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The Township of North Glengarry

Glen Robertson Well Supply System

2019 Annual and Summary Report

In compliance with O. Reg 170/03, section 11 and O. Reg 170/03 schedule 22

Contents

Section 1: Introduction

This report is an annual summary of water quantity, quality system information, system operations and major expenditures for the Glen Robertson Well Supply during the reporting period of January 1, 2019 to December 31, 2019. It was prepared in accordance with section 11 and schedule 22 of the of Ontario's Drinking Water Systems Regulation O. Regulation 170/03.

Section 2: System Description

The Glen Robertson Well Supply System is located on Irwin St within the hamlet of Glen Robertson, which is approximately 11 kms northeast of the Town of Alexandria. This system uses groundwater as its source to supply the residents with treated water and has a rated capacity of 224 m^3/day. It is categorized as a small municipal residential drinking water system. In 2010 the source was deemed to be groundwater under the direct influence of surface water (GUDI), and upgrades were implemented to strengthen the treatment processes.

Section 3: Process and Equipment Description

Supply Well

One 300 mm diameter drilled well located on 3342 Irwin St., *UTM Easting: 538506 UTM Northing: 5022689 (NAD 83, accuracy +/- 10m)*. It is equipped with a submersible well pump rated at 5.1L/sec (67 IGPM), attached to a 50mm diameter discharge pipe.

Pumping Station

All equipment is stored within a single-story brick building, approximately 17.4m^2, (4.7m x 3.7m), located at the Irwin St address.

Treatment Equipment

The raw water is pumped from the well pump into 50 mm piping and directed to the pre-filters for the ultraviolet light treatment units (UV). The water passed through a 5-micron filter followed by a 1-micron filter prior to going through the UV system, of which 2 UV units operate in parallel at one time and 1 is left in stand-by mode. The water is then directed into the chlorine header pipe passing the sodium hypochlorite injection point.

The chlorination system utilizes two diaphragm sodium hypochlorite metering pumps with rated capacities of 0.4L/hr, which discharges into the header discharge piping. The pumps have automatic switchover capabilities and will switch over if a problem develops with the lead pump during operation. There are 2 sodium hypochlorite storage tanks with capacities of 20L and are contained within a secondary containment tank.

One diaphragm sodium silicate metering pump with rated capacity of 0.4L/hr at 680kPa was removed from the system in 2019 to make room for a new sodium hypochlorite pumping panel.

An underground chlorine contact chamber is located outside to the south east of the building and consists of 52m of 300mm piping. It is complete with a flushing port and a treated water sample line which feeds the on-line analyzers located in the water treatment plant.

Monitoring Equipment

2 free chlorine analyzers are used for regulatory monitoring, one measuring chlorine residuals directly after sodium hypochlorite injection and measuring the residual at the end of the contact chamber as the treated water enters the distribution system. A flow meter is installed directly after the sodium hypochlorite injection and an on-line turbidity analyzer measures the treated water as it leaves the contact chamber and enters the distribution system. All the equipment described above are all connected to 7-day chart recorders, and a plc

with 7 days retention for recording purposes. An automated alarm/dialler system is also in place to alert operational staff to any limit exceedances, but currently there is no remote monitoring system in place for this facility.

The UV units are connected to a monitor that displays real time readings. Currently this unit is not equipped with recording capabilities, but the UV units are connected to the alarm/dialler system, so if problems occur thee unit is equipped with an automatically shut down preventing water from exiting the UV and an alarm will be initiated.

System Pressure Equipment

The well pump will start, run or stop based on the system pressure, which can be observed on a gauge in the water plant prior to sodium hypochlorite injection. The start and stop point are manually set on the well pump pressure switch and can be adjusted within the threshold if required. There are also five 400 L pneumatic pressure tanks operating between 275 to 400 kPa to maintain the system pressure at all times.

Emergency Power

A 17-kW natural gas generator, equipped with auto start, is used to provide power to the water treatment building in the event of an outage. It is located outside the building on the west wall.

Additional Equipment.

All piping, valves, controls and appurtenances along with associated mechanical and electrical equipment not mentioned in the description but are utilized to make up the system.

