

March 25, 2021

Ministry of the Environment  
Thunder Bay Regional Office  
3rd Flr Suite 331B  
435 James St. South  
Thunder Bay ON  
P7E 6S7

Attention: Trina Rawn  
District Manager

**Re: 2020 Performance Report for Fort Frances Sewage Treatment Plant**

Attached is the 2020 Performance Report for the **Fort Frances Sewage Treatment Plant** located in the Town of Fort Frances. This report has been completed in accordance with Condition No. 10 (5) cited in *Amended Environmental Compliance Approval Number 6786-A44PWG* dated January 6 2016 and issued to the Town of Fort Frances.

This report was prepared by the Ontario Clean Water Agency on behalf of the Town of Fort Frances based on the information kept on record by OCWA at the Fort Frances Sewage Treatment Plant location; and the report covers the period from January 1 to December 31, 2020.

Should you have any questions or comments in regards to this annual report, please do not hesitate to contact David Hoffman at 807-854-7142.

Yours truly,



Jeff St Pierre  
North West Regional Hub Manager  
Ontario Clean Water Agency  
Northwestern Ontario Hub  
(705)943-5578

Copy to: Craig Miller– Fort Frances Environmental and Facilities Superintendent  
Operations Staff – Fort Frances Sewage Treatment Plant

# 2020 Annual Report

## Fort Frances

### Wastewater Treatment Plant

Prepared by the Ontario Clean Water Agency



**Ontario Clean Water Agency**  
**Agence Ontarienne Des Eaux**

**The Corporation of the Town of Fort Frances  
Wastewater Treatment Plant  
(Sewage Plant)  
2020 Annual Report**

## **Introduction**

In accordance with the Amended Environmental Compliance Approval Number 6786-A44PWG section 10(5), the Town of Fort Frances Wastewater Treatment Plant is required to prepare an annual performance report. The 2020 annual performance report summarizes important information regarding the treatment quality of the effluent wastewater, analytical test results, relevant activities and maintenance operations of the Works.

