

— Township of —

**SEVERN**

Water Supply and Distribution System  
**Washago**  
**2025 Summary Report**

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# Overview and Background

## Safe Drinking Water Act

Safe Drinking Water Act Ontario Regulation 170/03, Schedule 22-2, requires that owners of municipal drinking water systems prepare a Summary Report and present this report to the members of Municipal Council by March 31 of each year. The report is prepared for the previous calendar year, and the following criteria must be included as per the regulation:

- List the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water license, and orders applicable to the system that were not met during the period covered by the report.
- For each requirement referred to in clause (a) that was not met specify the duration of the failure and the measures that were taken to correct the failure.
- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary referred to in (c) to the rated capacity and flow rates approved by the system's certificate of approval, drinking water works permit or municipal drinking water license.

This Summary Report also serves as a comprehensive review of the system's performance as it relates to regulations and criteria that fall under the municipal drinking water licensing program.

## Municipal Drinking Water Licensing Program

A Municipal Drinking Water License (MDWL) is required in Ontario to operate the drinking water system. The Municipal Drinking Water License (#148-104 Issue Number 4) was re-issued on May 20, 2021, and is valid until May 19, 2026. The reissuance was initiated by the Ministry of Environment, Conservation and Parks



(MECP) due to regulatory amendments that required timelines to be outlined in the MDWL. There are five requirements that must be achieved to obtain an MDWL:

- a valid Drinking Water Works Permit (#148-204 Issue Number 4)
- a valid Permit to Take Water for each source (7611-APGJ7S)
- An Operational Plan
- must have an Accredited Operating Authority (C0124837-DWQ6-C0124836)
- A Financial Plan approved by Council

## **System and Process Description**

The Corporation of the Township of Severn is the owner and operator of the Washago Supply and Distribution System (DWS#220005161). The system was constructed in 1984. It currently has 124 residential and commercial service connections. It also supplies water to the Knob Hill/Somerset system that is comprised of 20 connections, owned by the Township of Ramara, and operated by Ontario Clean Water Agency. It is classified as a Class 2 Water Treatment system and a Class 2 Water Distribution system.

## **Source Water**

The Washago Water Supply and Distribution System obtains its raw water from Lake Couchiching. The area of Lake Couchiching and Lake Simcoe combined is approximately 76,285 hectares with a total drainage area of approximately 3,850 square kilometers (km<sup>2</sup>). Lake Couchiching is part of the Trent Severn Waterway and is a controlled body of water with monitored water levels. Lake Couchiching has a surface area of 44.75 km<sup>2</sup> with a maximum depth of 12 meters (m) and a mean depth of 6m. The Lake and its immediate watershed are underlain by limestone bedrock in the southern and western areas and with Precambrian bedrock along the northern and eastern areas.

## **Raw Water Characteristics**

Raw water is of low turbidity and is of acceptable pH. The temperature varies widely between summer and winter. Raw water temperature can range from 0.5° Celsius to 25° Celsius.

## **Water Treatment**

The Washago water treatment plant is located at 3398 Quetton Street. Raw water is treated through two Culligan filtration systems followed by GAC filtration. Primary disinfection takes place in the form of chlorine dioxide. The system also uses sodium hypochlorite for secondary disinfection. Water is delivered to the distribution system by three vertical turbine high lift pumps discharging the treated water through a common header.

Online analyzers monitor and record raw and treated water flows, chlorine, pH, and turbidity values. Level sensing probes record reservoir levels. The plant is also equipped with full SCADA control.

A propane fueled generator provides backup power to the plant and its equipment.

## **Water Distribution**

The distribution system is comprised of 8.3 kilometers (km) of PVC water main ranging in size between 19 millimeters (mm) and 200 mm. There are 4 sample stations, 10 municipal fire hydrants and 1 private hydrant connected to the system. There is a recirculation line at the dead ends of the system; water is circulated back to the water treatment plant. This ensures that the water at the ends of the distribution system maintains a chlorine residual.

