



Township of Oro-Medonte Drinking Water Compliance Report 2023

Horseshoe Highlands Drinking Water System

Annual and Municipal Summary Reports
(Prepared in accordance with Section 11 and Schedule 22 of Ontario Regulation 170/03)

Period Covering: January 1 to December 31, 2023

February 28, 2024

Table of Contents

1 Introduction	3
2 Reporting Requirements	3
2.1 Requirements under Section 11: Annual Report.....	3
2.2 Requirements under Schedule 22: Summary Report for Municipalities.....	3
3 Compliance Reporting Requirement	4
3.1 Availability of the Drinking Water Compliance Report.....	4
4 Horseshoe Highlands Drinking Water System	5
4.1 Municipal Drinking Water System Description	5
4.2 Water Treatment Chemicals	6
4.3 Major Expenses Incurred within the Drinking Water System	6
4.4 Ontario Regulation (O.Reg) 170/03: Operational Checks, Sampling and Testing .	6
4.4.1 Schedule 7 Operational Checks (O.Reg 170/03)	6
4.4.2 Schedule 11: Microbiological Sampling and Testing (O.Reg 170/03)	7
4.4.3 Schedule 13: Chemical Testing (O.Reg 170/03).....	8
4.4.4 Schedule 15.1: Lead Testing (O.Reg 170/03).....	10
4.5 Reporting and Corrective Actions	11
4.5.1 Schedule 16: Reporting of Adverse Test Results and Other Problems.....	11
4.5.2 Schedule 17: Corrective Actions	11
4.6 Municipal Summary Report.....	12
4.6.1 Schedule 22, Section 1	12
4.6.2 Schedule 22, Section 2	13
5 Conclusion	13

Appendix

Appendix A - Well Flow Summary

Appendix B - Average and Maximum Daily Usage Compared to Permitted Daily Capacity

List of Tables

Table 1: Major Expense Summary

Table 2: Schedule 7 Operational Checks Summary

Table 3: Schedule 11 Microbiological Sampling and Testing Summary

Table 4: Schedule 23 Inorganic and Schedule 24 Organic Results Summary

Table 5: Trihalomethanes and Haloacetic Acids Results Summary

Table 6: Nitrate and Nitrite Results Summary

Table 7: Sodium and Fluoride Results Summary

Table 8: Alkalinity, pH and Lead Sampling Results Summary

Table 9: Adverse Water Quality Incidents (AWQIs) & Corrective Actions Summary

Table 10: Regulatory Compliance Summary

DRINKING WATER COMPLIANCE REPORT 2023

1 Introduction

The Township of Oro-Medonte has prepared this report to satisfy the requirements of Section 11: Annual Report and Schedule 22: Summary Reports for Municipalities of Ontario Regulation (O.Reg.) 170/03.

This report covers the period of January 1 to December 31, 2023, and applies to the following municipally-owned and operated drinking water system:

- Horseshoe Highlands Drinking Water System (DWS #250001402)

2 Reporting Requirements

2.1 Requirements under Section 11: Annual Report

Section 11 of O.Reg 170/03 requires that the Owner of a drinking water system shall ensure that an annual report, covering the period from January 1 to December 31 in a year, be prepared no later than February 28 of the following year. The report must include the following information relating to the period covered by the report:

- Include a statement of where a report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge;
- Contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system;
- Describe any major expenses incurred to install, repair or replace required equipment;
- Summarize any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQIs);
- Summarize the results of tests required under O.Reg. 170/03, or under an approval, municipal drinking water licence or order, including an Ontario Water Resources Act order, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter; and,
- Describe any corrective actions taken.

2.2 Requirements under Schedule 22: Summary Report for Municipalities

Schedule 22 of O.Reg 170/03 requires that the report be prepared no later than March 31 of the following year, and include the following information relating to the period covered by the report:

DRINKING WATER COMPLIANCE REPORT 2023

- List the 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 was not met at any time during the period covered by the report with specifics to the duration and measures that were taken to correct the failure.
- The report must also include the following information to enable the owner of the system to assess the capability of the system to meet existing and planned uses of the system:
 - Summarize the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows; and,
 - Compare the aforementioned summary of quantities and flow rates to the rated capacity and flow rates approved in the system’s approval, drinking water works permit, or municipal drinking water licence.

