The rated capacity is 11,563 m³/day. There is no maximum flow rate specified for water supplied to the distribution system.

Month	Total Treated Flow (m3)	Average Daily Flow (m ³ /day)	% Average Day Flow/ Rated Capacity	Maximum Daily Flow (m ³ /day)	% Maximum Day Flow/ Rated Capacity
January	77,542	2,501	22%	2,976	26%
February	72,987	2,607	23%	2,914	25%
March	83,852	2,705	23%	3,051	26%
April	87,370	2,912	25%	3,697	32%
May	109,395	3,529	31%	4,446	38%
June	131,948	4,398	38%	5,538	48%
July	137,400	4,432	38%	5,388	47%
August	129,644	4,182	36%	5,308	46%
September	96,841	3,228	28%	3,891	34%
October	83,360	2,689	23%	3,158	27%
November	68,915	2,297	20%	2,766	24%
December	69,987	2,258	20%	2,523	22%
Annual	1,149,242	3,145	27%	5,538	48%

Month	Average Daily Flow Rate (L/s)	Maximum Daily Flow Rate (L/s)
January	29.80	162.00
February	31.17	162.53
March	32.31	163.39
April	34.75	165.34
May	42.08	171.47
June	52.44	167.85
July	52.95	149.64
August	49.97	149.72
September	38.42	145.67
October	32.03	145.11
November	27.33	145.78
December	26.88	145.11
Annual	37.51	171.47

Note: Highlift average L/s includes 0's when pump is not running

4. ADVERSE WATER QUALITY INCIDENTS AND NON-COMPLIANCE FINDINGS

Any adverse results from microbiological samples, chemical samples or observations of operational conditions that indicate adverse water quality are reported to the Spills Action Centre (SAC) of the Ministry of the Environment, Conservation and Parks (MECP) and the Medical Officer of Health (MOH). All adverse conditions are responded to immediately and corrective actions taken.

Incident Date	Parameter	Result	Corrective Action	Corrective Action Date
January 2, 2025	Low distribution chlorine residual at hydrant WH2-8 on Riggins Cres	0.02mg/L of free chlorine	Flushed hydrant until residual was 0.62mg/L	January 2, 2025

An annual Ministry of the Environment, Conservation and Parks Inspection was completed on July 24, 2025. The inspection period covered was November 27, 2024 to July 24, 2025. There was one non-compliance issued in the report which was reported to the ministry at the time of the event and noted in the 2024 annual report under the Requirements the system failed to meet section. Below is a summary of the non-compliance.

Incident Date	Requirements the System Failed to Meet	Details	Corrective Action	Corrective Action Date
December 6, 2024	The process wastewater discharge monitoring program and discharge quality did not comply with requirements established in the Municipal Drinking Water Licence issued under Part V of the SDWA Chlorine limit of 0.02mg/L	Spill of 371m3 of chlorinated backwash water to Lake Huron with a chlorine residual of 1.89mg/L.	Backwash tank level alarm setpoints updated Contingency Plan updated	January 21, 2025

O. Reg 170 Schedule 22 requires the municipality to identify any requirements of the Act, Regulations, Drinking Water Works Permit, Municipal Drinking Water Licence and any Order that the system failed to meet during the reporting period. There were two issues identified in 2025.

Drinking Water Legislation	Requirements the System Failed to Meet	Duration	Corrective Actions
Reg 170, Section 13	SCADA Server Reset (Planned Maintenance) No data recorded July 18 for short period (Plant was offline)	July 18, 2025, 0957am to 1043am	Planned maintenance to fix an issue on SCADA
Reg 170, Section 13	PLC and SCADA failure, Data lost at KWTP August 12-13, 2025 (Plant not running during this time)	August 12, 2025 10:20pm to August 13 at 12:30am	Replaced PLC UPS unit