# **Regulatory Compliance**

## **Regulations**

All municipally owned and operated water systems are governed under the Safe Drinking Water Act, 2002, Ontario Water Resources Act (OWRA), and associated regulations. The following regulations, and associated standards and documents,



are all applicable, and most relevant, to the compliant operation of the Township of Severn's Drinking Water system:

### **Ontario Regulation 170/03**

This regulation includes requirements for:

- Sampling and analytical testing (microbiological and chemical)
- Adverse water quality incidents
- Corrective actions
- Continuous water quality monitoring

### **Ontario Regulation 169/03**

This regulation includes requirements for:

- Water Quality Standards

### **Ontario Regulation 128/04**

This regulation includes requirements for:

- Classifications of Drinking Water Systems
- Certifications and responsibilities of Operators
- Proper record keeping of the drinking water system

### **Wells Regulation 903**

This regulation includes requirements for:

- Well maintenance
- Well specifications

### **Drinking Water Quality Management Standard (DWQMS)**

This Standard specifies:

- Minimum requirements for the Quality Management System to allow for the accreditation of the Operating Authority

## **Municipal Drinking Water License**

This document includes requirements for:

- Specific conditions / testing / monitoring
- Flow limits through the treatment system
- Regulatory relief conditions
- Operations and Maintenance manual criteria

## **Drinking Water Works Permit License**

This document includes criteria for:

- Making alterations to the system

## **Non-Compliance and Adverse Water Quality Incidents**

There were no adverse water quality incidents that occurred in 2025.

## **DWQMS and Municipal Drinking Water Licensing Program**

### **Third-Party Audit and Accreditation**

On an annual basis, a third-party accreditation authority conducts an audit to determine whether the Quality Management System conforms to the requirements of the MECP Drinking Water Quality Management Standard (DWQMS). October 28 and 29, 2025, NSF International completed an onsite audit with no non-conformances noted.

### **Internal Audit**

As per the DWQMS, an internal audit is to be conducted once per year. September 15 to 22, 2025, an internal audit was conducted by Acclaims Environmental. One non-conformance was noted, and a full report was included during the Management Review.

## **Management Review**

As per the DWQMS, an annual Management Review is to be conducted, and findings conveyed to the Owner. Management Reviews were conducted March 3, 2025, and October 14, 2025. The review included findings from the internal and external audits, MECP inspections and other prescribed items.

# **Annual Operations Summary**

## **System Improvements and Maintenance**

The following maintenance and improvements were carried out in 2025 to provide the highest possible drinking water quality:

- The water distribution system was directionally flushed to maintain the drinking water quality.
- Over 25 per cent of the main valves in the distribution system were exercised to ensure their reliability.
- The standby generator was tested monthly to ensure reliability.
- All critical alarms were tested monthly to ensure reliability.
- Drinking water quality was tested at the water treatment plant and in the distribution system weekly.
- Highlift pump was rebuilt

## **Microbiological Testing**

### **E. Coli and Total Coliform**

Bacteriological samples, to be tested for E. Coli and Total Coliforms, are taken weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work as per Regulation 170/03. E. Coli or Total Coliform results above 0 in treated water must

be reported to the MECP and MOH. Resamples and other required actions are undertaken as quickly as possible.

The results from the 2025 sampling program are shown on the table below.

| Type of Water | Number of Samples | Range of E-Coli Results (cfu/100ml) (Min - Max) MAC=0 | Range of Total Coliform Results (cfu/100ml) (Min - Max) MAC=0 |
|---------------|-------------------|---|---|
| Raw           | 52                | 0 - 40  | 0 - 1220  |
| Treated       | 156               | 0 - 0   | 0 - 0   |

### Heterotrophic Plate Count (HPC)

HPC analyses are completed weekly from the distribution water for large systems. HPC should be less than 500 colonies (cfu) per 1mL. Results over 500 colonies (cfu) 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 on the table below.

| Type of Water | Number of Samples | Range of HPC Results (cfu/1ml) (Min - Max) |
|---------------|-------------------|--|
| Distribution  | 156               | 0 - 24                                     |

### Chlorine Residual and Turbidity

Free chlorine levels of the treated water are monitored continuously at the discharge point of the treatment facility. In the distribution system, free chlorine is checked twice weekly at various locations. 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 MECP and corrective action taken. There were no reportable incidents in 2025. The results from the 2025 sampling program are shown in the table below.

