



CANTON
d'ARMSTRONG
TOWNSHIP
EARLTON

January 24/2024

**SUMMARY & COMPLIANCE REPORT
FOR THE YEAR
2023
Earlton Drinking Water System**

220003662

COUNCIL MEMBERS SIGNATURES

Mayor:

Jean Marc Boileau

COUNCILOR:

Michelle Ruel

COUNCILOR:

R. Munn

COUNCILOR:

A. Amiri

COUNCILOR:



**CANTON
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EARLTON**

January 24/2024

ANNUAL REPORT

FOR THE YEAR

2023

EARLTON DRINKING

WATER SYSTEM

220003662

**The Drinking Water Works Permit (DWWP) #269-201 and
Municipal Drinking Water License (MDWL) #269-101.**

**EARLTON DRINKING WATER SYSTEM REPORT
FOR THE YEAR 2023**

Well # 1: has produced a total of 11693.28 cub meter at an average rate of 1.87 L/sec. (flow rate) and 1741.08 total hours of run time.

Well # 3: has produced a total of 54275.57 cub meter at an average rate of 8.72 L/sec. (flow rate) and 1728.07 total hours of run time.

Well # 4: has produced a total of 27129.63 cub meter at an average rate of 3.35 L/sec. (flow rate) and 2248.62 total hours of run time.

SUMMARY OF WATER TAKING PERMIT

(Permit # 4656-988LG9)

Source Name	Well # 1	Well # 3	Well # 4
Max amount taken in 1 minute	205 L/min	546 L/min	205 L/min
Max amount taken in 1 day	295,000 L	786,000 L	295,000 L
Max number of hours taking in one day	24 hours	24 hours	24 hours

**SUMMARY OF WELL OPERATION
FOR THE YEAR 2023**

Source Name	Well # 1	Well # 3	Well # 4
Max amount taken in 1 minute	111.94 L/min.	523.47 L/min.	201.08 L/min
Max amount taken in 1 day	92650 L 92.65 m ³	344490 L 344.49 m ³	138840 L 138.84 m ³
Max number of hours taking in one day	11.85 hours 711 minutes	11.10 hours 666 minutes	11.85 hours 711 minutes

CONCLUSION OF SUMMARY

- A) The maximum amount of water taken from the aquifer in any day did not exceed the water taking permit limit.
- B) The maximum production rate of each well did not exceed the water taking permit limit.
- C) The wells produced less water than the water-taking permit provided for.

NOTE: The new Water Taking Permit has not been received and was submitted and received by the Ministry on June 01, 2023.

EARLTON WATER TREATMENT PLANT PERFORMANCE FOR THE YEAR 2023

Daily Flow Record Review:

Records show that the Total Volume of water used in 2023 is 87515.36 cub meters, 806.71 cub. Meters less than 2022 which was at 88322.07 cub meters.

Records also show that the month of June was our peak month of the year with a total of 9033.78 cub meters, which averages to 301.126 cub meter per day.

July 03, with 459.92 cub meters was the maximum in any one day.

Records also show that we exceeded the design peak flow demand of 18.9 L/sec. as stated on the Certificate of Approval on 4 occasions during the year. 2 were directly related to Fire Department dealing with fires and filling fire trucks. 1 was due to testing of Fire Pump and 1 was caused by a computer glitch and wasn't actual flow.

MAXIMUM DAY DEMAND of the year was July 03, at 459.92 cub meter. There were a few factors affecting the water demands on this day, topping up public swimming pool and residents watering lawns and gardens.

A maximum flow rate of 459.92 cub meter/day which represents a flow rate of 5.32 l/sec., compared to the 12.50 l/sec. maximum day demand noted on the Certificate of Approval.

In conclusion, water consumption over the year has stayed fairly consistently below the maximum day demand allowed on the Certificate of Approval.

AVERAGE DAY DEMAND

Noted on the Certificate of Approval is 432.60m³/day while the observed “AVERAGE DAY DEMAND” for the water supply system in 2023 was 239.77 m³/day, which represents an average flow rate of 2.78 l/sec.

FILTER PERFORMANCE:

The filters performed well in 2023. The total production for the year for the Water Treatment Plant was 87515.36 cub. Meters. Turbidity has been maintained below ≤ 1.0 N.T.U. throughout the whole year. We have calibrated our turbidity analyzer units and also calibrated chart recorder for the turbidity at each filter unit. Calibrations done once a year by Hach and Quarterly calibrations performed by trained Operators.

