

Renfrew Drinking Water System

Waterworks # 210001102
System Category – Large Municipal Residential

Annual Water Report

Prepared For: Municipality of the Town of Renfrew

Reporting Period of January 1st – December 31st 2020

Issued: February 24, 2021

Revision: 0

Operating Authority:



This report has been prepared to satisfy the annual reporting requirements in O.Reg 170/03 Section 11 and Schedule 22

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Report Availability

This system does not serve more than 10,000 residence and the annual reports will be available to residents at the Town of Renfrew Municipal Office. Notification will be at the Municipal Office and copies provided free of charge if requested. The Town of Renfrew Municipal Office is located at, 127 Raglan St. S., Renfrew, ON K7V 1P8.

Compliance Report Card

Compliance Event	# of Events
Ministry of Environment Inspections	On site Ministry Inspections on November 3 rd 2020
Ministry of Labour Inspections	No Inspections during the reporting period
QEMS External Audit	One (1) External On-Site Audit was completed
AWQI's	No AWQI's during the reporting period
Non-Compliance	One (1) Non-Compliance during the reporting period
Spills	One (1) Spill during the reporting period

System Process Description

Raw Source

The source water for the Renfrew Drinking Water System (DWS) is the Bonnechere River. The low lift pumping station was constructed over the wet well, and is situated next to the Bonnechere River, across the street from the Renfrew DWS. The wet well is equipped with a bar screen. Water is drawn from the wet well and discharged into a raw water force main. Turbidity, pH and temperature meters have been installed at this point to collect raw water data.

Treatment

Raw water is treated with coagulant and a coagulant aid. The powdered activated carbon (PAC) system is currently not in use. The water is directed to the flash mixers and then through the Actiflo treatment system, which consists of coagulation, flocculation and sedimentation assisted by tube settlers.

Water is directed to three dual media (sand/anthracite) high-rate gravity filters. All three filters are connected to a common backwash system that includes filter-to-waste valving, backwash troughs and underdrain systems. The filters are equipped with one positive displacement air scour blower.

Filtered water is treated with chlorine gas (for disinfection), hydrated lime (for pH adjustments) and Hydrofluorosilicic acid (fluoride) just prior to being directed to the Clearwells. Two baffled Clearwells are in use to provide treated water storage and the treated water is pumped from the Clearwells to the distribution system.

There are two wastewater generating processes; filter backwashing and waste residuals from the Actiflo treatment system. Filter backwash effluent is directed to two settling tanks. The supernatant from the settling tank is discharged to the Bonnechere River via the municipal storm sewer and the sludge from the settling tank is pumped to the municipal sanitary sewer.

Treatment Chemicals used during the reporting year:

Chemical Name	Use	Supplier
PAS-8	Primary Coagulation	Kemira
Polymer	Coagulant Aid	BASF
Hydrated Lime	pH Adjustment	M & R Feeds (Sylvite)
Chlorine Gas	Disinfection	Brenntag
Hydrofluorosilic Acid	Fluoridation	Brenntag
Micro-Sand	Process	Veolia

Distribution

The distribution for the Town of Renfrew serves a population of approximately 8000 residents. The system includes a 6820 m³ capacity standpipe, complete with water remixing, located on O'Brian Road. The standpipe is operated by the OCWA.

Summary of Non-Compliance

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
No AWQI's during the reporting period						

Non-Compliance

Legislation	requirement(s) system failed to meet	duration of the failure	Corrective Action	Status
MDWL	Monthly Filter Backwash Sample	August 2020	Reviewed Sampling Standard Operating Procedures	Closed

Spill Incident

Date	Location	Details	Corrective Action
June 14 2020	Renfrew Water Tower	A loss of level control initiated the "fail-safe mode" to ensure positive pressure in the system and triggered the high-lift pumps at the Water Treatment Facility to run and fill the tower	The fault was caused by a loss of the power to the level control device at the tower

Non-Compliance Identified in a Ministry Inspection:

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There was an onsite Ministry inspection on November 3 rd 2020 - no report received				