3 Compliance Reporting Requirement

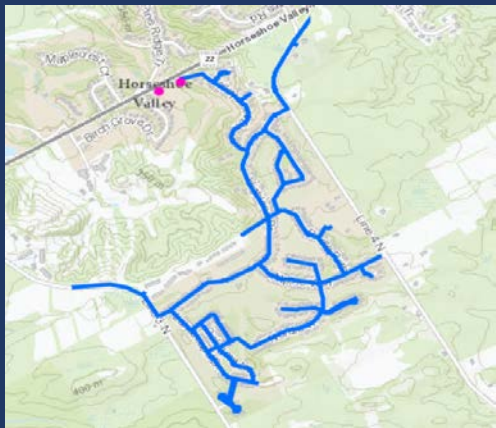
3.1 Availability of the Drinking Water Compliance Report

In accordance with Section 11 of O.Reg. 170/03, a copy of the report is available to the public, free of charge from the following outlets:

- Township of Oro-Medonte’s website (www.oro-medonte.ca); and,
- Public request at the Municipal Office, located at 148 Line 7 South, Oro-Medonte.

The public is advised of the report’s availability and how to obtain a copy, without charge, on the Township of Oro-Medonte’s website and social media by February 28th, 2024.

4 Horseshoe Highlands Drinking Water System



HORSESHOE HIGHLANDS

Drinking Water System Number: 250001402

Raw Water Source: Groundwater

Drinking Water System Category: Large Municipal Residential

Drinking Water System Classification: Water Supply & Distribution Class 2

Population Served: Approx. 2700 persons

4.1 Municipal Drinking Water System Description

The Horseshoe Highlands Drinking Water System (DWS #250001402) is located at 1A Country Club Lane, Concession 5, Oro-Medonte. The facility is owned and operated by the Corporation of the Township of Oro-Medonte in accordance with its specific MDWL, DWWP, PTTW, and all other applicable legislation.

This groundwater facility consists of two production wells, process piping, and chlorine contact main before entering the distribution system. Raw water is conveyed to the pumphouse, where treatment includes chlorination with sodium hypochlorite. Primary disinfection is achieved through the CT disinfection concept using the combination of a disinfectant residual concentration and effective contact time by means of a chlorine contact main. Treated water enters the distribution system and is stored in the Highland Drive Water Tower (1280 m³ capacity) and the Line 4 North Reservoir and Booster Station (two above-ground reservoirs with 769 m³ capacity each and 4 high lift pumps) to supply the distribution system and regulate system demands.

The distribution system consists of approximately 11 km of watermain (ranging in sizes from 100mm to 300mm), seventy-two (72) hydrants, forty (40) valves, and five (5) sample stations supplying approximately 525 water services, including residential homes, condominium properties, fire hall, police station, and nurse practitioner clinic.

Monitoring of the drinking water system’s operation is 24 hours a day, seven days a week continuously through a computerized SCADA system, equipped with alarming for a certified water operator dispatch when operational issues arise. Emergency backup power is fulfilled through a 455 kW diesel generator at the pumphouse and a 400 kW diesel generator located at the Line 4 North Reservoir and Booster Station.

4.2 Water Treatment Chemicals

The following water treatment chemicals were utilized during the reporting period:

- Sodium Hypochlorite (12%)

4.3 Major Expenses Incurred within the Drinking Water System

The Township of Oro-Medonte has determined expenses over \$25,000 to be considered a ‘major expense’. A brief summary of the major or notable expenses incurred or during the reporting period to install, repair, or replace required equipment, and the value of each is included in the table below.

Table 1: Major or Notable Expense Summary

Expense	Cost Incurred
Horseshoe Highlands Booster Automatic Valve Programming Upgrade	\$13,000
SCADA Software Upgrade (\$7,000 cost split across all drinking water systems)	\$650

4.4 Ontario Regulation (O.Reg) 170/03: Operational Checks, Sampling and Testing

O.Reg. 170/03 outlines specific operational checks and sampling requirements for drinking water systems, while O.Reg. 169/03 specifies drinking water quality standards and maximum allowable concentrations of analytical parameters.