Monitoring Wells

2 drilled monitoring wells are located on the property where the treatment plant is located. One being located northeast of the building and one located southwest of the building

Section 4: Flow Summary

In order to assess the rated capacity of the WTP in terms of meeting existing and planned uses of the system, a summary of the treated flow rates during this period covered by this report was prepared and is presented below. In accordance with License #181-102 the Glen Robertson Well Supply shall not be operated to exceed the rated of the treatment system. Both the Permit to Take Water (PTTW) and the License requirements allow for a maximum of 224 m^3 total daily for raw and treated water.

The average treated daily flow for 2019 is calculated to be 16.8 m^3 and the maximum daily flow for the year was reported to be 59.2 m^3. This represents 7.5% of the total plant rated capacity. Refer to the appendices for full 2019 data summary

2019 Treated Flow Summary	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Maximum Daily Flow (m^3)	21.7	18.3	20.8	19.5	23.7	59.2	23.2	25.4	17.3	18.9	20.2	21.6
Monthly Average Flow (m^3)	16.5	14.9	15.7	15.1	16.0	23.5	19.5	16.6	13.8	14.4	16.5	18.5
Monthly Average Daily Maximum Instantaneous Flow (L/s)	1.32	1.16	1.17	1.08	1.52	1.40	1.46	1.36	1.34	1.08	1.10	1.16
Rated Maximum Daily Treated Flow for the approved system										224 m^3/day		
Rated Maximum Instantaneous Treated Flow										2.6 L/s		

Section 5: Sampling and Laboratory Analysis Summary

The Township of North Glengarry uses Cadouceon Laboratories as the primary provider for all sample analysis. Cadouceon Laboratories is an accredited laboratory under the Ministry of the Environment and Climate Control requirements. Refer to table below for all results as required.

2019 Microbiological Testing Completed as per Schedule 10, 11 and/or 12 of O. Reg 170/03					
Location	*Number of Samples*	*Range of E. Coli or Fecal Results (#-#)*	*Range of Total Coliform Results (#-#)*	*Number of HPC Samples*	*Range of HPC Results (#-#)*
Raw	53	0 – 3	0 - 24	0	
Treated	53	0 – 0	0 - 0	53	< 2 - 4
Distribution	106	0 – 0	0 - 0	106	< 2 - 48

2019 Operational Testing as per Schedule 7, 8 and or 9 of O. Reg 170/03		
Parameter	*Number of Grab Samples*	*Range of Results unit of measure is mg/L unless otherwise indicated (#-#)*
Raw Turbidity	248	0.10 ntu – 1.10 ntu
Treated Free Chlorine	Continuous	0.27 – 2.92
Distribution Free Chlorine	Continuous	0.27 – 2.92
Fluoride *(If the DWS provides fluoridation)*	n/a	

Additional Sampling or Testing in Accordance with System Approval Requirement or Order				
Date of Order or Approval Amendment	*Parameter*	*Date Sampled*	*Result*	*Unit of Measure*
n/a				

2019 Summary of Inorganic Parameters Tested *Annual sampling or most recent result (1ppm = 1mg/L)*					
Parameter	*Sample Date*	*Standard (maximum concentration)*	*Result Value*	*Unit of Measure*	*Exceedance*
Antimony	December 17, 2018	0.006 mg/L	< 0.0001	mg/L	No
Arsenic	December 17, 2018	0.01 mg/L	0.0001	mg/L	No
Barium	December 17, 2018	1.0 mg/L	0.141	mg/L	No
Boron	December 17, 2018	5.0 mg/L	0.020	mg/L	No
Cadmium	December 17, 2018	0.005 mg/L	< 0.000015	mg/L	No
Chromium	December 17, 2018	0.05 mg/L	< 0.002	mg/L	No
Lead	September 14, 2017	0.01mg/L	0.00162	mg/L	No
Mercury	December 17, 2018	0.001mg/L	< 0.00002	mg/L	No
Selenium	December 17, 2018	0.01 mg/L	< 0.001	mg/L	No
Uranium	December 17, 2018	0.02 mg/L	0.00049	mg/L	No
Fluoride	June 19, 2017	1.5 mg/L	< 0.1	mg/L	No
Nitrite	January 13, 2020	1.0 mg/L	< 0.1	mg/L	No
Nitrate	January 13, 2020	10.0 mg/L	1.1	mg/L	No