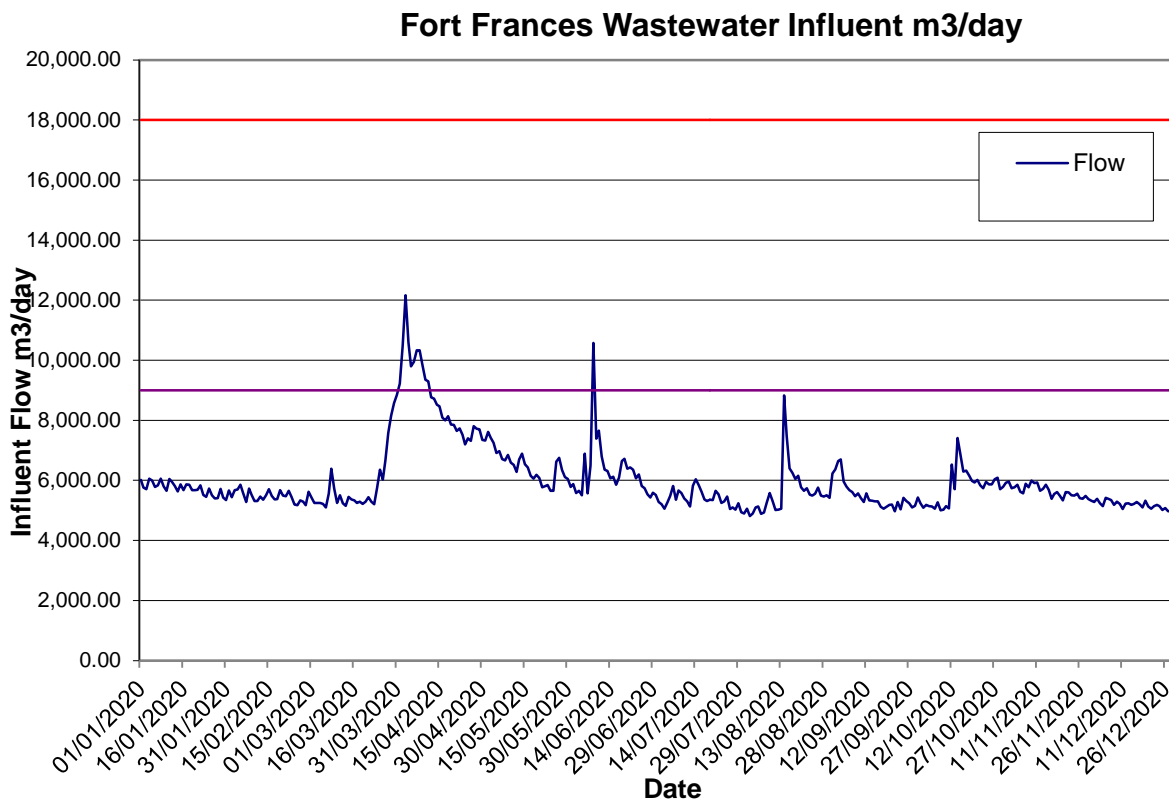
## **Description of the Works**

Capacity of Works	9000 m <sup>3</sup> /day (average flow) Peak 18000 m <sup>3</sup> /day
Service Area	Town of Fort Frances and Couchiching Reserve
Service Population	9000
Effluent Receiver	Rainy River
Major Process	Secondary treatment facility complete with a phosphorus removal system; ultra violet disinfection; aerobic sludge stabilization and dewatering

## **1. Summary and Comprehensive Interpretation of Data**

<b>Flow Summary</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>5-yr avg.</b>
Avg. Day m <sup>3</sup> /day	6731	6476	5988	7860	5967	6604
Design m <sup>3</sup> /day	9000	9000	9000	9000	9000	9000
Utilization (Avg. Day/ Design)	75%	72%	67%	87%	66%	73 %
Max Day m <sup>3</sup> /day	18874	12238	13977	18190	12162	15088
Max Day Factor	2.8	1.9	2.3	2.3	2.0	2.3

The daily flow of influent into the Fort Frances Wastewater treatment plant is presented in the following graph.



The peak flow occurred on April 3 2020. The peak flow through the treatment plant was 12162 m<sup>3</sup>/day. The flow through the plant exceeded the design flow of 9000 m<sup>3</sup>/day on 11 days in April and one day in June.

The daily analytical and process data for the plant is attached as the Monthly Operations Summary. This data is summarized in the Annual Summary also attached to the report.

In the following table the Carbonaceous Biochemical Oxygen Demand, Suspended Solids and Total Phosphorus are compared to the Certificate of Approval effluent concentrations and loadings as specified in section 7.

Month	CBOD5		Suspended Solids		Total Phosphorus		E. Coli	pH	
	Avg. Eff.	Avg. Load	Avg.Eff.	Avg. Load	Avg. Eff.	Avg. Load	Geo Mean	Monthly	Monthly
	CBOD	CBOD	S.S	S.S	T.P	T.P	Counts	Minimum	Maximum
	(mg/L)	(kg/day)	(mg/L)	(kg/day)	(mg/L)	(kg/day)	/100ml		
January	2.9	16.4	4.9	28.2	0.14	0.82	44.6	6.3	6.6
February	9.0	15.9	5.0	27.2	0.12	0.67	22.1	6.4	7.5
March	2.6	16.2	5.3	31.4	0.11	0.68	33.1	7.0	7.6
April	2.9	24.2	5.1	45.8	0.11	0.96	49.0	7.0	7.4
May	2.2	14.2	3.9	25.2	0.10	0.63	14.1	7.0	7.3
June	2.3	13.7	3.8	23.7	0.13	0.81	15.2	6.9	7.2
July	2.1	11.5	2.6	14.1	0.11	0.61	10.0	6.9	7.1
August	2.0	11.4	2.5	14.2	0.17	0.96	11.5	6.7	7.1
September	2.0	10.6	2.1	11.6	0.17	0.96	10.0	6.7	7.1
October	2.1	11.6	2.3	13.4	0.13	0.75	15.7	6.6	7.0
November	2.0	11.3	3.3	18.4	0.16	0.91	33.8	6.6	7.1
December	2.2	11.2	2.4	12.4	0.08	0.40	10.0	6.6	7.1
Average	2.9	14.0	3.6	22.1	0.13	0.76	22.4	6.7	7.2
Max (Min)	9	24.2	5.3	45.8	0.17	0.96	49	(6.3)	7.6
C of A Limit	<25	<225	<25	<225	<1	<9	<200	>6.0	<9.5
C of A Obj.	<15		<15		<0.9		<150		

The Certificate of Approval Limits for CBOD5 and suspended solids are 25 mg/l with an objective target of 15 mg/l and loading limits of less than 225 kg/day. The levels for total phosphorus are less than 1 mg/l and a loading limit of 9 kg/day. In the reporting year 2020, CBOD<sub>5</sub>, suspended solids and total phosphorus concentration limits and loading limits met both the Certificate of Approval limits and the objectives.

The Certificate of Approval states the pH of the effluent shall be maintained between 6.0 and 9.5, inclusive, at all times. The pH during this period was a high of 7.6 and a low of 6.3. The pH met the requirements of the Certificate of Approval in 2020.