CHLORINATION SYSTEM PERFORMANCE:

Our Certificate of Approval allows for a minimum FREE Chlorine Residual Requirement in treated water leaving the plant to distribution of 0.2 mg/L. Records show that Free Chlorine Residual leaving the plant was maintained at an average over the year at 0.84 mg/L.

The FREE Chlorine Residual in the distribution system was monitored by sampling at various homes and businesses while collecting water samples for BACTERIA testing and the extra samples of free chlorine taken on 4/3 weekly split with 48 hours in between samples.

The average FREE Chlorine Residual in the distribution system is 0.85 mg/L with the minimum of the year 0.45 mg/L.

**12% Sodium Hypochlorite and ferric sulphate used
in 2023**

	Well #1	Well #3	Plant	Ferric	Year total Chlorine
Jan.	39.24	75.25	70.95	56.975	185.44
Feb.	29.03	75.25	73.10	25.80	177.38
Mar	27.95	78.475	70.95	35.475	177.375
April	19.89	68.80	76.325	30.10	165.015
May	25.8	73.64	77.4	39.78	176.84
June	33.325	86.54	86.54	37.625	206.405
July	25.8	92.45	82.24	23.65	200.49
Aug.	17.2	83.85	77.4	34.4	178.45
Sept.	5.375	106.43	70.95	32.25	182.755
Oct.	0	111.8	81.7	40.85	193.5
Nov.	2.15	78.48	64.5	32.25	145.13
Dec.	20.43	76.33	86.54	12.9	183.3
Total	246.19	1007.29 5	918.595	402.055	2172.08

MICROBIOLOGICAL SAMPLE SUMMARY FOR THE YEAR 2023

Sample Source	Total Number Of Samples	Number of Samples with Total Coliform Detected	Number of Samples With E Coli Detected	Number of Samples with background Bacteria detected over 200/ml.	Number of Samples with HPC Detected over 500CFU/ml.
Well # 1	52	2	0	0	0
Well # 3	52	0	0	0	0
Well # 4	52	0	0	0	0
Water Treat. Plant	52	0	0	0	0
Homes/Businesses	104	0	0	0	0

There were no sign of E-Coli in raw water (3 Wells). But there were 2 samples at well #1 that had Total Coliform (1 per sample) while well was being put back in service after lengthy refurbishment. The distribution System and Water Plant also showed no signs of E-coli or Total Coliforms.

There were no signs of HPC over (500CFU/ml.) throughout the Distribution System and the treatment plant samples, over the year 2023.

FILTER BACKWASH WATER TREATMENT FOR 2023

The filters are backwashed on a daily basis and the resulting backwash water is treated in a series of settling tanks, the treated wastewater is discharged to the storm sewer in Earlton. Phippen Waste Management who are licensed to handle contaminated waste, dispose the sludge remains in the town lagoon system. Sampling of the wastewater is done quarterly as a composite sample and tested for suspended solids and should not exceed 25mg/L, the maximum acceptable level.

Records show that samples have not exceeded 25mg/L. of Total Suspended Solids for the year 2023.

2023 Quarterly Lab. Report

	Water plant	WP	WP	Distr.	Distr.
	T.S.S. mg/l	Nitrite mg/l	Nitrate mg/l	THM ug/l	HAA ug/l
Jan.	7.5	<0.01	<0.1	8.2	<8
Feb.					
March					
April	8.5	<0.01	<0.1	10	<8
May					
June					
July	10.5	<0.01	<0.1	8	<8
August					
Sept.					
Oct.	10	0.04	<0.1	10.9	<8
Nov.					
Dec.					
Average	9.13	<0.01	<0.1	9.275	<8
Maximum	10.5	0.04	0	10.9	0
Minimum	7.5	0.04	0	8	0

MAC	25 mg/l	1.0 mg/l	10 mg/l	100 ug/l	80 ug/l
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*MAC: maximum acceptable concentration

WATER DISTRIBUTION REPORT

The Town had one new water connection for 2023. Operators closed and open all 109 water main valves with Valve Turning Unit as part of the yearly maintenance. One main valve had to be dug out by Vacuum Truck and repaired. Operators also performed the regular yearly hydrant maintenance and water main flushing through the distribution system. There was no water quality complaint from the public in 2023.

All complaints, connections and repairs are attended by competent operators and reports are logged and kept on file.