During the reporting period, the required operational checks were completed and drinking water samples were collected in accordance with O.Reg. 170/03. All accredited laboratory results for analyzed samples met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

No additional testing and sampling was required in 2023 due to any requirements of an approval, order, or other legal instruments.

4.4.1 Schedule 7 Operational Checks (O.Reg 170/03)

Operational checks of measurements of free chlorine residuals and raw water turbidity were conducted in accordance with the large residential drinking water system requirements as prescribed by O.Reg.170/03, Schedule 7. No data is reported for fluoride as the Township of Oro-Medonte does not fluoridate any of its drinking water systems.

Table 2: Schedule 7 Operational Checks Summary

Parameter	Sample Count	Range of Results (min/avg/max)
Raw Turbidity (NTU) – Well 1	11**	0.12/0.19/0.48
Raw Turbidity (NTU) – Well 3	11**	0.11/0.18/0.32
Chlorine (mg/L)	8760*	0.11/1.41/3.00***
Fluoride	N/A	N/A

*8760 is the number of samples used for continuous monitoring.

**Details regarding a missed raw turbidity reading are summarized in Table 10.

*** The range of chlorine results incorporates maintenance activities and operational testing. It does not necessarily reflect residuals within the distribution system.

4.4.2 Schedule 11: Microbiological Sampling and Testing (O.Reg 170/03)

Raw, treated and distribution water samples were collected and analyzed for microbiological parameters specified in Section 11-2, 11-,3, and 11-4 of O.Reg. 170/03. All accredited laboratory results for samples analyzed for microbiological parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03, unless otherwise stated in Section 4.5.1 ‘Schedule 16: Reporting of Adverse Test Results and Other Problems’ of this report.

Raw, treated and distribution drinking water samples were analyzed for bacteriological health-related parameters including E.coli, total coliform, background bacteria (background,) and heterotrophic plate count (HPC). The presence of HPC and background bacteria indicates that when measured in counts greater than 200 CFU per 100 mL, it may indicate a deterioration in water quality within the drinking water system and initiate additional maintenance activities, such as flushing. The results for microbiological and bacteriological parameters during this reporting period are summarized below for reference.

Table 3: Schedule 11 Microbiological Sampling and Testing Summary

Source		Sample Count	E.coli (CFU/100 mL)	Total Coliform (CFU/100 mL)	Background (CFU/100 mL)	HPC (CFU/1 mL)
			(min-max)	(min-max)	(min-max)	(min-max)
Raw	Well 1	52	0 – 0	0 - 4	0 - 14	N/A
	Well 3	52	0 – 0	0 – 0	0 - 1	N/A
Treated	-	52	0 – 0	0 – 0	0 – 0	<10 - 20
Distribution	-	196	0 – 0	0 – 0	0 - 5	<10 - 30

Note: Total coliform results in raw drinking water samples are prior to treatment.

4.4.3 Schedule 13: Chemical Testing (O.Reg 170/03)

Drinking water samples were collected from the drinking water system and analyzed for all parameters in accordance with O.Reg. 170/03, Schedule 13. All samples analyzed met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

If chemical analysis under O.Reg. 170/03 was not required during this reporting period; the most recent analytical results for that parameter have been summarized in the tables below for reference, in accordance with O.Reg. 170/03, Section 11.

Under Section 13-2 and 13-4, sampling requirements for inorganics and organics are once every 36 months and tested for every parameter listed in O.Reg 170/03, Schedules 23 and 24. Results indicated that all parameters were below half the maximum allowable concentration in Schedule 2 in the Ontario Drinking Water Quality Standards. The most recent chemical parameters results are summarized in the table below for reference.