The Certificate of Approval also requires the E-coli results to be less than 200 organisms per 100 ml and an objective of less than 150 organisms per 100 ml as a monthly geometric mean density. The effluent met the objective and limit targets with a maximum monthly geometric mean density of 49 organisms per 100 ml.

## **2. Effluent Quality Assurance or Control Measures**

The effluent sample is a 24 hour composite sampled downstream of the UV disinfection system. The influent and effluent samplers are set to collect samples at a frequency of at the least one sample per hour interval.

The operators send weekly influent and effluent samples to ALS Laboratories in Thunder Bay. The effluent samples are analyzed for carbonaceous biochemical oxygen demand, total phosphorus, ammonia, total nitrogen, and nitrates. E-coli are sampled from the effluent only. The influent samples are tested for biochemical oxygen demand, total Kjeldahl nitrogen and total phosphorus. The digester contents are analyzed on an annual basis.

Suspended solids are sampled and tested in house on both influent and effluent and total phosphorus is tested on the effluent. The plant operators perform in-house laboratory testing for several other process parameters to monitor plant performance.

## **3. Maintenance**

The operators performed required routine maintenance through the 2020 period. Additional maintenance activities conducted during the year are as follows:

### **Treatment Plant:**

- Thawed alum line
- Replaced tubing influent auto sampler
- Repaired main gate
- Replaced belt head works air handler
- Replaced UV sensor bank B
- Replaced shear pins long collector 1
- Switch issues with WAS pump 1 and Grit pump 1 were resolved by Cannect Electric
- Cannect Electric replaced the board in air valve 1
- Replaced shear pin long collector 1
- Replaced belt on sludge room air handler
- Repaired PVC line for scum hose
- Replaced shear pins long collector 1
- Replaced ruptured polymer line and cleaned polymer injection check valve X 3
- Replaced the 6V battery in the Verbatim auto dialer
- Cycled power to the repeater radio at the water plant
- Replaced pump tubing on effluent automatic sampler
- Replaced battery on Yamaha generator
- Replaced pump tubing on influent automatic sampler
- Drained and inspected both clarifiers, removed one link each longitudinal chain

- Replaced outlet for the Fournier control panel UPS
- Cleaned polymer injection check valve
- Replaced bulbs UV bank 3 and cleaned sleeves
- TOFF IT replaced 5 UPS units at the wastewater plant
- The main building garage door opener was repaired.
- Lakeside Controls performed software upgrades to the DeltaV SCADA system and replaced one workstation computer and monitors.
- Blower 3 failed December 24th and blower 2 has been running on hand since. A replacement is on order.
- Air conditioning installation in the office and lunch room complete except for wiring.

### **Pump Stations:**

- Removed grease from Boundary Road wet well
- Replaced UPS units at White Pine and Boundary Road lift stations
- Asselin Transportation vacuum trucks removed debris from the Central Avenue lift station wet well for 2 days in June.
- Reset PLC and Milltronics controller at Church Street lift station
- Replaced battery Fifth Street genset
- Replaced the power supply White Pine PLC
- Central Avenue and Fifth Street wet wells were cleaned out by Asselin Transportation Nov
- Installed a new style seal water assembly on pump 1 at White Pine lift station
- Gensets were load tested.

## **4. Operational issues**

The Town of Fort Frances has accepted 327.4 m<sup>3</sup> of untested sewage from the New Gold mine site into the collection system in January and February 2020. The operators of the wastewater plant are not aware of when the addition sewage material is added to the town collection system. Additional testing of the sewage from the New Gold mine has been requested but the results of the testing have not been provided to the Fort Frances wastewater plant operators.

A new ECA was received from the MOE on January 6 2016 allowing for the installation of the new sludge dewatering equipment. The new equipment began processing sludge on September 19 2016. Optimization of the sludge dewatering process using the new equipment has been continuing in 2020.

A Fournier press technician recommended a water heater be installed for polymer dilution water and that the sludge be tested in colder weather for SVI and filaments that could potentially impede drainage. The on-demand water heater was installed in January 2019.

Ongoing pumping issues with the LMI polymer pumps made it necessary to delay trials of alternate polymer samples. A new progressive cavity polymer pump was installed in May 2019 and totes of polymer replaced the drums. The press achieved an average moisture content of 16.6% in the processed sludge for 2020.