WATER TREATMENT PLANT RESERVE CAPACITY CALCULATION FOR 2023

The Hydraulic Reserve Capacity of the Earleton Water treatment Plant has been calculated in accordance with Ministry of Environment guidelines.

In 2023 we had 28 unconnected units in town plus 19 new ones at the Airport road subdivision, a total of 47 unconnected units, 359 Residential units, 26 commercial units, and 15 institutions, for an estimated population of 812.

The Hydraulic Reserve Capacity was calculated using the following equation:

$$C_u = C_r - \frac{L \times F \times P}{H}$$

Cr = Plant Design Capacity	432.60 m ³ /day
Average Daily Flow over 3 years	<u>240.53 m³/day</u>
	192.07 m ³ /day

So Hydraulic Reserve Capacity is Cr = 192.07 m³/day

(Cu) Uncommitted Reserve Capacity is:

$$C_u = C_r - \frac{L \times F \times P}{H}$$

$$L = 47 \text{ units}$$

$$F = \frac{\text{Avg. m}^3/\text{day}}{\text{People}} = 0.296 \text{ m}^3/\text{day}/\text{person}$$

$$Cu = 192.07 - \frac{11296.544}{359} \quad P = 812 \text{ people}$$

$$H = 359 \text{ units}$$

$$Cu = 192.07 - 31.47 \quad Cr = 192.07 \text{ m}^3/\text{day}$$

$$Cu = 160.6 \text{ m}^3/\text{day} \quad Cu = 160.6 \text{ m}^3/\text{day}$$

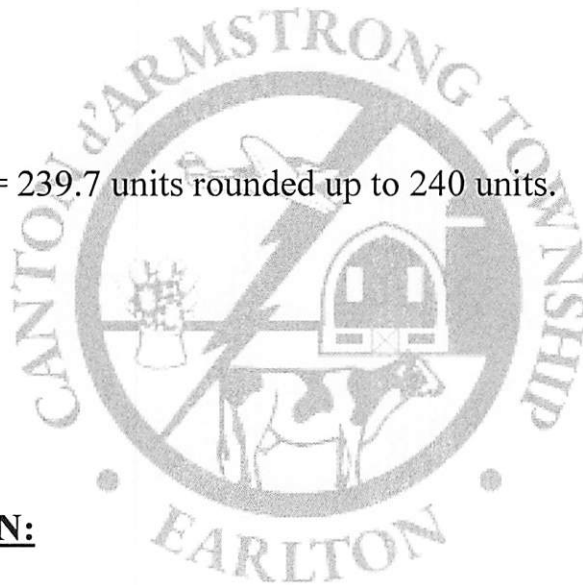
$$Cu = \frac{P \times F}{H}$$

$$Cu = \frac{812 \times 0.296}{359}$$

$$Cu = 0.67$$

$$Cu = \frac{160.6}{0.67}$$

Therefore CU = 239.7 units rounded up to 240 units.



CONCLUSION:

- The Water Supply System and Treatment Plant performed satisfactorily.
- The average water consumption in 2023 was 0.296 cub. Meter/day/person.
- The average 3-year plant production rate in 2023 was 240.53 cub. Meter/day compared to the Certificate of Approval production rate of 432.6m³/day.
- Calculations indicate that the Water Treatment plant has uncommitted hydraulic reserve capacity of 192.07 cub. Meters/day based on a Per Capita Consumption in 2023. There is an uncommitted reserve capacity of 240 units.

COMPLIANCE AND NON-COMPLIANCE REPORT FOR 2022:

There was one “noncompliance” issued during the 2023 MOECP yearly inspection due to chlorine residuals not being taken at the 5-minute intervals during Chlorine Analyzer maintenance. Although an Inspection rating of 95.24% was given to the Water System it is important to note that there was no danger to public health at any time. All issues deemed resolved.