2018 Summary of Lead Testing *(1ppm = 1mg/L)*							
Location/ Type	*Number of Samples*	*Range of Lead Results (#-#)*	*Unit of Measure*	*Range of Alkalinity Results (#-#)*	*Unit of Measure*	*Average pH*	*Exceedance*
Residential Plumbing							
Non-Residential Plumbing							
Distribution	1			314	mg/L	7.06	0

2018 Summary of Organic Parameters Tested *Annual sampling or most recent result* *(1ug/L = 0.001mg/L)*					
Parameter	*Sample Date*	*Standard* (maximum concentration)	*Result Value*	*Unit of Measure*	*Exceedance*
Alachlor	December 17, 2018	0.005 mg/L	< 0.3	ug/L	No
Atrazine + N-dealkylated metobolites	December 17, 2018	0.005 mg/L	< 0.5	ug/L	No
Azinphos-methyl	December 17, 2018	0.02 mg/L	< 1	ug/L	No
Benzene	December 17, 2018	0.001 mg/L	< 0.5	ug/L	No
Benzo(a)pyrene	December 17, 2018	0.00001 mg/L	< 0.005	ug/L	No
Bromoxynil	December 17, 2018	0.005 mg/L	< 0.3	ug/L	No
Carbaryl	December 17, 2018	0.09 mg/L	< 3	ug/L	No
Carbofuran	December 17, 2018	0.09 mg/L	< 1	ug/L	No
Carbon Tetrachloride	December 17, 2018	0.002 mg/L	< 0.2	ug/L	No
Chlorpyrifos	December 17, 2018	0.09 mg/L	< 0.5	ug/L	No
Diazinon	December 17, 2018	0.02 mg/L	< 1	ug/L	No
Dicamba	December 17, 2018	0.12 mg/L	< 5	ug/L	No
1,2-Dichlorobenzene	December 17, 2018	0.2 mg/L	< 0.1	ug/L	No
1,4-Dichlorobenzene	December 17, 2018	0.005 mg/L	<0.2	ug/L	No
1,2-Dichloroethane	December 17, 2018	0.005 mg/L	< 0.1	ug/L	No
1,1-Dichloroethylene (vinylidene chloride)	December 17, 2018	0.014 mg/L	< 0.1	ug/L	No
Dichloromethane	December 17, 2018	0.05 mg/L	< 0.3	ug/L	No
2-4 Dichlorophenol	December 17, 2018	0.9 mg/L	< 0.1	ug/L	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	December 17, 2018	0.1 mg/L	< 5	ug/L	No
Diclofop-methyl	December 17, 2018	0.009 mg/L	< 0.5	ug/L	No
Dimethoate	December 17, 2018	0.02 mg/L	< 1	ug/L	No
Diquat	December 17, 2018	0.07 mg/L	< 5	ug/L	No
Diuron	December 17, 2018	0.15 mg/L	< 5	ug/L	No

2018 Summary of Organic Parameters Tested *Annual sampling or most recent result* *(1ug/L = 0.001mg/L)*					
Parameter	*Sample Date*	*Standard* (maximum concentration)	*Result Value*	*Unit of Measure*	*Exceedance*
Glyphosate	December 17, 2018	0.28 mg/L	< 25	ug/L	No
Haloacetic Acid	January 13, 2020	0.08 mg/L	< 5.3	ug/L	No
Malathion	December 17, 2018	0.19 mg/L	< 5	ug/L	No
2 Methyl-4 Chlorophenoxyacetic (MCPA)	December 17, 2018	0.1 mg/L	< 0.10	ug/L	No
Metolachlor	December 17, 2018	0.05 mg/L	< 3	ug/L	No
Metribuzin	December 17, 2018	0.08 mg/L	< 3	ug/L	No
Monochlorobenzene	December 17, 2018	0.08 mg/L	< 0.2	ug/L	No
Paraquat	December 17, 2018	0.01 mg/L	< 1	ug/L	No
Pentachlorophenol	December 17, 2018	0.06mg/L	< 0.1	ug/L	No
Phorate	December 17, 2018	0.002 mg/L	< 0.3	ug/L	No
Picloram	December 17, 2018	0.19 mg/L	< 5	ug/L	No
Polychlorinated Biphenyls (PCB)	December 17, 2018	0.003 mg/L	< 0.05	ug/L	No
Prometryne	December 17, 2018	0.001 mg/L	< 0.1	ug/L	No
Simazine	December 17, 2018	0.01 mg/L	< 0.5	ug/L	No
THM	January 13, 2020	0.100 mg/L	13	ug/L	No
Terbufos	December 17, 2018	0.001 mg/L	< 0.3	ug/L	No
Tetrachloroethylene	December 17, 2018	0.03 mg/L	< 0.2	ug/L	No
2,3,4,6-Tetrachlorophenol	December 17, 2018	0.1 mg/L	< 0.1	ug/L	No
Triallate	December 17, 2018	0.23 mg/L	< 10	ug/L	No
Trichloroethylene	December 17, 2018	0.005 mg/L	< 0.2	ug/L	No
2,4,6-Trichlorophenol	December 17, 2018	0.005 mg/L	< 0.1	ug/L	No
Trifluralin	December 17, 2018	0.045 mg/L	< 0.5	ug/L	No
Vinyl Chloride	December 17, 2018	0.002 mg/L	< 0.2	ug/L	No