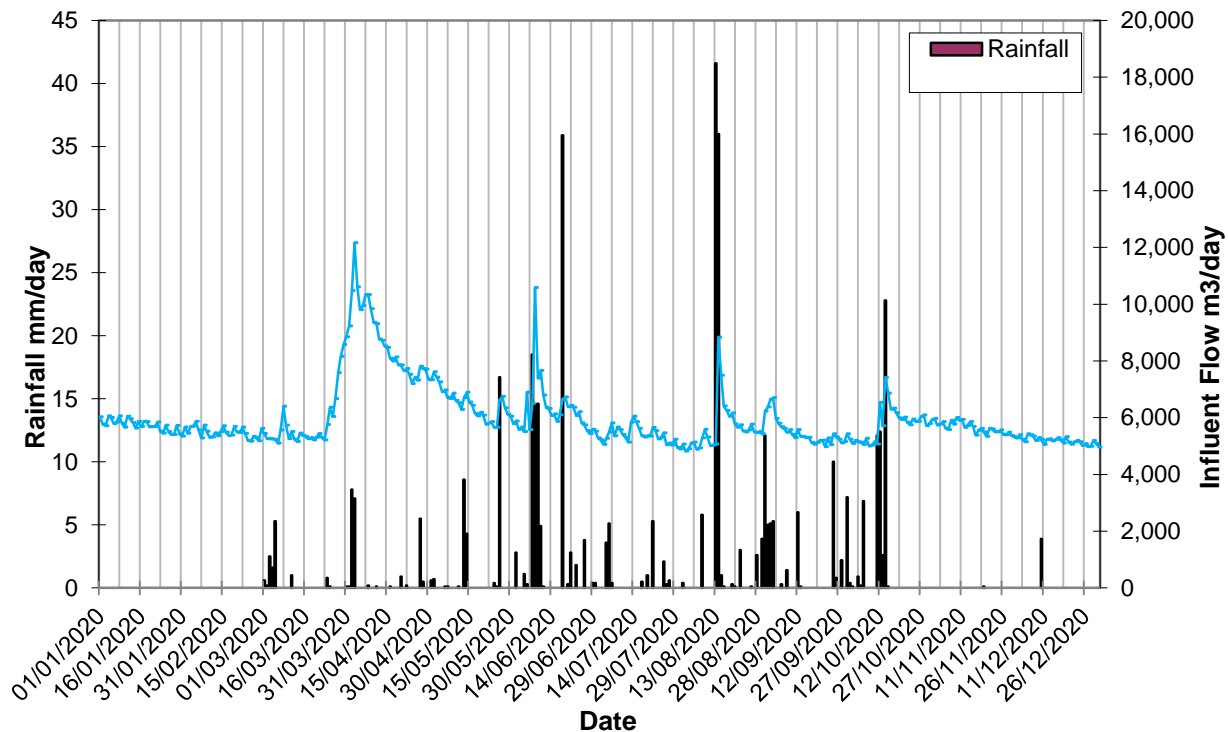
There were no reported bypasses during 2020.

There was no community complaints received during the period of this report.

A graph of the influent flows and rainfall as recorded at the Fort Frances Airport sourced from Environment Canada is included illustrating several rainfall events closely correlating to influent flow spikes. There were a number of rainfall data gaps in the Environment Canada database; these were supplemented by data from the International Falls Airport when available. The highest rainfall event occurred on July 17 2019 with a recorded rainfall amount of 44 mm. The flow at the sewage plant was 8213 m<sup>3</sup> on July 17 and 12069 m<sup>3</sup> on July 18 2019. The peak flow of 18190 m<sup>3</sup> was recorded on October 11 2019 with a rainfall of 9.7 mm. The rainfall in the town may have been higher than the recorded value as the airport is located outside of the town.

The flow to the treatment plant was above the rated capacity of 9000 m<sup>3</sup>/day for 12 days in 2020. The flow was over the rated capacity continuously for the first 11 days of April, and one day in June. The highest flow was April 3 with 12162 m<sup>3</sup>. The April flows were associated with the snow melt and moderate rainfall. The June flow was a two day rainfall event.

**Rainfall vs influent Flow 2020**





## 5. Sludge Generation and Disposal

A new Fournier Rotary Press was installed and in operation as of September 19 2016 decreasing the water content of the sludge for disposal at the landfill. The rotary press operated for 1446.9 hours in 2020.

### Sludge Volume Hauled in 2020

Month	Total Volume( m3)
January	113.2
February	108.2
March	117.1
April	149.3
May	124.4
June	131.0
July	110.5
August	89.9
September	114.8
October	105.8
November	152.5
December	123.9
<b>Total</b>	<b>1440.6</b>

There was 1440.6 m<sup>3</sup> of sludge generated and hauled in 2020 with an average of 120.05 m<sup>3</sup> per month. The sludge analytical sample results for 2020 are appended to this report.