Flows

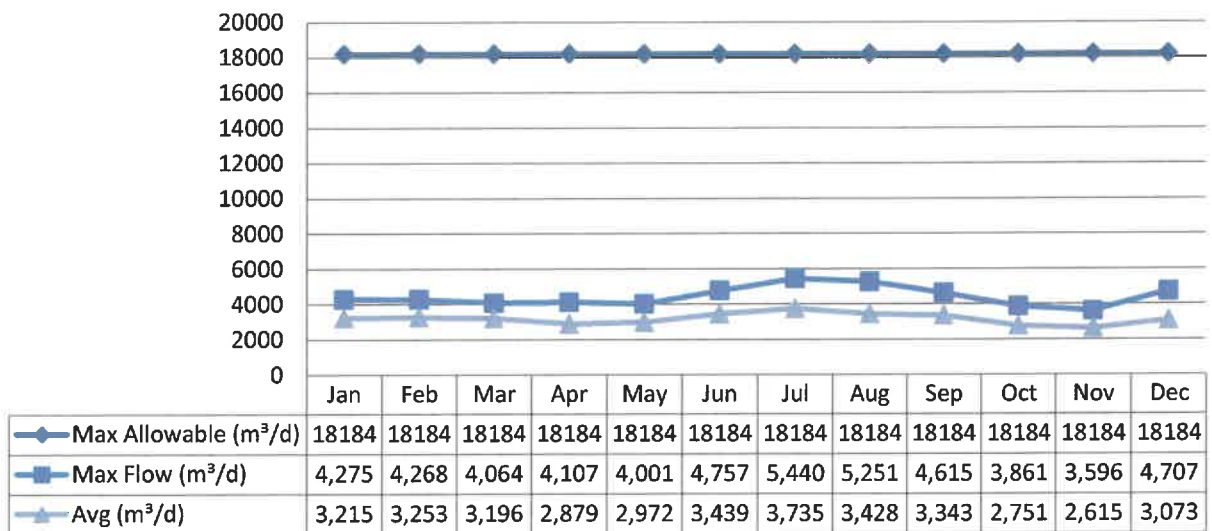
The Renfrew Drinking Water System is operating on average under half the rated capacity.

Raw Water Flows

The Raw Water flows are regulated under the Permit to Take Water. 2020 Raw Flow Data was submitted to the Ministry electronically under permit #8088-9AXJ6C. The confirmation is attached in Appendix A.

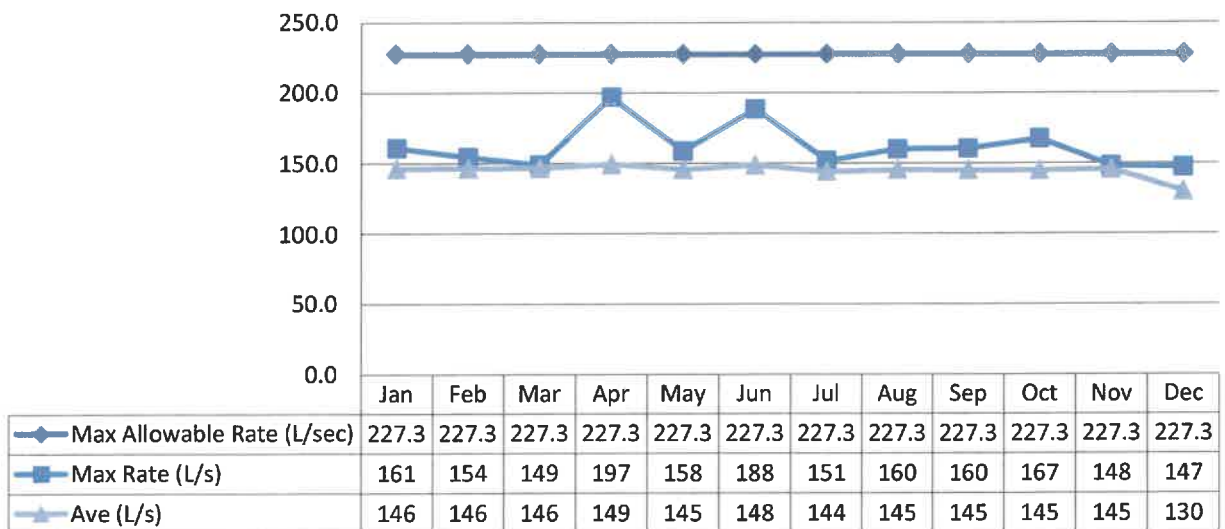
Total Monthly Flows (m³/d)