Inorganic or Organic Parameters that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards **Only complete if category is large municipal residential, small municipal residential, large municipal non-residential, small municipal non-residential, large non-municipal non-residential**			
Parameter	**Result Value**	**Unit of Measure**	**Date of Sample**
n/a			

Section 6: Significant Expenses Incurred

3 significant expenses occurred during this period and can be described as

- **[ ]** Install required equipment
- **[ ]** Repair required equipment
- **[X]** Replace required equipment
- **[ ]** None during this period

Briefly Describe Incident and/or Expenses Incurred:

No.	Project Name	Description	Cost
1	Chlorine Dosing Panel Replacement	Due to on-going sodium hypochlorite dosing issues and due to the age of the equipment the panel was replaced.	$ 10,252

Section 7: Compliance with Licenses, Permits, Approvals and Orders

The system is an approved system through the accreditation process that was rolled out by the Ministry of the Environment, Conservation, and Parks in 2011. The operating authority strives to remain compliant with the Drinking Water Quality Management Standard, the Safe Drinking Water Act and all associated procedures or a guideline. This approach is utilized to creating a multi-barrier approach to ensure safe drinking water. The following table is a listing of all permits and or licenses that apply to this system:

Description	*Number*	*Version*	*Issue Date*	*Expiry Date*
Water Works License	181-102	2	March 22, 2016	March 21, 2021
Water Works Permit	181-202	2	March 22, 2016	March 21, 2021
Permit to Take Water	3330-9UNQ2Q		March 20, 2015	March 16, 2025

This system actively engages in all required internal and external auditing, as per the Drinking Water Management Standard. The latest external third-party accreditation audit was completed on November 12, 2019. The results indicated an effective system with 1 minor opportunity for improvement.

During this period, all raw water flows were compliant with the permit to take water and all flows were well within the rated capacity for the system, currently at 7.5% of the allowable limits. Furthermore, no operational limits or testing results were exceeded during this reporting timeframe.

All disinfection equipment was operated in such a manner that all license requirements were met at all times. The treatment system was operated at all times to ensure compliance with the Procedure for Disinfection of Drinking Water in Ontario.

All equipment was maintained as per operations manuals and/or calibrated annually by a certified technician.

Section 8: Non-Compliance with Licenses, Permits, Approvals and Orders

There were no instances of non-compliance in regard to regulatory requirements. All license, permit and/or approval requirements were met during this reporting period. Furthermore, there were no orders or additional requirements issued to this system.

2018 Reported Incident in accordance to subsection 18(1) of the Safe Drinking Water Act or Schedule 16 of O. Reg 170/03					
Incident Date	*Parameter*	*Result*	*Unit of Measure*	*Corrective Action*	*Corrective Action Date*

Section 9: Township of North Glengarry Endorsement of Summary Report

A copy of the report was presented to all members of the municipal Council through the Committee of the Whole meeting held on February 19, 2020. The report was also made available to the public through the Township of North Glengarry website or upon request at the Main office, located at 90 Main St South in Alexandria, or at the Public Works Office, located at 63 Kenyon St West in Alexandria

This report has been endorsed by Sarah Huskinson, Chief Administrative Officer on behalf of Township of North Glengarry Council.