Table 4: Schedule 23 Inorganic and Schedule 24 Organic Results Summary

Parameter	Date Sampled	Results	Units	Exceedance
Schedule 23: Inorganics				
Antimony	2021/06/16	0.9<MDL	ug/L	No
Arsenic	2021/06/16	0.2	ug/L	No
Barium	2021/06/16	39.8	ug/L	No
Boron	2021/06/16	8	ug/L	No
Cadmium	2021/06/16	0.004	ug/L	No
Chromium	2021/06/16	1.23	ug/L	No
Mercury	2021/06/16	0.01<MDL	ug/L	No
Selenium	2021/06/16	0.15	ug/L	No
Uranium	2021/06/16	0.648	ug/L	No
Schedule 24: Organics				
Alachlor	2021/06/16	0.02<MDL	ug/L	No
Atrazine + N-dealkylated metabolites	2021/06/16	0.01<MDL	ug/L	No
Azinphos-methyl	2021/06/16	0.05<MDL	ug/L	No
Benzene	2021/06/16	0.32<MDL	ug/L	No
Benzo(a)pyrene	2021/06/16	0.004<MDL	ug/L	No
Bromoxynil	2021/06/16	0.33<MDL	ug/L	No
Carbaryl	2021/06/16	0.05<MDL	ug/L	No
Carbofuran	2021/06/16	0.01<MDL	ug/L	No
Carbon Tetrachloride	2021/06/16	0.17<MDL	ug/L	No
Chlorpyrifos	2021/06/16	0.02<MDL	ug/L	No
Diazinon	2021/06/16	0.02<MDL	ug/L	No
Dicamba	2021/06/16	0.20<MDL	ug/L	No
1,2-Dichlorobenzene	2021/06/16	0.41<MDL	ug/L	No

DRINKING WATER COMPLIANCE REPORT 2023

1,4-Dichlorobenzene	2021/06/16	0.36<MDL	ug/L	No
1,2-Dichloroethane	2021/06/16	0.35<MDL	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	2021/06/16	0.33<MDL	ug/L	No
Dichloromethane	2021/06/16	0.35<MDL	ug/L	No
2-4 Dichlorophenol	2021/06/16	0.15<MDL	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	2021/06/16	0.19<MDL	ug/L	No
Diclofop-methyl	2021/06/16	0.40<MDL	ug/L	No
Dimethoate	2021/06/16	0.06<MDL	ug/L	No
Diquat	2021/06/16	1<MDL	ug/L	No
Diuron	2021/06/16	0.03<MDL	ug/L	No
Glyphosate	2021/06/16	1<MDL	ug/L	No
Malathion	2021/06/16	0.02<MDL	ug/L	No
Metolachlor	2021/06/16	0.01<MDL	ug/L	No
Metribuzin	2021/06/16	0.02<MDL	ug/L	No
Monochlorobenzene	2021/06/16	0.3<MDL	ug/L	No
MCPA	2021/06/16	0.00012<MDL	mg/L	No
Paraquat	2021/06/16	1<MDL	ug/L	No
Pentachlorophenol	2021/06/16	0.15<MDL	ug/L	No
Phorate	2021/06/16	0.01<MDL	ug/L	No
Picloram	2021/06/16	1<MDL	ug/L	No
Polychlorinated Biphenyls (PCB)	2021/06/16	0.04<MDL	ug/L	No
Prometryne	2021/06/16	0.03<MDL	ug/L	No
Simazine	2021/06/16	0.01<MDL	ug/L	No
Terbufos	2021/06/16	0.01<MDL	ug/L	No
Tetrachloroethylene	2021/06/16	0.35<MDL	ug/L	No
2,3,4,6-Tetrachlorophenol	2021/06/16	0.20<MDL	ug/L	No
Triallate	2021/06/16	0.01<MDL	ug/L	No
Trichloroethylene	2021/06/16	0.44<MDL	ug/L	No
2,4,6-Trichlorophenol	2021/06/16	0.25<MDL	ug/L	No
Trifluralin	2021/06/16	0.02<MDL	ug/L	No
Vinyl Chloride	2021/06/16	0.17<MDL	ug/L	No

Note: '<MDL' indicates the result was below the detection limit for the parameter's analysis method used by the external lab.

Under Section 13-6 and 13-6.1, sampling requirements for trihalomethanes (THMs) and haloacetic acids (HAAs) are quarterly and expressed as a running annual average (RAA), which is updated continually as quarterly sample results are received.

Regulatory reporting requirements for HAAs and its associated calculated RAA of quarterly results commenced January 1, 2020, although Environmental Services has been actively calculating RAA since 2017 as a best management practice to evaluate the status of the parameter within the drinking water system.