The Town of Fort Frances installed a Fournier rotary press designed to dewater the sludge and allow for the hauled sludge to meet the MOE criteria for landfill disposal without further drying. The new equipment began processing sludge on September 19 2016. The sludge is being disposed of in the municipal landfill site.

A Fournier press technician recommended a water heater be installed for polymer dilution water and that the sludge be tested in colder weather for SVI and filaments that could potentially impede drainage. The on-demand water heater was installed in January 2019.

Ongoing pumping issues with the LMI polymer pumps made it necessary to delay trials of alternate polymer samples. A new progressive cavity polymer pump was installed in May 2019 and totes of polymer replaced the drums. The press achieved an average moisture content of 16.6% in the processed sludge for 2020.

The only anticipated potential changes to volumes of sludge hauled from the system are dependent on further optimization of the dewatering process.

## **6. Calibrations**

The owner shall maintain a continuous flow-measuring device to measure the flow rate within an accuracy of +/- 5% of actual rate of flow within the range of 10% to 100% of the full-scale reading of the measuring devices.

In 2020, calibration of the plant bypass weir was completed on July 26 2020 and effluent parshall flume was also completed on July 26 2020; results attached to this report. Both flow measuring devices passed the verification testing.

# **2020 Annual Summary Report**

2020 Fort Frances Wastewater

Month	Sewage Flows Year 2020					Usage	Calculated	Sludge	Removal Efficiency	
	Avg. Day	Max Day	Total	Total	Total	% Plant	Volume	Bins	CBOD5 0.968922715	
	Flow	Flow	Treated	ByPass	Volume	Capacity	Hauled	Hauled	Suspended Solids 0.977863182	
	m3	m3	Volume ML	Volume ML	ML		M3		Total Phosphorus 0.948726542	
January	5733.8	6060	177747		177747	64%	113.2	12		
February	5477.0	5861	158832		158832	61%	108.2	11		
March	5852.1	8845	181415		181415	65%	117.1	12		
April	8705.3	12162	261159		261159	97%	149.3	15		
May	6468.6	7612	200528		200528	72%	124.4	12		
June	6308.4	10580	189252		189252	70%	131.0	13		
July	5376.8	6039	166681		166681	60%	110.5	11		
August	5641.0	8831	174870		174870	63%	89.9	9		
September	5464.9	6696	163947		163947	61%	114.8	11		
October	5753.3	7408	178352		178352	64%	105.8	11		
November	5635.0	5997	169049		169049	63%	152.5	15		
December	5183.9	5424	160702		160702	58%	123.9	13		
Sum				0	2182534		1440.6	145		
Average	5967		181878		181878	61%	120.1	12.1		
Max		12162	261159		261159			15		
ECA	9000	18000								

Month	BOD5/CBOD5			Suspended Solids			Total Phosphorus			Nitrogen		E. Coll	pH	
	Avg. Raw	Avg. Eff.	Avg. Load	Avg. Raw	Avg. Eff.	Avg. Load	Avg. Raw	Avg. Eff.	Avg. Load	Avg. Raw	Avg. Eff.	Geo Mean	Monthly	Monthly
	BOD	CBOD	CBOD	S.S	S.S	S.S	T.P	T.P	T.P	TKN	Total N	Counts	Minimum	Maximum
	(mg/L)	(mg/L)	(kg/day)	(mg/L)	(mg/L)	(kg/day)	(mg/L)	(mg/L)	(kg/day)	(mg/L)	(mg/L)	/100ml		
January	92.6	2.9	16.4	167.8	4.9	28.2	2.59	0.14	0.82	16.2	12.5	44.6	6.3	6.6
February	112.0	9.0	15.9	163.1	5.0	27.2	3.38	0.12	0.67	16.4	13.0	22.1	6.4	7.5
March	99.2	2.6	16.2	149.8	5.3	31.4	2.68	0.11	0.68	21.9	12.4	33.1	7.0	7.6
April	69.8	2.9	24.2	106.4	5.1	45.8	1.88	0.11	0.96	14.5	10.1	49.0	7.0	7.4
May	75.8	2.2	14.2	133.1	3.9	25.2	1.90	0.10	0.63	16.2	12.3	14.1	7.0	7.3
June	79.6	2.3	13.7	154.9	3.8	23.7	1.59	0.13	0.81	17.5	12.5	15.2	6.9	7.2
July	86.3	2.1	11.5	182.9	2.6	14.1	2.34	0.11	0.61	19.3	8.1	10.0	6.9	7.1
August	82.4	2.0	11.4	186.8	2.5	14.2	2.46	0.17	0.96	17.3	6.8	11.5	6.7	7.1
September	99.3	2.0	10.6	171.5	2.1	11.6	2.61	0.17	0.96	18.4	7.4	10.0	6.7	7.1
October	90.8	2.1	11.6	163.9	2.3	13.4	2.50	0.13	0.75	19.7	7.4	15.7	6.6	7.0
November	92.6	2.0	11.3	183.0	3.3	18.4	2.89	0.16	0.91	19.1	8.6	33.8	6.6	7.1
December	123.3	2.2	11.2	188.3	2.4	12.4	3.02	0.08	0.40	19.7	8.4	10.0	6.6	7.1
Average	92.0	2.9	14.0	162.6	3.6	22.1	2.49	0.13	0.76	18.0	10.0	22.4	6.7	7.2
Max	123.3	9	24.2	188.3	5.3	45.8	3.38	0.17	0.96	21.9	13.0	49.0	7.0	7.6
ECA		25	225		25	225		1.0	9.0			200	6.0	9.5