Section 10: Contact

All efforts have been made to provide accurate and up to date information in a relevant format. In the event that additional information is required please submit all verbal requests by phone at 613-525-3087; in writing by mail to 63 Kenyon St West. P.O. Box 700, Alexandria Ontario, K0C 1A0; or in writing by email to dean@northglengarry.ca

Appendix A:

2019 Glen Robertson Flow (m3)

	January	February	March	April	May	June	July	August	September	October	November	December
1	14.2	16.5	15.9	13.0	12.3	18.5	22.8	25.2	14.8	12.5	16.0	18.5
2	14.2	16.5	15.9	13.8	10.7	18.5	21.4	25.4	14.8	12.5	16.0	18.9
3	14.7	16.5	15.9	9.6	18.3	13.7	21.4	20.5	12.0	18.0	16.0	18.6
4	16.3	12.4	14.6	15.1	14.9	15.1	19.9	20.5	11.6	15.5	17.8	15.4
5	16.3	16.6	11.8	15.5	14.9	19.6	23.1	20.5	14.5	15.5	13.0	15.4
6	16.3	14.6	11.8	15.5	12.8	19.6	23.1	20.4	13.6	15.5	16.4	18.3
7	16.5	14.6	14.4	15.5	22.5	59.2	23.1	11.4	13.6	14.5	16.3	18.3
8	16.7	18.3	20.8	11.9	11.4	59.2	19.5	18.7	13.6	10.9	13.2	18.3
9	21.7	16.1	20.8	17.5	11.4	59.2	16.4	15.0	14.1	12.0	20.2	16.2
10	12.8	16.1	20.8	19.5	17.7	16.5	16.4	15.0	17.1	10.9	20.2	14.0
11	18.6	17.4	14.0	15.8	17.7	17.0	15.1	15.0	10.9	18.9	14.4	16.6
12	18.6	13.2	14.2	18.4	17.7	12.6	20.1	13.6	12.1	18.9	15.6	17.6
13	18.6	14.3	15.9	18.1	14.8	17.6	20.1	19.8	15.3	11.2	14.8	19.0
14	15.9	13.1	10.6	18.1	15.9	22.3	20.1	11.5	15.3	11.2	14.6	19.0
15	15.0	13.3	19.0	13.8	10.5	22.3	23.2	16.9	15.3	13.0	17.9	19.0
16	17.6	14.6	19.0	15.3	18.4	22.3	22.3	14.9	17.3	16.4	17.9	14.9
17	18.4	14.6	19.0	15.0	18.4	14.8	18.7	14.9	10.9	17.3	17.9	17.5
18	16.0	14.6	15.4	16.0	17.6	16.7	15.6	14.9	10.7	14.9	15.1	21.6
19	16.0	14.4	18.6	16.0	17.6	15.3	20.9	19.9	10.7	14.9	17.6	16.6
20	16.0	14.4	14.9	15.8	17.6	12.4	20.9	19.0	12.6	14.9	10.6	21.6
21	15.3	13.3	15.0	15.8	13.9	30.7	20.9	11.4	12.6	13.0	12.4	21.6
22	15.2	17.3	15.4	15.8	13.9	30.7	22.7	17.0	12.6	13.4	18.6	21.6
23	18.6	17.3	15.4	13.6	13.9	30.7	21.5	16.4	13.4	8.6	18.6	16.6
24	13.7	15.8	15.4	10.3	19.4	29.6	16.4	16.4	13.2	15.0	18.6	21.2
25	18.7	15.4	12.6	16.9	19.4	15.9	16.0	16.4	15.2	17.0	17.1	21.2
26	18.7	13.3	11.4	15.2	19.4	15.9	16.5	14.8	12.2	17.0	16.0	21.2
27	18.7	15.5	17.6	15.2	14.4	16.9	16.5	13.2	16.2	17.0	16.6	18.9
28	19.4	7.9	9.6	15.2	17.0	16.9	16.5	13.0	16.2	13.0	17.1	18.9
29	11.8		17.3	13.3	9.8	22.8	17.3	13.0	16.2	15.2	18.5	18.9
30	18.8		17.3	13.0	23.7	22.8	17.7	14.8	13.9	15.2	18.5	19.6
31	12.1		17.3		18.5		19.5	14.8		13.8		19.3