Max Allowable PTTW



Monthly Rated Flows (L/s)

Max allowable rate - PTTW

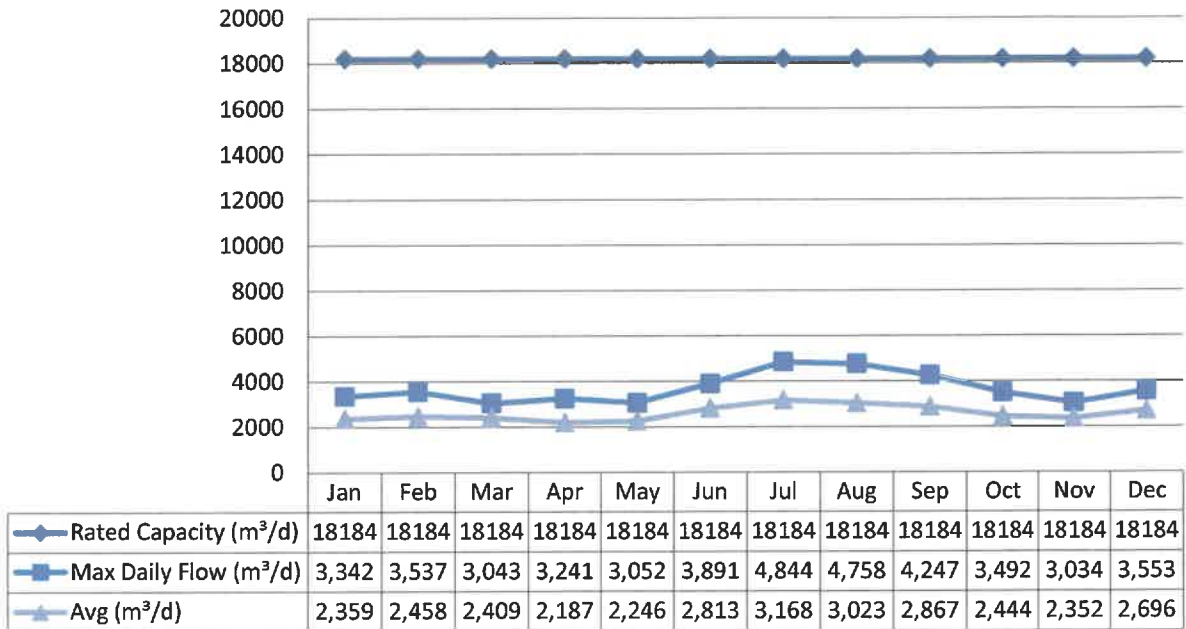


Treated Water Flows

The Treated Water flows are regulated under the Municipal Licence.