Turbidity of treated water is continuously monitored at the treatment facility, as a change in turbidity can indicate an operational problem. Turbidity of the wells is checked monthly. Turbidity is measured in Nephelometric Turbidity Units (NTU).

The results from the 2025 sampling program are shown in the table below.

| Parameter                                | Number of Tests | Range of Results (Min - Max) Average |
|--|-----------------|--------------------------------------|
| Chlorine residual in distribution (mg/L) | 367             | (0.96 - 2.06)                        |
| Chlorine residual after treatment (mg/L) | CONTINUOUS      | (1.15 - 2.12) 1.60                   |
| Turbidity after treatment (NTU)          | CONTINUOUS      | (0.04 - 0.13) 0.07                   |

## Chemical Testing

The Safe Drinking Water Act requires periodic testing of the water for different chemical parameters. The latest results are provided below. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the Maximum Allowable Concentration (MAC) under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by the Regulation. Where concerns regarding a parameter exist, the MECP can also require additional sampling. Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page.

## Understanding Chemical Test Results

Tables below are shown with concentrations units of either milligrams per litre (mg/L) or micrograms per litre ( $\mu\text{g/L}$ ): 1 mg/L is equal to 1000  $\mu\text{g/L}$ . The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. The result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring.

Nitrate and Nitrite samples are required every 3 months in normal operation.

| Parameter      | Result Range<br>Min - Max | Average | MAC (mg/L) | MDL (mg/L) |
|----------------|---------------------------|---------|------------|------------|
| Nitrite (mg/L) | 0.003 - 0.003             | 0.003   | 1          | 0.003      |
| Nitrate (mg/L) | 0.049 - 0.079             | 0.063   | 10         | 0.006      |

A Trihalomethane (THM) sample is required every 3 months from the distribution system.

| Parameter | Annual | Result (Avg.) | MAC (µg/L) | MDL (µg/L) |
|-----------|--------|---------------|------------|------------|
| THM       | 2025   | 50.75         | 100        | 0.37       |

A Haloacetic Acid (HAA) sample is required every 3 months from the distribution system.

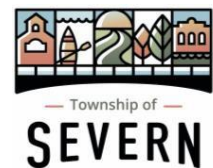
| Parameter | Annual | Result (Avg.) | MAC (µg/L) | MDL (µg/L) |
|-----------|--------|---------------|------------|------------|
| HAA       | 2025   | 27.40         | 80         | 5.3        |

Summary of the most recent sodium, fluoride, and hardness results.

| Parameter | Sample Date | Result (mg/L) | MAC (mg/L) | MDL (mg/L) |
|-----------|-------------|---------------|------------|------------|
| Sodium    | 2025        | 43.0          | 20         | 0.01       |
| Fluoride  | 2025        | 0.06          | 1.5        | 0.06       |
| Hardness  | 2025        | 129           | N/A        | 0.05       |

Summary of the most recent lead testing results

| Parameter               | Sample Date | Result Range<br>(Min - Max) | Number<br>of<br>samples | Acceptable Level |
|-------------------------|-------------|-----------------------------|-------------------------|------------------|
| Distribution Alkalinity | 2025        | 84 - 97 mg/L                | 2                       | 30 - 500 mg/L    |
| Distribution pH         | 2025        | 6.5 - 7.3                   | 2                       | 6.5 - 8.5        |
| Distribution Lead       | 2025        | 0.09- 0.10 µg/L             | 2                       | 0-10 µg/L        |



Summary of the most recent Schedule 23/24 testing as per Regulation 170/03

\*All results are measured in µg/L unless otherwise stated.

