

# SUMMARY REPORT

ONTARIO REGULATION 170/03  
SECTION 22

## THORNTON DRINKING WATER SYSTEM



**FOR THE PERIOD:  
JANUARY 1, 2022 – DECEMBER 31, 2022**

*Prepared for the Corporation of the Township of Essa  
by the Ontario Clean Water Agency*

This report was prepared in accordance with the requirements of [O.Reg 170/03, Schedule 22, Summary Reports for Municipalities](#) for the following system and reporting period:

<b>Drinking-Water System Number:</b>	220006945
<b>Drinking-Water System Name:</b>	Thornton (Glen Avenue) Drinking Water System
<b>Drinking-Water System Owner:</b>	The Corporation of the Township of Essa
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 1, 2022 – December 31, 2022

## 1. Issue(s) of Non-Compliance

A Ministry of Environment, Conservation and Parks (MECP) Drinking Water System Inspection was conducted on June 16, 2022 for the period covering July 1, 2021 to June 16, 2022. On September 28, 2022 the Inspection Report was issued and an Inspection Summary Rating Record (IRR) of 100% was received.

The following is a summary of non-compliances noted in the MECP Inspection Report, as well as the duration and the measures that were taken to correct the non-compliance. If any self-reported non-compliances were included in the inspection report, they will be noted in Table 1.

**Table 1. Non-Compliances and Corrective Actions noted in the 2021/2022 MECP Inspection Report**

Non-Compliance(s)	Duration	Required Actions & Corrective Actions
N/A	N/A	N/A

The following table (Table 2) is a summary of any incidents that the Operating Authority interpreted as instances where any requirements of the Act, the regulations, the system's approval, drinking water works permit (DWWP), municipal drinking water licence (MDWL), and any orders applicable were not met. The Operating Authority reported the following incidents to the MECP and confirmation of whether the incidents are considered non-compliances are noted in the MECP Inspection Report and included in Table 1.

**Table 2. Self-Reported Incidents and Corrective Actions for the Reporting Period**

Incident	Duration	Corrective Actions
N/A	N/A	N/A

For information on any Adverse Water Quality Incident(s) that may have occurred during the reporting period, please refer to the Thornton (Glen Avenue) Drinking Water System Annual Report (Section 11).

## 2. Assessment of Flowrates and Quantity of Water Supplied

The following tables (Table 3 to 13) summarize the quantities and flowrates of water supplied during the reporting period, including monthly averages and maximum daily flows as well as a comparison to the rated capacity and flowrates approved in the system's approval, DWWP or MDWL.

As required by the MDWL, regulatory flow measuring devices are checked/verified and where necessary calibrated. These checks/verifications/calibrations are performed annually by a third party to ensure the flow measuring devices are within acceptable deviation limits.

### 2.1 Treated Water

<b>Municipal Drinking Water License (MDWL):</b>	118-101 (Issue Number: 4)
<b>Allowable Rated Capacity:</b>	1,540 m <sup>3</sup> /day
<b>Allowable Flowrate into Treatment System:</b>	17.82 L/s

As per the MDWL, the maximum daily volume of treated water that flows from the treatment subsystem to the distribution system shall not exceed the listed rated capacity. However, the MDWL allows a system to be operated temporarily at a maximum daily volume and/or a maximum flowrate above the values set out in the MDWL for the purposes of fighting a large fire or for the maintenance of the drinking water system.

**Table 3. Treated Water Annual and Monthly Average and Maximum Flows with Comparison to Rated Capacity and Total Volume for 2022**

Treated Water Flow <sup>3A</sup>					
Timeframe	Average Flow (m <sup>3</sup> /day)	Percent of Rated Capacity	Maximum Flow (m <sup>3</sup> /day)	Percent of Rated Capacity	Total Volume (m <sup>3</sup> )
January	316.27	20.54%	368.78	23.95%	9,804.26
February	344.79	22.39%	418.29	27.16%	9,654.22
March	359.70	23.36%	435.80	28.30%	11,150.55
April	338.89	22.01%	933.24	60.60%	10,166.68
May	494.02	32.08%	832.45	54.06%	15,314.48
June	629.04	40.85%	944.57	61.34%	18,871.20
July	757.30	49.18%	1,114.38	72.36%	23,476.37
August	637.76	41.41%	1,172.41	76.13%	19,770.47
September	489.97	31.82%	676.16	43.91%	14,699.01
October	418.55	27.18%	1,235.79	80.25%	12,975.05
November	353.22	22.94%	688.60	44.71%	10,596.49
December	336.82	21.87%	409.60	26.60%	10,441.46
<b>2022</b>	<b>457.32</b>	<b>29.70%</b>	<b>1,235.79</b>	<b>80.25%</b>	<b>166,920.24</b>

A review of flow information for the reporting period indicates that the Thornton drinking water system operated within the rated capacity specified in the MDWL, for the maximum treated volume of treated water that flows from the treatment subsystem to the distribution system.