													2019 Flows Summary
Minimum	11.8	7.9	9.6	9.6	9.8	12.4	15.1	11.4	10.7	8.6	10.6	14.0	7.9
Maximum	21.7	18.3	20.8	19.5	23.7	59.2	23.2	25.4	17.3	18.9	20.2	21.6	59.2
Average	16.5	14.9	15.7	15.1	16.0	23.5	19.5	16.6	13.8	14.4	16.5	18.5	16.8
Total	511.0	418.2	487.7	453.5	496.3	705.1	605.3	514.0	412.6	447.6	493.6	574.4	6119.2

Appendix B:

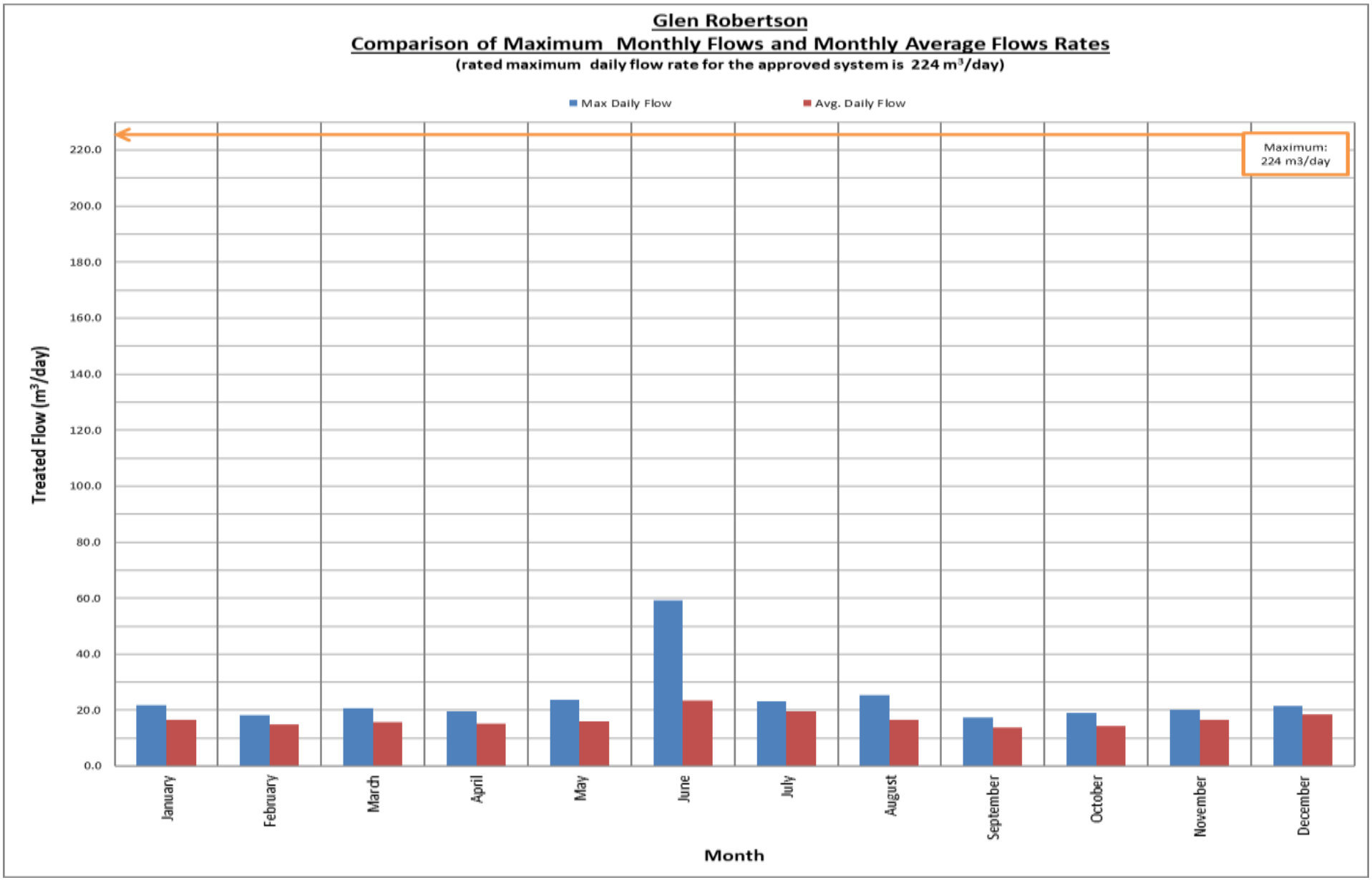
2019 Glen Robertson Maximum Instantaneous Flows(L/s)