| Parameter            | Sample Date   | Result Value | MAC  | MDL   |
|----------------------|---------------|--------------|------|-------|
| Antimony             | Oct. 20, 2025 | 0.6          | 6    | 0.6   |
| Arsenic              | Oct. 20, 2025 | 0.4          | 10   | 0.2   |
| Barium               | Oct. 20, 2025 | 26           | 1000 | 0.02  |
| Boron                | Oct. 20, 2025 | 20           | 5000 | 2     |
| Cadmium              | Oct. 20, 2025 | 0.055        | 5    | 0.003 |
| Chromium             | Oct. 20, 2025 | 0.08         | 50   | 0.08  |
| Mercury              | Oct. 20, 2025 | 0.01         | 1    | 0.01  |
| Selenium             | Oct. 20, 2025 | 0.04         | 50   | 0.04  |
| Uranium              | Oct. 20, 2025 | 0.051        | 20   | 0.002 |
| Benzene              | Oct. 20, 2025 | 0.32         | 1    | 0.32  |
| Bromodichloromethane | Oct. 20, 2025 | 14           |      | 0.26  |
| Bromoform            | Oct. 20, 2025 | 0.34         |      | 0.34  |
| Bromoacetic Acid     | Oct. 20, 2025 | 2.9          |      | 2.9   |
| Carbon tetrachloride | Oct. 20, 2025 | 0.17         | 2    | 0.17  |
| Chloroacetic Acid    | Oct. 20, 2025 | 4.7          |      | 4.7   |
| Chloroform           | Oct. 20, 2025 | 42           |      | 0.29  |
| 1,2-Dichlorobenzene  | Oct. 20, 2025 | 0.41         | 200  | 0.41  |
| 1,4-Dichlorobenzene  | Oct. 20, 2025 | 0.36         | 5    | 0.36  |
| 1,1-Dichloroethylene | Oct. 20, 2025 | 0.33         | 14   | 0.33  |
| 1,2-Dichloroethane   | Oct. 20, 2025 | 0.35         | 5    | 0.35  |
| Dichloromethane      | Oct. 20, 2025 | 0.35         | 50   | 0.35  |
| Dibromoacetic Acid   | Oct. 20, 2025 | 2            |      | 2     |
| Dichloroacetic Acid  | Oct. 20, 2025 | 15.1         |      | 2.6   |
| Desethyl atrazine    | Oct. 20, 2025 | 0.01         |      | 0.01  |
| Monochlorobenzene    | Oct. 20, 2025 | 0.3          | 80   | 0.3   |
| Dibromochloromethane | Oct. 20, 2025 | 3.3          |      | 0.37  |
| Tetrachloroethylene  | Oct. 20, 2025 | 0.35         | 10   | 0.35  |
| Trichloroethylene    | Oct. 20, 2025 | 0.44         | 5    | 0.44  |
| Vinyl Chloride       | Oct. 20, 2025 | 0.17         | 1    | 0.17  |
| Diquat               | Oct. 20, 2025 | <1           | 70   | 1     |

| Parameter                          | Sample Date   | Result Value | MAC  | MDL     |
|------------------------------------|---------------|--------------|------|---------|
| Paraquat                           | Oct. 20, 2025 | <1           | 10   | 1       |
| Glyphosate                         | Oct. 20, 2025 | <1           | 280  | 1       |
| PCBs                               | Oct. 20, 2025 | 0.04         | 3    | 0.04    |
| Benzo(a)pyrene                     | Oct. 20, 2025 | 0.004        | 0.01 | 0.004   |
| Alachlor                           | Oct. 20, 2025 | 0.02         | 5    | 0.02    |
| Atrazine+N-dealkylated metabolites | Oct. 20, 2025 | 0.01         | 5    | 0.01    |
| Atrazine                           | Oct. 20, 2025 | 0.01         | --   | 0.01    |
| Azinphos-methyl                    | Oct. 20, 2025 | 0.05         | 20   | 0.05    |
| Carbaryl                           | Oct. 20, 2025 | 0.05         | 90   | 0.05    |
| Carbofuran                         | Oct. 20, 2025 | 0.01         | 90   | 0.01    |
| Chlorpyrifos                       | Oct. 20, 2025 | 0.02         | 90   | 0.02    |
| Diazinon                           | Oct. 20, 2025 | 0.02         | 20   | 0.02    |
| Dimethoate                         | Oct. 20, 2025 | 0.06         | 20   | 0.06    |
| Diuron                             | Oct. 20, 2025 | 0.03         | 150  | 0.03    |
| Malathion                          | Oct. 20, 2025 | 0.02         | 190  | 0.02    |
| Metolachlor                        | Oct. 20, 2025 | 0.01         | 50   | 0.01    |
| Metribuzin                         | Oct. 20, 2025 | 0.02         | 80   | 0.02    |
| Phorate                            | Oct. 20, 2025 | 0.01         | 2    | 0.01    |
| Prometryne                         | Oct. 20, 2025 | 0.03         | 1    | 0.03    |
| Simazine                           | Oct. 20, 2025 | 0.01         | 10   | 0.01    |
| Terbufos                           | Oct. 20, 2025 | 0.01         | 1    | 0.01    |
| Triallate                          | Oct. 20, 2025 | 0.01         | 230  | 0.01    |
| Trifluralin                        | Oct. 20, 2025 | 0.02         | 45   | 0.02    |
| Trichloroacetic Acid               | Oct. 20, 2025 | 16.1         |      |         |
| 2,4-dichlorophenoxyacetic acid     | Oct. 20, 2025 | 0.19         | 100  | 0.19    |
| Dicamba                            | Oct. 20, 2025 | 0.20         | 120  | 0.20    |
| Dichlofop-methyl                   | Oct. 20, 2025 | 0.40         | 9    | 0.40    |
| MCPA (mg/L)                        | Oct. 20, 2025 | 0.00012      | 0.1  | 0.00012 |
| Picloram                           | Oct. 20, 2025 | <1           | 190  | 1       |
| 2,4-dichlorophenol                 | Oct. 20, 2025 | 0.15         | 900  | 0.15    |
| 2,4,6-trichlorophenol              | Oct. 20, 2025 | 0.25         | 5    | 0.25    |