# **Monthly Operations Summary Report**

**Fort Frances Wastewater Treatment Plant**  
**Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												Bypass Volume (m3)
Day	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (ctu/100 mL)	
01/01/2020	6,019.00			203	6,019.00	94					0.11		2.4	9.5	6.3		
02/01/2020	5,764.00	82	1.32	169	5,764.00	90	2	6.76	0.212	5.09	0.1	2	4.4	10	6.6	160	
03/01/2020	5,707.00			193	5,707.00	90					0.18		2	10	6.6		
04/01/2020	6,055.00			167	6,055.00	96					0.14		4	9.5	6.6		
05/01/2020	5,994.00			180	5,994.00	95					0.13		5.2	9	6.5		
06/01/2020	5,785.00	92	3.03	170	5,785.00	92	3.6	3.53	0.258	4.37	0.11	6.4	4	9	6.5	220	
07/01/2020	5,839.00			172	5,839.00	92					0.11		4.4	9	6.5		
08/01/2020	6,060.00			158	6,060.00	100					0.2		8.8	9	6.5		
09/01/2020	5,802.00			157	5,802.00	93					0.08		1.6	9	6.5		
10/01/2020	5,657.00			168	5,657.00	95					0.1		2	9	6.6		
11/01/2020	6,049.00			151	6,049.00	97					0.13		4.4	9	6.6		
12/01/2020	5,951.00			168	5,951.00	96					0.13		4	9	6.5		
13/01/2020	5,815.00			141	5,815.00	94					0.1		4.4	9	6.5		
14/01/2020	5,630.00			155	5,630.00	90					0.12		9.2	9	6.5		
15/01/2020	5,868.00			147	5,868.00	99					0.16		4.8	9	6.5		
16/01/2020	5,680.00	98	2.93	144	5,680.00	93	2.9	7.11	0.177	4.58	0.17	5.9	8	8.5	6.5	10	
17/01/2020	5,864.00			206	5,864.00	95					0.12		3.6	9	6.5		
18/01/2020	5,855.00			164	5,855.00	93					0.4		3.6	8.5	6.4		
19/01/2020	5,676.00			166	5,676.00	92					0.14		3.8	8.5	6.5		
20/01/2020	5,673.00			175	5,673.00	92					0.12		6.4	8.5	6.4		
21/01/2020	5,686.00	94	2.81	183	5,686.00	91	2.9	5.86	0.167	4.62	0.13	5.6	5.6	8.5	6.4	10	
22/01/2020	5,837.00			176	5,837.00	102					0.18		6.4	8.5	6.5		
23/01/2020	5,512.00			163	5,512.00	90					0.19		6.8	8.5	6.5		
24/01/2020	5,448.00			181	5,448.00	89					0.15		5.2	8.5	6.5		
25/01/2020	5,725.00			163	5,725.00	94					0.13		6	8.5	6.5		
26/01/2020	5,503.00			195	5,503.00	88					0.15		5.6	8.5	6.5		
27/01/2020	5,397.00			151	5,397.00	86					0.08		4.4	9	6.4		
28/01/2020	5,405.00	97	2.85	162	5,405.00	86	3.1	2.5	0.129	4.75	0.13	3.6	3.2	9	6.5	50	
29/01/2020	5,720.00			212	5,720.00	101					0.19		8.8	8.5	6.5		
30/01/2020	5,427.00			141	5,427.00	89					0.13		4.8	8.5	6.4		
31/01/2020	5,344.00			121	5,344.00	88					0.12		4.8	8.5	6.5		
Total	177,747.00				177,747.00												0.00
Average	5,733.77	92.60	2.59	167.81	5,733.77	92.97	2.90	5.15	0.19	4.68	0.14	4.70	4.92	8.89	6.49	44.58	0.00
Minimum	5,344.00	82.00	1.32	121.00	5,344.00	86.00	2.00	2.50	0.13	4.37	0.08	2.00	1.60	8.50	6.30	10.00	0.00
Maximum	6,060.00	98.00	3.03	212.00	6,060.00	102.00	3.60	7.11	0.26	5.09	0.40	6.40	9.20	10.00	6.60	220.00	0.00
Count	31	5	5	31	31	31	5	5	5	5	31	5	31	31	31	5	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (cfu/100 mL)	