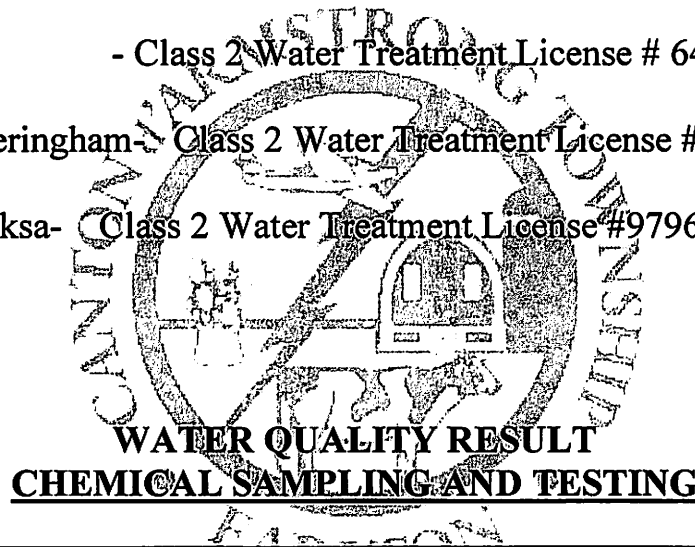
There were no adverse test results or notice of issues at our drinking water system during year period 2023.

- All our operators are trained and licensed to be Class II Water treatment and Class I Water Distribution Certificate.

Guy Laurin - Class 2 Water Treatment License # 64148

Caleb Fotheringham- Class 2 Water Treatment License # 86673

David Holeksa- Class 2 Water Treatment License #97961



CHEMICAL & MICROBIOLOGICAL	TESTED HOW OFTEN AND FROM WHERE
Schedule 23 – Inorganic Parameters	Every 36 months from plant – last tested April 06/2021
Schedule 24 – Organic Parameters	Every 36 months from plant – last tested April 06/2021
Sodium	Every 60 months from plant – last tested April 11/2023
Fluoride	Every 60 months from plant – last tested April 11/2023
Nitrite & Nitrate	Every 3 months from plant – last tested Oct.04/2023
Trihalomethanes	Every 3 months at Earlton Arena – last tested Oct.04/2023
HAA	Every 3 months in Distribution – last tested Oct.04/2023
Lead in drinking water sampling; O.Reg. 170/03 Requirements.	10 Houses Batches, June 2011/ October 2011
	1 Commercial Samples, June 2011/ October 2011
	2 Distribution Samples, August 01/2023

MICROBIOLOGICAL SAMPLING AND TESTING

Distribution Samples: - 8 samples per month with at least two samples being taken each week.

Tested for: a) Escherichia coli or Fecal Coliform
b) Total Coliform and that 25 per cent of samples taken during that month are tested for general bacteria population: background colony count or Heterotrophic plate counts.

Treated Samples: once every week and tested for
a) Escherichia coli or Fecal Coliform
b) Total Coliforms
c) Background colony counts or Heterotrophic plate count

Raw Samples: once every week and tested for
a) Escherichia coli or Fecal Coliform
b) Total Coliform

Operational check in Distribution:
Shall ensure that one sample is taken at least once every day and tested for Free Chlorine Residual method, or four samples one day and three samples another day 48 hours apart method.

I confirm with this report that the **Earlton Drinking Water System** has complied with all the rules and regulation, {*samples, quality, quantity etc.*}.

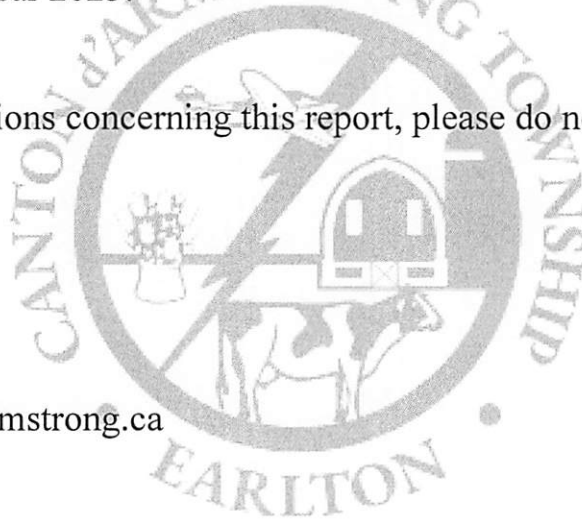
The annual report is available to the public at no cost, at the Town Office. (Notice is posted outside Town Office)

Copy of the summary report is also available for inspection in the “Water/Wastewater Office” with copies of all the 2023 sample results.


This concludes the Earlton Water Treatment System’s compliance/non-compliance report for the year 2023.

If you have any questions concerning this report, please do not hesitate to contact me at your convenience.

Guy Laurin
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Email: guy.laurin@armstrong.ca



Copy of all sample results are available upon request. Thank you.



Guy Laurin

January 24 / 2024
DATE