**Table 4. Treated Water Annual and Monthly Maximum Flowrates for 2022**

<b>Treated Water Maximum Flowrate</b>	
<b>Timeframe</b>	<b>Maximum Flowrate (L/sec)</b>
January	10.9
February	15.3
March	10.8
April	14.0
May	21.0
June	130.0
July	29.4
August	18.1
September	20.1
October	59.6
November	78.6
December	18.8
<b>2022</b>	<b>130.0</b>

A summary of flowrates of water that flows out of the Thornton treatment subsystem to the distribution system can be found in the above table. A summary of flowrates of water that flows into the Thornton treatment subsystem can be found in Tables 6, 8, 10 and 12.

## 2.2 Raw Water

<b>Permit to Take Water Number (PTTW):</b>	0113-A4LMPV
<b>Allowable Maximum Raw Water Volume - Well #1:</b>	522.72 m <sup>3</sup> /day
<b>Allowable Maximum Raw Water Flowrate - Well #1:</b>	363 L/min (6.05 L/sec)
<b>Allowable Maximum Volume of Raw Water - Well #2:</b>	522.72 m <sup>3</sup> /day
<b>Allowable Maximum Raw Water Flowrate – Well #2:</b>	363 L/Min (6.05 L/sec)
<b>Allowable Maximum Volume of Raw Water - Well #3:</b>	492.48 m <sup>3</sup> /day
<b>Allowable Maximum Raw Water Flowrate – Well #3:</b>	342 L/min (5.70 L/sec)
<b>Allowable Maximum Volume of Raw Water - Well #4:</b>	328.32 m <sup>3</sup> /day
<b>Allowable Maximum Raw Water Flowrate – Well #4:</b>	228 L/min (3.80 L/sec)
<b>Allowable Maximum Combined Raw Water Volume from Well #1, Well #2, Well #3 and Well #4</b>	1,540.00 m <sup>3</sup> /day

As per the PTTW, water shall only be taken from the specified source(s) and at the rates and amounts taken as specified in the permit. Notwithstanding the totals identified above for each well, the maximum combined taking per day from Well #1, #2, #3 and #4 is limited to 1,540,000

litres (1,540.0 m<sup>3</sup>/day). The PTTW also stipulates that wells #3 and #4 shall not be operated simultaneously. The system is design so that well #3 and well #4 cannot physical run at the same time, an internal lockout mechanism has been installed to lock out one well when the other well is running.

**Table 5. Raw Water (Well #1) Monthly Average, Maximum Flow and Total Volume for 2022**

Raw Water Flow – Well #1					
Timeframe	Average Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Maximum Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Total Volume (m <sup>3</sup> )
January	80.63	15.43%	201.97	38.64%	2,499.60
February	121.55	23.25%	279.49	53.47%	3,403.34
March	110.65	21.17%	235.84	45.12%	3,430.04
April	110.46	21.13%	262.78	50.27%	3,313.67
May	143.31	27.42%	392.46	75.08%	4,442.66
June	177.25	33.91%	492.55	94.23%	5,317.43
July	236.41	45.23%	509.75	97.52%	7,328.85
August	205.79	39.37%	453.44	86.75%	6,379.45
September	153.92	29.45%	360.55	68.98%	4,617.75
October	126.65	24.23%	339.52	64.95%	3,926.01
November	99.38	19.01%	317.48	60.74%	2,981.35
December	93.51	17.89%	229.71	43.95%	2,898.74
<b>2022</b>	<b>138.46</b>	<b>26.49%</b>	<b>509.75</b>	<b>97.52%</b>	<b>50,538.89</b>

A review of flow information for the reporting period indicates that the system operated within the PTTW’s maximum allowable daily raw water volume for Well #1.

**Table6. Raw Water (Well #1) Annual and Monthly Average and Maximum Flowrates for 2022**

Raw Water Flowrate – Well #1		
Timeframe	Average Flowrate (L/sec)	Maximum Flowrate (L/sec)
January	5.78	6.5
February	3.88	6.6
March	3.17	6.5
April	3.84	6.5
May	3.17	6.2
June	3.65	6.4
July	5.43	6.4
August	3.91	6.5
September	3.28	6.3

<b>Raw Water Flowrate – Well #1</b>		
<b>Timeframe</b>	<b>Average Flowrate (L/sec)</b>	<b>Maximum Flowrate (L/sec)</b>
October	3.15	6.4
November	3.19	6.4
December	2.98	6.4
<b>2022</b>	<b>3.72</b>	<b>6.6</b>

A review of flow information for the reporting period indicates that the system operated outside the PTTW’s maximum allowable raw water flowrate for Well #1 during all reporting months. Instances of flowrate exceedances were of very short duration and are explained by frequent well pump start-ups and instantaneous flow rate measurements. Maximum flowrates exceedances for all months were only 0.3-0.5 L/sec higher than the allowable flowrates (6.05 L/sec). The average monthly flowrate for each reporting month was below the allowable maximum rate.