	January	February	March	April	May	June	July	August	September	October	November	December
1	0.80	0.97	0.70	0.90	0.95	1.10	1.12	1.15	0.86	0.90	0.86	0.94
2	0.88	0.96	0.90	0.90	0.76	1.12	1.34	1.36	0.90	0.94	0.85	0.92
3	0.90	1.10	0.94	0.77	0.94	0.90	1.11	1.10	0.92	0.85	0.81	0.92
4	0.80	0.82	0.78	0.82	1.52	0.88	1.12	0.97	0.78	1.08	1.06	0.98
5	0.90	1.16	0.94	0.82	0.88	1.00	0.91	1.14	0.82	0.84	1.05	0.74
6	0.94	0.92	0.78	0.84	0.90	1.06	1.14	0.95	0.91	1.06	1.06	0.80
7	1.32	0.90	0.90	0.82	1.40	0.90	1.03	0.86	0.89	0.94	0.94	0.94
8	1.12	0.74	1.08	1.06	0.82	1.02	1.10	1.16	0.94	0.80	0.83	0.90
9	1.02	1.06	1.10	0.98	0.80	1.06	1.02	0.82	0.88	0.88	0.80	0.87
10	0.90	0.98	1.08	0.95	1.28	1.02	0.88	1.36	1.07	0.94	1.08	0.86
11	0.82	0.96	0.86	0.76	0.94	0.90	0.83	0.92	0.74	0.78	0.90	1.06
12	1.14	0.84	0.76	0.78	1.16	0.95	0.83	1.02	0.96	0.74	0.96	0.84
13	0.95	0.98	0.82	0.69	1.20	1.08	0.84	0.96	0.98	0.84	1.02	0.94
14	0.87	0.77	0.84	0.60	0.93	1.07	1.40	0.94	0.84	0.96	0.75	0.90
15	0.83	0.82	1.14	1.06	0.92	1.11	1.00	1.08	0.96	0.82	0.70	0.96
16	0.84	0.90	1.16	0.92	0.76	1.29	1.02	0.90	0.84	0.86	0.94	0.92
17	0.84	1.08	1.17	0.94	1.00	1.07	0.91	0.96	0.76	0.81	1.10	1.16
18	0.76	0.86	0.85	0.74	0.98	0.98	0.85	0.90	0.92	0.86	0.76	0.88
19	0.92	0.93	0.99	1.02	1.16	1.24	0.80	0.98	0.72	0.96	0.78	0.92
20	1.00	0.92	1.00	1.04	1.12	0.80	1.00	0.88	0.75	0.97	0.92	0.89
21	0.86	0.84	0.80	1.00	1.44	1.08	1.46	0.78	0.78	0.76	0.75	1.04
22	0.81	0.88	0.88	1.08	0.92	1.30	1.05	0.92	0.82	0.70	0.80	0.88
23	0.95	0.90	0.86	0.82	0.92	1.40	1.04	1.00	0.98	0.27	0.94	0.90
24	0.80	0.89	1.00	0.92	1.38	1.40	1.08	0.86	1.12	0.94	0.76	0.98
25	0.92	0.76	0.94	0.80	1.10	1.12	1.08	1.04	1.34	0.80	0.86	0.86
26	0.90	0.86	0.88	0.88	1.14	0.93	0.88	0.80	0.73	0.90	0.74	0.90
27	1.08	0.86	0.76	0.93	1.18	1.02	0.84	1.00	1.30	1.04	0.78	0.90
28	0.96	0.00	0.76	0.88	0.80	1.13	0.88	0.70	1.00	0.84	0.78	0.94
29	0.74	0.00	0.80	0.88	0.82	1.24	1.02	0.93	0.94	0.80	0.93	0.91
30	0.86		0.84	1.02	0.89	0.88	1.18	0.82	0.88	0.92	0.92	0.90
31	0.96		0.96		1.10		1.34	0.96		0.94		0.90