01/02/2020	5,666.00			152	5,666.00	93					0.12		4	8.5	6.5		
02/02/2020	5,444.00			161	5,444.00	90					0.14		4.4	8.5	6.4		
03/02/2020	5,680.00			282	5,680.00	94					0.06		2.8	8.5	6.4		
04/02/2020	5,696.00	122	3.81	241	5,696.00	114	2.9	6.42	0.158	5.25	0.05	5.1	9.2	8.5	6.5	120	
05/02/2020	5,861.00			207	5,861.00	103					0.08		2.8	8	6.4		
06/02/2020	5,561.00			234	5,561.00	98					0.11		6.8	8	6.5		
07/02/2020	5,281.00			137	5,281.00	90					0.47		6	8	6.5		
08/02/2020	5,726.00			192	5,726.00	93					0.12		6	8	6.5		
09/02/2020	5,512.00			133	5,512.00	94					0.1		4.8	8	6.4		
10/02/2020	5,309.00			117	5,309.00	90					0.19		2.8	8	6.5		
11/02/2020	5,313.00	84	2.93	133	5,313.00	86	2.2	7.21	0.313	5.11	0.09	3.7	4.8	8	6.6	10	
12/02/2020	5,460.00			115	5,460.00	96					0.1		2	8	6.6		
13/02/2020	5,351.00			121	5,351.00	89					0.12		4	8	6.6		
14/02/2020	5,500.00			128	5,500.00	90					0.09		3.6	8	6.6		
15/02/2020	5,711.00			119	5,711.00	95					0.11		2.8	8	6.5		
16/02/2020	5,480.00			127	5,480.00	90					0.13		4	8	6.5		
17/02/2020	5,370.00	127	3.83	209	5,370.00	88	3.7	6.56	0.29	4.59	0.16	3.2	8	8	6.5		
18/02/2020	5,380.00			151	5,380.00	87					0.15		7.6	8	6.5	10	
19/02/2020	5,680.00			146	5,680.00	96					0.11		6.4	8	6.6		
20/02/2020	5,496.00			171	5,496.00	93					0.09		4	8	6.6		
21/02/2020	5,474.00			163	5,474.00	88					0.1		3.6	8	6.6		
22/02/2020	5,659.00			146	5,659.00	92					0.14		4.4	8	6.6		
23/02/2020	5,439.00			173	5,439.00	87					0.12		3.2	8	6.6		
24/02/2020	5,191.00			153	5,191.00	86					0.07		3.6	8	7		
25/02/2020	5,170.00	115	2.96	157	5,170.00	86	3	6.48	0.678	4.82	0.02	3.9	2.4	8	7.3	20	
26/02/2020	5,331.00			150	5,331.00	97					0.08		5.2	8	7.5		
27/02/2020	5,294.00			193	5,294.00	89					0.19		12	8	7.3		
28/02/2020	5,179.00			148	5,179.00	88					0.14		7.2	8	7.3		
29/02/2020	5,618.00			170	5,618.00	90					0.13		5.6	8	7.3		
Total	158,832.00				158,832.00												0.00
Average	5,476.97	112.00	3.38	163.07	5,476.97	92.14	2.95	6.67	0.36	4.94	0.12	3.98	4.97	8.07	6.68	22.13	0.00
Minimum	5,170.00	84.00	2.93	115.00	5,170.00	86.00	2.20	6.42	0.16	4.59	0.02	3.20	2.00	8.00	6.40	10.00	0.00
Maximum	5,861.00	127.00	3.83	282.00	5,861.00	114.00	3.70	7.21	0.68	5.25	0.47	5.10	12.00	8.50	7.50	120.00	0.00
Count	29	4	4	29	29	29	4	4	4	4	29	4	29	29	29	4	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (cfu/100 mL)	
01/03/2020	5,432.00			158	5,432.00	90					0.1		7.2	7.5	7.2		
02/03/2020	5,250.00			156	5,250.00	86					0.1		5.6	8	7.3		
03/03/2020	5,254.00	112	2.45	151	5,254.00	86	2	6.29	0.268	4.82	0.18	12.4	4.8	8	7.3	20	
04/03/2020	5,249.00			153	5,249.00	87					0.07		5.2	7.5	7.2		
05/03/2020	5,222.00			145	5,222.00	90					0.06		5.6	7.5	7.2		