| Parameter                 | Sample Date   | Result Value | MAC | MDL  |
|---------------------------|---------------|--------------|-----|------|
| 2,3,4,6-tetrachlorophenol | Oct. 20, 2025 | 0.20         | 100 | 0.2  |
| Pentachlorophenol         | Oct. 20, 2025 | 0.15         | 60  | 0.15 |

## Water Quantity

Continuous monitoring of flow rates from supply wells into the treatment system and from the facility into the distribution system is required by Regulation 170/03. The Municipal Drinking Water License and Permit to Take Water issued by the MECP regulates the amount of water that can be utilized over a given time. A summary of the 2025 flows is provided in the tables below.

| Flow Summary                           | Quantity                  |
|--|---------------------------|
| Permit to Take Water Limit             | 544.3 m <sup>3</sup> /day |
| Municipal Drinking Water License Limit | 544.3 m <sup>3</sup> /day |
| 2025 Average Daily Flow                | 86 m <sup>3</sup> /day    |
| 2025 Maximum Daily Flow                | 120 m <sup>3</sup>        |
| 2025 Total Amount of Water Supplied    | 31367 m <sup>3</sup>      |

## Summary of Raw Water Flows

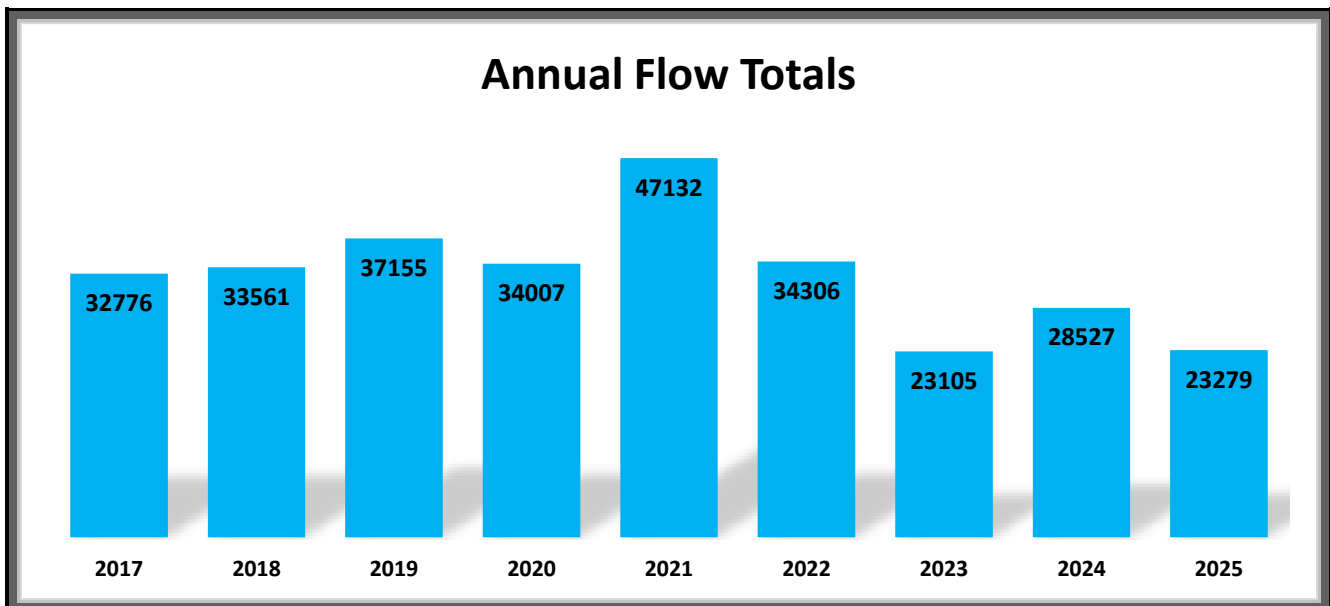
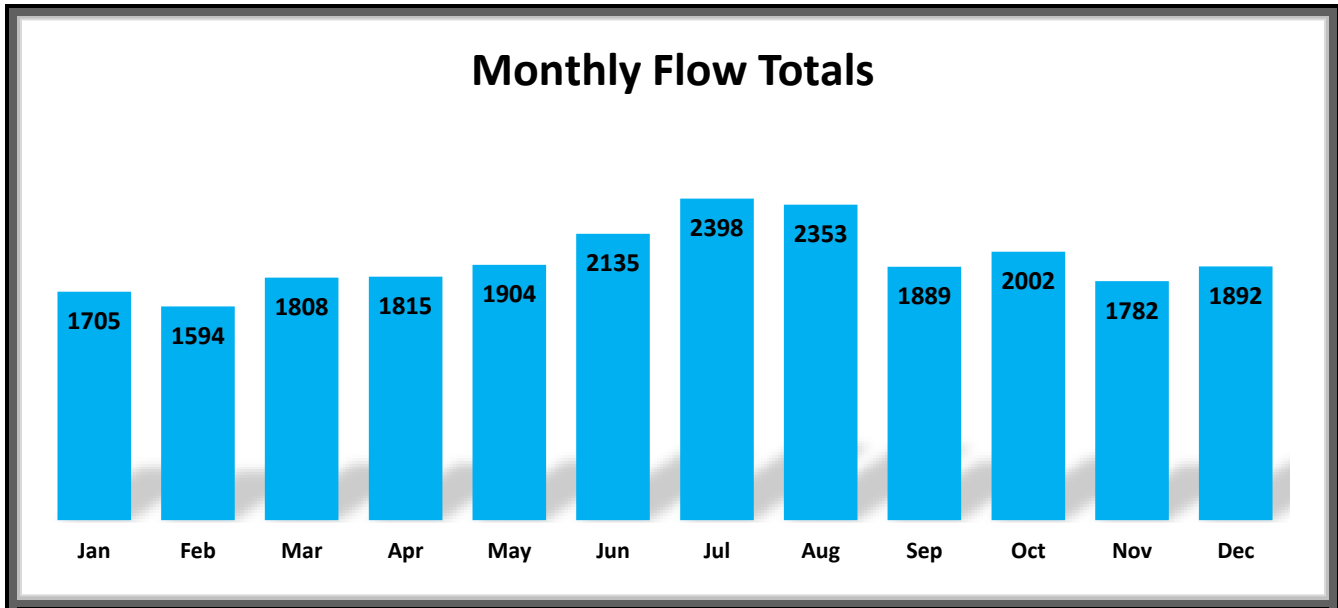
| Month        | Monthly Total (m <sup>3</sup> ) |
|--------------|---------------------------------|
| January      | 1922                            |
| February     | 1809                            |
| March        | 2026                            |
| April        | 2023                            |
| May          | 2113                            |
| June         | 2342                            |
| July         | 2645                            |
| August       | 2607                            |
| September    | 2188                            |
| October      | 2346                            |
| November     | 2091                            |
| December     | 2166                            |
| <b>TOTAL</b> | <b>26277</b>                    |