DRINKING WATER COMPLIANCE REPORT 2023

The 2023 THMs and HAAs results are summarized in the table below for reference.

Table 5: Trihalomethanes and Haloacetic Acids Results Summary

Parameter	Running Annual Average (RAA)	Unit	Exceedance
Trihalomethanes (THMs)	2.75	ug/L	No
Haloacetic Acid (HAAs)	5.3<MDL	ug/L	No

Note: '<MDL' indicates the result was below the detection limit for the parameter's analysis method used by the external lab.

Under Section 13-7, sampling requirements for nitrate and nitrite are quarterly. The 2023 nitrate and nitrite results are summarized in the table below for reference.

Table 6: Nitrate and Nitrite Results Summary

Parameter	Date Sampled	Results	Unit	Exceedance
Nitrate	2023/03/08	1.80	mg/L	No
	2023/05/24	1.93	mg/L	No
	2023/08/29	1.89	mg/L	No
	2023/12/05	1.88	mg/L	No
Nitrite	2023/03/08	0.003<MDL	mg/L	No
	2023/05/24	0.003<MDL	mg/L	No
	2023/08/29	0.003<MDL	mg/L	No
	2023/12/05	0.003<MDL	mg/L	No

Note: '<MDL' indicates the result was below the detection limit for the parameter's analysis method used by the external lab.

Under Section 13-8 and 13-9, sampling requirements for sodium and fluoride are once every 60 months. Sodium and fluoride sampling was completed 2023 and the results are summarized in the table below for reference. The next sampling will be due in 2028.

Table 7: Sodium and Fluoride Results Summary

Parameter	Date Sampled	Results	Unit	Exceedance
Sodium	2023/08/29	4.73	mg/L	No
Fluoride	2023/08/29	0.06<MDL	mg/L	No

4.4.4 Schedule 15.1: Lead Testing (O.Reg 170/03)

Lead samples are required to be collected from the drinking water system during the prescribed sampling periods of 'Winter' (December 15 to April 15) and 'Summer' (June 15 to October 15) in accordance with Schedule 15.1. The Horseshoe Highlands Drinking Water System has met the eligibility criteria for a reduction in sampling requirements as prescribed in Section 15.1-5. The distribution system sampling is required as follows:

DRINKING WATER COMPLIANCE REPORT 2023

- Alkalinity and pH each year, every “Winter” and “Summer” period
- Lead once every 3 years, “Winter” and “Summer” period

Summarized in the table below are the 2023 total alkalinity and pH results for reference. Lead samples were last required to be sampled in 2021 and results can be referenced in the annual report for that year.

Table 8: Alkalinity, pH and Lead Sampling Results Summary

Location Type	Sample Count	Date Sampled	Lead (ug/L)	Alkalinity (mg/L as CaCo3)	pH	Exceedance
Non-Res Plumbing	1	2023/04/04	N/A	158	8.1	No
	1	2023/10/04	N/A	179	7.8	No
Distribution	2	2023/04/04	N/A	158 - 159	8.1 - 8.2	No
	2	2023/10/04	N/A	157 - 159	7.7*	No

*Results were identical in both samples collected.

4.5 Reporting and Corrective Actions

4.5.1 Schedule 16: Reporting of Adverse Test Results and Other Problems

In accordance with O.Reg 170/03, Schedule 16, notifications of adverse water quality incidents and other observations that indicate the potential of improperly disinfected water has been directed to users are provided to the MECP Spills Action Centre (SAC) and local Medical Officer of Health (Simcoe Muskoka District Health Unit (SMDHU)). During this reporting period, there were zero (0) incidents in the drinking water system.

4.5.2 Schedule 17: Corrective Actions

Due to the non-occurrence of any adverse test or other observations requiring reporting to the MECP, there were no corrective actions required.

Table 9 Adverse Water Quality Incidents (AWQIs) & Corrective Actions Summary

AWQI Number:
There were no AWQIs to report during this reporting period.
Incident Details:
N/A
Corrective Action:
N/A

4.6 Municipal Summary Report

4.6.1 Schedule 22, Section 1

The following table summarizes the requirements of the Act, the Regulations, the system’s approval, municipal drinking water licence, drinking water works permit, and any orders applicable to the system that were not met during the reporting period, including the duration and description of the corrective action(s) taken.