Maximum	1.32	1.16	1.17	1.08	1.52	1.40	1.46	1.36	1.34	1.08	1.10	1.16
Average	0.92	0.85	0.91	0.89	1.04	1.07	1.04	0.97	0.91	0.86	0.88	0.92

2019 Flows Summary
1.52
0.94

Appendix C


Glen Robertson
Comparison of Maximum Monthly Flows and Monthly Average Flows Rates
(rated maximum daily flow rate for the approved system is 224 m³/day)
Max Daily Flow
Avg. Daily Flow
Maximum: 224 m3/day
Treated Flow (m³/day)
220.0
200.0
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
January
February
March
April
May
June
July
August
September
October
November
December
Month

Appendix D

Compliance Status Report
Groundwater Treatement

Year: 2019
Municipality: North Glengarry
System Number: 220008408
Water Source: Glen Robertson Well
Design Capacity: 224m³
Description: GUDI Well with UV and Chlorination Treatment

Date	Monthly Flow	Max Daily Flow	Avg. Daily Flow	Avg. Maximum Instantaneous Daily Flow	Average Free Cl2	Average Total Cl2	Average Treated Turbidity
	m^3	m^3	m^3	L/s	mg/L	mg/L	NTU
January	511.0	21.7	16.5	0.19	1.60	1.62	0.08
February	418.2	18.3	14.9	0.17	1.62	1.74	0.23
March	487.7	20.8	15.7	0.18	1.76	1.70	0.14
April	453.5	19.5	15.1	0.17	1.71	1.71	0.13
May	496.3	23.7	16.0	0.19	1.83	1.74	0.10
June	705.1	59.2	23.5	0.27	1.75	1.99	0.10
July	605.3	23.2	19.5	0.23	1.78	2.11	0.07
August	514.0	25.4	16.6	0.19	1.64	2.07	0.08
September	412.6	17.3	13.8	0.16	1.52	1.99	0.08
October	447.6	18.9	14.4	0.17	1.64	1.66	0.07
November	493.6	20.2	16.5	0.19	0.16	0.57	1.69
December	574.4	21.6	18.5	0.21	0.10	0.67	1.70
Average	509.9	24.2	16.8	0.2	1.43	1.63	0.37
Total	6119.2						
Max Day		59.225	23.5	0.27	1.83	2.11	1.70
Criteria		224	224	2.6			1.0
Count							

	Raw Total Coliform				Raw E. Coli				Treated Total Coliform				Treated E. Coli				Treated HPC				Distribution Total Coliform				Distribution E. Coli				Distribution HPC			
	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average	Count	Minimum	Maximum	Average
January	5	0	2	0.4	5	0	0	0.0	5	0	0	0	5	0	0	0	5	2.0	4	2.4	10	0	0	0	10	0	0	0	10	2.0	2.0	2.0
February	4	0	2.0	0.5	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	48.0	7.7
March	4	0	0	0.0	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	2.0	2.0
April	5	0	24	5.2	5	0	3	0.6	5	0	0	0	5	0	0	0	5	2.0	2.0	2.0	10	0	0	0	10	0	0	0	10	2.0	2.0	2.0
May	4	0	2	0.5	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	2.0	2.0
June	5	0	2	0.8	5	0	0	0.0	5	0	0	0	5	0	0	0	5	2.0	2.0	2.0	10	0	0	0	10	0	0	0	10	2.0	2.0	2.0
July	4	0	2	1.0	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	2.0	2.0
August	4	0	1	0.3	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	8.0	2.7
September	5	0	0	0.0	5	0	0	0.0	5	0	0	0	5	0	0	0	5	2.0	2.0	2.0	10	0	0	0	10	0	0	0	10	2.0	2.0	2.0
October	4	0	2	0.5	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	2.0	2.0
November	4	1	3	2.0	4	0	0	0.0	4	0	0	0	4	0	0	0	4	2.0	2.0	2.0	8	0	0	0	8	0	0	0	8	2.0	2.0	2.0
December	5	0	2	1.0	5	0	0	0.0	5	0	0	0	5	0	0	0	5	2.0	2.0	2.0	10	0	0	0	10	0	0	0	10	2.0	2.0	2.0
Total	*53*				*53*				*53*				*53*				*53*				*106*				*106*				*106*			