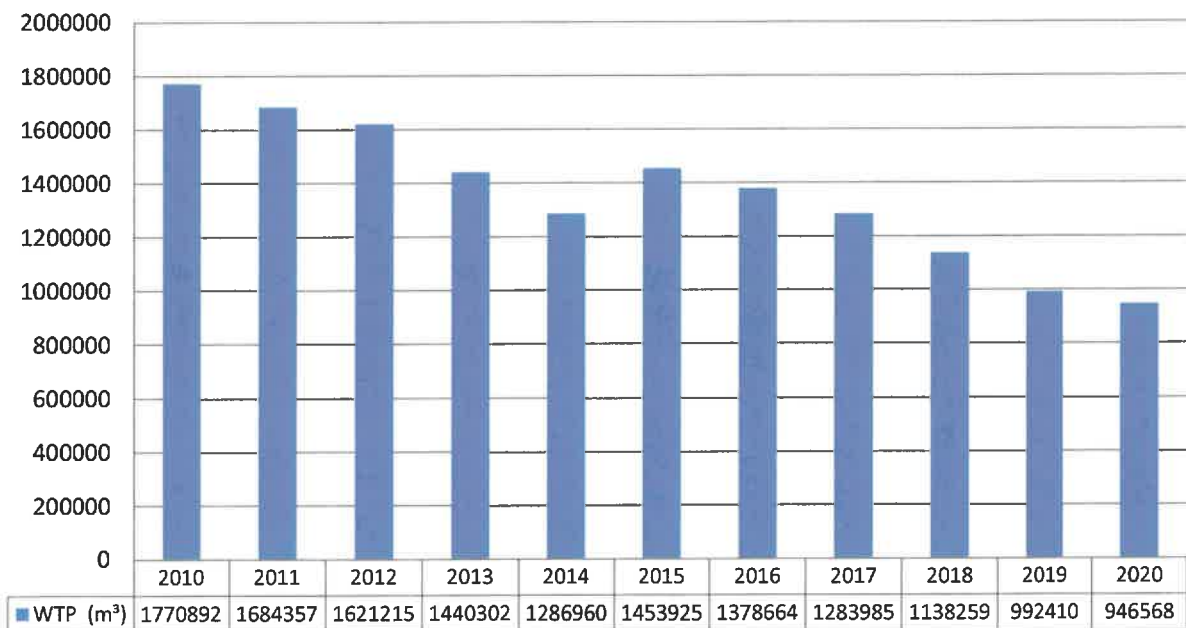
Monthly Rated Flows

Rated Capacity - MDWL



Annual Total Flow Comparison

Total Annual m³



Regulatory Sample Results Summary

Microbiological Testing

	No. of Samples Collected	Range of E.coli Results		Range of Total Coliform Results		# of HPC Samples Collected	Range of HPC Results	
		Min	Max	Min	Max		Min	Max
Raw Water	52	0	210	3	3400			
Treated Water	52	0	0	0	0	51	2	8
Distribution Water	207	0	0	0	0	101	2	4

Operational Testing

	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Turbidity, In-House (NTU) - RW	96	1.66	141
Turbidity, In-House (NTU) - TW	96	0.13	1.46
Turbidity, On-Line (NTU) - Filt1	8760	0.009	4.99
Turbidity, On-Line (NTU) - Filt2	8760	0.019	4.63
Turbidity, On-Line (NTU) - Filt3	8760	0.02	5.0
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.79	2.71
Free Chlorine Residual, In-House (mg/L) - TW	366	0.97	3.0
Free Chlorine Residual, TW Field (mg/L) Lab Upload - TW	52	1.34	2.31
Free Chlorine Residual, On-Line (mg/L) - DW	8760	0.36	2.29
Free Chlorine Residual, DW Field (mg/L) Lab Upload - DW	207	0.2	1.96
Fluoride Residual, On-Line (mg/L) - TW	8760	0.11	1.27
Fluoride Residual, In-House (mg/L) - TW	94	0.06	0.80
Fluoride Residual, Lab Upload (mg/L) -TW	12	0.1	0.8

NOTE: spikes recorded by on-line instrumentation were a result of air bubbles and various maintenance/calibration activities. All spikes are reviewed for compliance with O.Reg 170/03

Laboratory Testing

Parameter	# of grab samples taken	Range of Results (min # - max #)
Raw Water		
Alkalinity	12	42 - 87 mg/l
Colour	12	9 - 36 TCU
Dissolved Organic Carbon (DOC)	12	4.9 - 8.3 mg/L
Fluoride	12	0.1 mg/L
Iron	12	0.074 - 0.681 mg/L
Manganese	12	0.006 - 0.062
pH	12	7.3 - 8.0
Treated Water		
Alkalinity	12	40 - 74 mg/L
Aluminum	12	30 - 620

Parameter	# of grab samples taken	Range of Results (min # - max #)
Colour	12	2 - 2 TCU
Conductivity	12	156 - 308
Dissolved Organic Carbon (DOC)	12	2.9 - 4.3 mg/L
Fluoride	12	0.1 - 08 mg/L
Iron	12	0.005 - 0.143 mg/L
Manganese	12	0.003 - 0.94
pH	12	7.2 - 7.8
Hardness (as CaCO ₃)	12	77 - 114 mg/L

Inorganic Parameters

These parameters are tested as a requirement under 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly and the metals are tested annually as required under 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

- MAC = Maximum Allowable Concentration as per O.Reg 169/03
- BDL = Below the laboratory detection level