**Table 7. Raw Water (Well #2) Monthly Average, Maximum Flow and Total Volume for 2022**

<b>Raw Water Flow – Well #2</b>					
<b>Timeframe</b>	<b>Average Flow (m<sup>3</sup>/day)</b>	<b>Percent of Allowable Volume</b>	<b>Maximum Flow (m<sup>3</sup>/day)</b>	<b>Percent of Allowable Volume</b>	<b>Total Volume (m<sup>3</sup>)</b>
January	118.36	22.64%	245.03	46.88%	3,669.29
February	110.49	21.14%	341.29	65.29%	3,093.60
March	110.71	21.18%	285.84	54.68%	3,431.92
April	100.38	19.20%	342.77	65.57%	3,011.39
May	163.38	31.26%	426.07	81.51%	5,064.87
June	220.71	42.22%	476.35	91.13%	6,621.17
July	268.45	51.36%	501.12	95.87%	8,322.06
August	193.50	37.02%	501.12	95.87%	5,998.56
September	145.35	27.81%	460.75	88.14%	4,360.46
October	135.18	25.86%	371.30	71.03%	4,190.59
November	119.10	22.78%	263.75	50.46%	3,573.08
December	109.09	20.87%	253.81	48.56%	3,381.92
<b>2022</b>	<b>149.91</b>	<b>28.68%</b>	<b>501.12</b>	<b>95.87%</b>	<b>54,718.91</b>

A review of flow information for the reporting period indicates that the system operated within the PTTW’s maximum allowable daily raw water volume for Well #2.

**Table 8. Raw Water (Well #2) Annual and Monthly Average and Maximum Flowrates for 2022**

Raw Water Flowrate – Well #2		
Timeframe	Average Flowrate (L/sec)	Maximum Flowrate (L/sec)
January	5.64	6.9
February	2.82	6.9
March	2.56	6.9
April	2.46	6.8
May	3.85	6.8
June	4.37	6.8
July	3.85	6.6
August	3.28	6.5
September	2.43	6.4
October	2.87	6.3
November	2.94	6.2
December	2.66	6.4
<b>2022</b>	<b>3.23</b>	<b>6.9</b>

A review of flow information for the reporting period indicates that the system operated outside of the PTTW's the maximum allowable raw water flowrate for Well #2 during all reporting months. Instances of flowrate exceedances were of very short duration and are explained by frequent well pump start-ups and instantaneous flow rate measurements. Maximum flowrates exceedances for all months were only 0.20-0.85 L/sec higher than the allowable flowrates (6.05 L/sec). The average monthly flowrate for each reporting month was below the allowable maximum rate.

**Table 9. Raw Water (Well #3) Monthly Average, Maximum Flow and Total Volume for 2022**

Raw Water Flow – Well #3					
Timeframe	Average Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Maximum Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Total Volume (m <sup>3</sup> )
January	59.87	12.16%	153.24	31.12%	1,855.86
February	80.39	16.32%	170.30	34.58%	2,251.05
March	83.50	16.96%	177.16	35.97%	2,588.42
April	74.83	15.19%	156.57	31.79%	2,245.02
May	102.25	20.76%	293.37	59.57%	3,169.65
June	119.34	24.23%	365.96	74.31%	3,580.29
July	129.78	26.35%	376.60	76.47%	4,023.21
August	142.54	28.94%	331.13	67.24%	4,418.87
September	110.26	22.39%	263.92	53.59%	3,307.77

<b>Raw Water Flow – Well #3</b>					
<b>Timeframe</b>	<b>Average Flow (m<sup>3</sup>/day)</b>	<b>Percent of Allowable Volume</b>	<b>Maximum Flow (m<sup>3</sup>/day)</b>	<b>Percent of Allowable Volume</b>	<b>Total Volume (m<sup>3</sup>)</b>
October	86.16	17.50%	194.88	39.57%	2,670.92
November	67.81	13.77%	164.20	33.34%	2,034.39
December	68.85	13.98%	168.49	34.21%	2,134.50
<b>2022</b>	<b>93.92</b>	<b>19.07%</b>	<b>376.60</b>	<b>76.47%</b>	<b>34,279.95</b>

A review of flow information for the reporting period indicates that the system operated within the PTTW’s maximum allowable daily raw water volume for Well #3.