Table 10: Regulatory Compliance Summary

Safe Drinking Water Act (SDWA) & Associated Regulations
<p>At the time of this report’s compilation, the 2023 MECP Inspection Report for this system had not yet been received.</p> <p>The 2022 MECP Inspection Report was received after the completion of the 2022 Drinking Water Compliance Report. During that reporting period, there were no issues or non-compliances identified.</p> <p>During July 2023, Well 1 and 3 raw water turbidity readings were not recorded as required by Schedule 7 of O.Reg.170/03. The non-compliance was reported to the MECP, and systems were put in place to avoid a future occurrence.</p> <p>From September 2023 to January 2024, Well 1 had multiple occurrences of flow rate exceedances. These exceedances were minimal, only exceeding the maximum allowable flow rate by 5% and were associated with well pump start-ups. The occurrences were reported to the MECP, and the issue has been rectified.</p>
Municipal Drinking Water Licence & Drinking Water Work Permit
<p>At the time of this report’s compilation, the 2023 MECP Inspection Report for this system had not yet been received.</p> <p>The 2022 MECP Inspection Report was received after the completion of the 2022 Drinking Water Compliance Report. During that reporting period, there were no issues or non-compliances identified.</p>
Provincial Orders
<p>At the time of this report’s compilation, the 2023 MECP Inspection Report for this system had not yet been received.</p> <p>The 2022 MECP Inspection Report was received after the completion of the 2022 Drinking Water Compliance Report. During that reporting period, there were no provincial orders identified.</p>
Best Practice Issues and Recommendations
<p>At the time of this report’s compilation, the 2023 MECP Inspection Report for this system had not yet been received.</p>

The 2022 MECP Inspection Report was received after the completion of the 2022 Drinking Water Compliance Report. During that reporting period, there were no best practices and/or recommendations identified.

4.6.2 Schedule 22, Section 2

In order to assist the Township in assessing the capability of the system to meet existing and planned uses of the system, Appendix A and B summarizes quantities of water volumes supplied and offers a visual depiction of permitted water taking compared to drinking water system demands during the reporting period, including monthly average and maximum daily flows.

5 Conclusion

This report satisfies the requirements of Section 11 and Schedule 22 of O.Reg. 170/03. Any questions regarding this report should be directed to Environmental Services.

Appendix A – Well Flow Summary

Horseshoe Highlands Well Flow Summary Table

	Well 1				Well 3			
	Permitted Capacity: 3,371 m ³ /day				Permitted Capacity: 4,580 m ³ /day			
	Total Flow (m ³)	Average Day (m ³)	Maximum Day (m ³)	Max. Day/Capacity (%)	Total Flow (m ³)	Average Day (m ³)	Maximum Day (m ³)	Max. Day/Capacity (%)
January	13946.44	449.89	963.43*	28.58	12738.90	410.93	952.63	20.80
February	5599.55	199.98	800.42	23.74	9004.69	321.60	710.20	15.51
March	3947.05	127.32	292.34	8.67	5652.61	182.34	420.60	9.18
April	4511.08	150.37	224.99	6.67	6429.45	214.32	529.91	11.57
May	6750.29	217.75	390.41	11.58	10265.45	331.14	1101.31*	24.05
June	8522.20	284.07	530.93	15.75	12458.44	415.28	773.63	16.89
July	7634.00	246.26	376.86	11.18	10453.86	337.22	506.36	11.06
August	6991.36	225.53	362.00	10.74	9747.38	314.43	506.64	11.06
September	7488.97	249.63	409.33	12.14	8912.17	297.07	498.90	10.89
October	5575.52	179.86	364.10	10.80	6825.05	220.16	410.22	8.96
November	4418.02	147.27	321.52	9.54	5317.97	177.27	237.22	7.04
December	5156.07	166.32	341.81	10.14	6021.19	194.23	253.78	7.53

* Denotes month of maximum day flow for 2023.

Appendix B – Average and Maximum Daily Usage Compared to Permitted Daily Capacity

Average and Maximum Daily Usage Compared to Permitted Daily Capacity Graph