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2020/01/30	<MDL 0.1	6.0	No	No
Arsenic: As (ug/L) - TW	2020/01/30	0.1	10.0	No	No
Barium: Ba (ug/L) - TW	2020/01/30	28.0	1000.0	No	No
Boron: B (ug/L) - TW	2020/01/30	8.0	5000.0	No	No
Cadmium: Cd (ug/L) - TW	2020/01/30	<MDL 0.02	5.0	No	No
Chromium: Cr (ug/L) - TW	2020/01/30	<MDL 2.0	50.0	No	No
Mercury: Hg (ug/L) - TW	2020/01/30	<MDL 0.02	1.0	No	No
Selenium: Se (ug/L) - TW	2020/01/30	<MDL 1.0	50.0	No	No
Uranium: U (ug/L) - TW	2020/01/30	<MDL 0.05	20.0	No	No
Additional Inorganics					
Fluoride (mg/L) - TW	2020/12/01	0.6	1.5	No	No
Nitrite (mg/L) - TW	2020/01/21	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/04/21	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/08/11	<MDL 0.1	1.0	No	No
Nitrite (mg/L) - TW	2020/10/13	<MDL 0.1	1.0	No	No
Nitrate (mg/L) - TW	2020/01/21	0.1	10.0	No	No
Nitrate (mg/L) - TW	2020/04/21	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2020/08/11	<MDL 0.1	10.0	No	No
Nitrate (mg/L) - TW	2020/10/13	<MDL 0.1	10.0	No	No
Sodium: Na (mg/L) - TW	2016/01/12	15.2	20	No	Yes

Schedule 15 Distribution Sampling:

This sampling and reporting is completed by the Town of Renfrew. Results are as follows:

Date Sampled	Sampling Location	Sample Type	Lead Results (mg/L)		Alkalinity Result (mg/L)	pH Result
			1st Litre	2nd Litre if plumbing		
03/31/20	Hydrant	Distribution	0.00002		70	7.57
03/31/20	Hydrant	Distribution	0.00002		71	7.55
03/31/20	Kitchen tap	Residential	0.00017	0.00013		7.72
03/31/20	Bathroom tap	Non-Residential	0.00034	0.00058		7.76
12/20/20	Hydrant	Distribution	0.00004		70	7.49
12/20/20	Hydrant	Distribution	0.00061		65	7.56
01/26/21	Hydrant	Distribution	0.00107		57	5
12/20/20	Kitchen tap	Residential	0.00024	0.00034		7.41
03/31/20	Bathroom tap	Non-Residential	0.00027	0.00025		7.45