**Table 10. Raw Water (Well #3) Annual and Monthly Average and Maximum Flowrates for 2022**

<b>Raw Water Flowrate – Well #3</b>		
<b>Timeframe</b>	<b>Average Flowrate (L/sec)</b>	<b>Maximum Flowrate (L/sec)</b>
January	4.51	5.7
February	2.24	6.2
March	2.45	5.8
April	2.54	5.8
May	2.12	5.6
June	2.06	5.8
July	1.97	5.5
August	2.25	5.9
September	2.48	5.7
October	4.33	5.6
November	2.02	5.6
December	2.25	5.5
<b>2022</b>	<b>2.44</b>	<b>6.2</b>

A review of flow information for the reporting period indicates that the system operated within the PTTW’s maximum allowable raw water flowrate for Well #3 with the exception of February, March, April, June and August, 2022. Instances of flowrate exceedances were of very short duration and are explained by frequent well pump start-ups and instantaneous flow rate measurements. Maximum flowrates exceedances for all listed months were only 0.10-0.50 L/sec higher than the allowable flowrates (6.05 L/sec). The average monthly flowrate for each reporting month was below the allowable maximum rate.



**Table 11. Raw Water (Well #4) Monthly Average, Maximum Flow and Total Volume for 2022**

Raw Water Flow – Well #4					
Timeframe	Average Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Maximum Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Total Volume (m <sup>3</sup> )
January	60.49	18.42%	125.04	38.08%	1,875.14
February	55.98	17.05%	171.69	52.29%	1,567.43
March	56.39	17.18%	146.10	44.50%	1,748.00
April	51.80	15.78%	177.70	54.12%	1,554.00
May	82.39	25.09%	216.89	66.06%	2,554.20
June	106.54	32.45%	243.05	74.03%	3,196.20
July	116.11	35.36%	254.61	77.55%	3,599.27
August	89.94	27.39%	252.87	77.02%	2,788.06
September	74.32	22.64%	234.58	71.45%	2,229.56
October	65.19	19.86%	159.97	48.72%	2,021.00
November	61.81	18.83%	136.76	41.65%	1,854.42
December	56.88	17.32%	131.49	40.05%	1,763.32
<b>2022</b>	<b>73.29</b>	<b>22.32%</b>	<b>254.61</b>	<b>77.55%</b>	<b>26,750.60</b>

A review of flow information for the reporting period indicates that the system operated within the PTTW's maximum allowable daily raw water volume for Well #4.

**Table 12. Raw Water (Well #4) Annual and Monthly Average and Maximum Flowrates for 2022**

Raw Water Flowrate – Well #4		
Timeframe	Average Flowrate (L/sec)	Maximum Flowrate (L/sec)
January	2.93	4.6
February	1.36	4.3
March	1.32	4.3
April	1.29	4.5
May	1.76	4.0
June	1.58	4.9
July	1.62	3.9
August	1.33	4.4
September	1.27	4.0
October	2.85	4.4
November	1.46	4.4
December	1.42	4.3
<b>2022</b>	<b>1.59</b>	<b>4.9</b>

A review of flow information for the reporting period indicates that the system operated within the PTTW's maximum allowable raw water flowrate for Well #4. Instances of exceeding the allowable PTTW maximum flow rate (L/sec) are explained by instantaneous flow rate measurements and well pump start-ups.

**Table 13. Combined Well (Well #1, Well #2, Well #3 and Well #4) Annual and Monthly Flow and Annual Volume for 2022**

Combined Well Flow (Well #1, Well #2, Well #3 and Well #4)					
Timeframe	Average Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Maximum Flow (m <sup>3</sup> /day)	Percent of Allowable Volume	Total Volume (m <sup>3</sup> )
January	319.35	20.74%	370.07	24.03%	9,899.89
February	368.41	23.92%	792.47	51.46%	10,315.42
March	361.24	23.46%	431.94	28.05%	11,198.38
April	337.47	21.91%	783.25	50.86%	10,124.08
May	491.33	31.90%	812.78	52.78%	15,231.38
June	623.84	40.51%	940.52	61.07%	18,715.09
July	750.75	48.75%	1,064.64	69.13%	23,273.39
August	631.77	41.02%	944.01	61.30%	19,584.94
September	483.85	31.42%	695.33	45.15%	14,515.54
October	413.18	26.83%	953.16	61.89%	12,808.52
November	348.11	22.60%	713.04	46.30%	10,443.24
December	328.34	21.32%	398.20	25.86%	10,178.48
<b>2022</b>	<b>455.58</b>	<b>29.58%</b>	<b>1,064.64</b>	<b>69.13%</b>	<b>166,288.35</b>

A review of the flow information for the reporting period indicates that the system operated within the PTTW's maximum allowable daily taking of water from the taking of water from all wells identified (1,540 m<sup>3</sup>/day).