### Summary of Distribution Flows

| Month        | Monthly Total (m <sup>3</sup> ) | Average Daily Flow (m <sup>3</sup> /day) | Minimum Daily Flow (m <sup>3</sup> /day) | Maximum Daily Flow (m <sup>3</sup> /day) |
|--------------|---------------------------------|--|--|--|
| Month        | Monthly                         | Average                                  | Minimum                                  | Maximum                                  |
| January      | 1705                            | 55                                       | 46                                       | 73                                       |
| February     | 1594                            | 57                                       | 39                                       | 97                                       |
| March        | 1808                            | 58                                       | 40                                       | 88                                       |
| April        | 1815                            | 61                                       | 43                                       | 81                                       |
| May          | 1904                            | 61                                       | 51                                       | 69                                       |
| June         | 2135                            | 71                                       | 56                                       | 88                                       |
| July         | 2398                            | 77                                       | 64                                       | 98                                       |
| August       | 2353                            | 76                                       | 54                                       | 93                                       |
| September    | 1889                            | 63                                       | 49                                       | 79                                       |
| October      | 2002                            | 65                                       | 55                                       | 74                                       |
| November     | 1782                            | 59                                       | 46                                       | 70                                       |
| December     | 1892                            | 61                                       | 52                                       | 80                                       |
| <b>Total</b> | <b>23279</b>                    |  |  |  |

# Flow Charts

\*Note all values are in (m<sup>3</sup>)



# Appendix A

## Common Acronyms

### Regulatory and Compliance

|               |   |
|---------------|---|
| <b>MECP</b>   | Ministry of Environment, Conservation and Parks ( <i>formerly Ministry of the Environment</i> ) |
| <b>DWQMS</b>  | Drinking Water Quality Management System  |
| <b>QMS</b>    | Quality Management System   |
| <b>PTTW</b>   | Permit to Take Water  |
| <b>MDWL</b>   | Municipal Drinking Water License  |
| <b>DWWP</b>   | Drinking Water Works Permit   |
| <b>C of A</b> | Certificate of Approval   |
| <b>DWS</b>    | Drinking Water System   |
| <b>AWQI</b>   | Adverse Water Quality Incident  |
| <b>BWA</b>    | Boil Water Advisory   |
| <b>ORO</b>    | Overall Responsible Operator  |
| <b>OIC</b>    | Operator in Charge  |
| <b>OFI</b>    | Opportunity for Improvement   |
| <b>BMP</b>    | Best Management Practices   |

## Parameters and Measurements

|                          |                                  |
|--------------------------|----------------------------------|
| <b>ppm</b>               | parts per million                |
| <b>mg/L</b>              | milligrams per litre             |
| <b>µg/L</b>              | micrograms per litre             |
| <b>mj/cm<sup>2</sup></b> | millijoule per square centimeter |
| <b>psi</b>               | pounds per square inch           |
| <b>w/m<sup>2</sup></b>   | watt per square meter            |
| <b>THM</b>               | Trihalomethane                   |
| <b>HAA</b>               | Haloacetic Acid                  |
| <b>UV</b>                | Ultra Violet                     |
| <b>CCP</b>               | Critical Control Point           |

## Facilities and Training/Licensing

|              |   |
|--------------|---|
| <b>OWWCO</b> | Ontario Water Wastewater Certification Office |
| <b>WCWC</b>  | Walkerton Clean Water Centre                  |
| <b>OIT</b>   | Operator in Training                          |
| <b>WTP</b>   | Water Treatment Plant                         |
| <b>CEU</b>   | Credited Education Units                      |

## Other

|              |  |
|--------------|--|
| <b>GAC</b>   | Granular Activated Carbon                |
| <b>VFD</b>   | Variable Frequency Drive                 |
| <b>HL</b>    | High Lift (pump)                         |
| <b>SCADA</b> | Supervisory Control and Data Acquisition |
| <b>LL</b>    | Low Lift (pump)                          |