Organic Parameters

These parameters are tested annually as a requirement under O.Reg 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
Alachlor (ug/L) - TW	2020/01/30	<MDL 0.3	5.00	No	No
Azinphos-methyl (ug/L) - TW	2020/01/30	<MDL 1.0	20.00	No	No
Benzene (ug/L) - TW	2020/01/30	<MDL 0.5	1.00	No	No
Benzo(a)pyrene (ug/L) - TW	2020/01/30	<MDL 0.005	0.01	No	No
Bromoxynil (ug/L) - TW	2020/01/30	<MDL 0.5	5.00	No	No
Carbaryl (ug/L) - TW	2020/01/30	<MDL 3.0	90.00	No	No
Carbofuran (ug/L) - TW	2020/01/30	<MDL 1.0	90.00	No	No
Carbon Tetrachloride (ug/L) - TW	2020/01/30	<MDL 0.2	2.00	No	No
Chlorpyrifos (ug/L) - TW	2020/01/30	<MDL 0.5	90.00	No	No
Diazinon (ug/L) - TW	2020/01/30	<MDL 1.0	20.00	No	No
Dicamba (ug/L) - TW	2020/01/30	<MDL 10.0	120.00	No	No
1,2-Dichlorobenzene (ug/L) - TW	2020/01/30	<MDL 0.5	200.00	No	No
1,4-Dichlorobenzene (ug/L) - TW	2020/01/30	<MDL 0.5	5.00	No	No
1,2-Dichloroethane (ug/L) - TW	2020/01/30	<MDL 0.5	5.00	No	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2020/01/30	<MDL 5.0	50.00	No	No
2,4-Dichlorophenol (ug/L) - TW	2020/01/30	<MDL 0.1	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2020/01/30	<MDL 10.0	100.00	No	No
Diclofop-methyl (ug/L) - TW	2020/01/30	<MDL 0.9	9.00	No	No
Dimethoate (ug/L) - TW	2020/01/30	<MDL 1.0	20.00	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Diquat (ug/L) - TW	2020/01/30	<MDL 5.0	70.00	No	No
Diuron (ug/L) - TW	2020/01/30	<MDL 5.0	150.00	No	No
Glyphosate (ug/L) - TW	2020/01/30	<MDL 25.0	280.00	No	No
Malathion (ug/L) - TW	2020/01/30	<MDL 5.0	190.00	No	No
2-Methyl-4chlorophenoxyacetic Acid (MCPA)(ug/L) - TW	2020/01/30	<MDL 10.0	100	No	No
Metolachlor (ug/L) - TW	2020/01/30	<MDL 3.0	50.00	No	No
Metribuzin (ug/L) - TW	2020/01/30	<MDL 3.0	80.00	No	No
Paraquat (ug/L) - TW	2020/01/30	<MDL 1.0	10.00	No	No
PCB (ug/L) - TW	2020/01/30	<MDL 0.05	3.00	No	No
Pentachlorophenol (ug/L) - TW	2020/01/30	<MDL 0.1	60.00	No	No
Phorate (ug/L) - TW	2020/01/30	<MDL 0.3	2.00	No	No
Picloram (ug/L) - TW	2020/01/30	<MDL 15.0	190.00	No	No
Prometryne (ug/L) - TW	2020/01/30	<MDL 0.1	1.00	No	No
Simazine (ug/L) - TW	2020/01/30	<MDL 0.5	10.00	No	No
Terbufos (ug/L) - TW	2020/01/30	<MDL 0.5	1.00	No	No
Tetrachloroethylene (ug/L) - TW	2020/01/30	<MDL 0.5	10.00	No	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2020/01/30	<MDL 0.1	100.00	No	No
Triallate (ug/L) - TW	2020/01/30	<MDL 10.0	230.00	No	No
Trichloroethylene (ug/L) - TW	2020/01/30	<MDL 0.5	5.00	No	No
2,4,6-Trichlorophenol (ug/L) - TW	2020/01/30	<MDL 0.1	5.00	No	No
Trifluralin (ug/L) - TW	2020/01/30	<MDL 0.5	45.00	No	No
Vinyl Chloride (ug/L) - TW	2020/01/30	<MDL 0.2	1.00	No	No
Distribution Water					
Trihalomethane: Total (ug/L) Annual Average - DW	2020	74.98	100.00	No	No
Haloacetic Acid: HAA (ug/L) Annual Average-DW	2020	73.05	80.0	No	No

MAC = Maximum Allowable Concentration as per O.Reg 169/03

BDL = Below the laboratory detection level

Additional Legislated Samples

Legal Document	Date of Issuance	Parameter	Date Sampled	Result	Unit of measure	Limit
Municipal License 183-101 Issue #3	2015-12-16	Actiflo Suspended Solids	Annual Avg.	11.64	mg/L	25.0 mg/L
Municipal License 183-101 Issue #3	2015-12-16	Backwash Effluent Suspended Solids	Annual Avg.	23.82	mg/L	25.0 mg/L



Major Maintenance Summary

WO #	Description
1584590	Capital Blanket Items under \$200

WO #	Description
1751573	SCADA system
1793517	Capital Treated water flow meter
1833656	Capital filter turbidimeter replacement/setup
1963504	Capital Renfrew Standpipe - Internal rover inspection
1751721	Capital Calibration Cell Turbidity
1791036	Capital SAI Global DWQMS External Audit
1874120	Capital No communication with Low Lift station
1916498	Capital Pocket Colorimeter
1916522	Jet Pump and discharge line

Appendix A

WTRS Data and Submission Confirmation



Ministry of the Environment,
Conservation and Parks

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Location: [WTRS](#) / [WT DATA](#) / [Input WT Record](#) WTRS-WT-008

Water Taking Data submitted successfully.

Confirmation:


Thank you for submitting your water taking data online.

Permit Number: 8088-9AXJ6C
Permit Holder: THE CORPORATION OF THE TOWN OF RENFREW.
Received on: Feb 9, 2021 12:19 PM

This confirmation indicates that your data has been received by the Ministry, but should not be construed as acceptance of this data if it differs from that specified on the Permit Number, assigned to the Permit Holder stated above.

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