06/03/2020	5,095.00			136	5,095.00	89					0.08		4.4	7.5	7.3		
07/03/2020	5,563.00			156	5,563.00	90					0.06		3.6	7.5	7.3		
08/03/2020	6,390.00			144	6,390.00	106					0.09		6	7.5	7.2		
09/03/2020	5,724.00	98	2.49	157	5,724.00	99	2	5.46	0.247	4.36	0.08	4	4	7.5	7.2		
10/03/2020	5,250.00			122	5,250.00	88					0.14		4.8	8	7.2	100	
11/03/2020	5,508.00			140	5,508.00	98					0.16		6.8	8	7.3		
12/03/2020	5,234.00			193	5,234.00	87					0.12		7.6	7.5	7.2		
13/03/2020	5,151.00			135	5,151.00	84					0.07		5.6	7.5	7.2		
14/03/2020	5,450.00			169	5,450.00	91					0.12		7.6	7.5	7		
15/03/2020	5,368.00			169	5,368.00	90					0.11		5.6	7.5	7.1		
16/03/2020	5,338.00			147	5,338.00	86					0.1		5.2	7.5	7.1		
17/03/2020	5,250.00	90	3.1	221	5,250.00	96	2.1	6.08	0.287	5.17	0.08	6.9	4.8	7.5	7	10	
18/03/2020	5,289.00			131	5,289.00	89					0.18		4.4	7.5	7.1		
19/03/2020	5,215.00			143	5,215.00	87					0.07		4	7.5	7.3		
20/03/2020	5,295.00			154	5,295.00	89					0.08		2.8	7.5	7		
21/03/2020	5,436.00			154	5,436.00	93					0.24		5.2	7.5	7.1		
22/03/2020	5,290.00			139	5,290.00	89					0.11		4	7.5	7.1		
23/03/2020	5,207.00			210	5,207.00	88					0.08		5.6	7.5	7.4		
24/03/2020	5,750.00	118		159	5,750.00	97	3.7	8.46	0.359	3.16	0.12	5.7	1.6	7.5	7.4	10	
25/03/2020	6,356.00			99	6,356.00	97					0.14		5.6	7.5	7.4		
26/03/2020	6,029.00			131	6,029.00	95					0.11		4	7.5	7.2		
27/03/2020	6,663.00			145	6,663.00	122					0.09		3.6	7.5	7.3		
28/03/2020	7,580.00			126	7,580.00	110					0.13		4.8	7.5	7.3		
29/03/2020	8,157.00			152	8,157.00	137					0.14		5.2	7.5	7.3		
30/03/2020	8,575.00	78		138	8,575.00	123	3.1	4.99	1.05	2.8	0.11	5.5	5.6	7	7.2		
31/03/2020	8,845.00			112	8,845.00	126					0.22		12	7	7.6	200	
Total	181,415.00				181,415.00												0.00
Average	5,852.10	99.20	2.68	149.84	5,852.10	96.29	2.58	6.26	0.44	4.06	0.11	6.90	5.25	7.53	7.23	33.14	0.00
Minimum	5,095.00	78.00	2.45	99.00	5,095.00	84.00	2.00	4.99	0.25	2.80	0.06	4.00	1.60	7.00	7.00	10.00	0.00
Maximum	8,845.00	118.00	3.10	221.00	8,845.00	137.00	3.70	8.46	1.05	5.17	0.24	12.40	12.00	8.00	7.60	200.00	0.00
Count	31	5	3	31	31	31	5	5	5	5	31	5	31	31	31	5	0



**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (cfu/100 mL)	
01/04/2020	9,227.00			96	9,227.00	125					0.18		10	7	7.4		
02/04/2020	10,481.00			86	10,481.00	155					0.16		10.4	7	7.1		
03/04/2020	12,162.00			74	12,162.00	170					0.15		7.6	7	7.2		
04/04/2020	10,600.00			78	10,600.00	145					0.16		7.2	7	7.3		
05/04/2020	9,801.00			90	9,801.00	135					0.17		7.6	7	7.3		
06/04/2020	9,944.00	45	1.11	70	9,944.00	135	3.1	2.1	0.629	4.47	0.15	7.3	10	7	7.3	60	
07/04/2020	10,329.00			97	10,329.00	138					0.08		3.6	7	7.4		
08/04/2020	10,330.00			101	10,330.00	139					0.11		4	7	7.3		
09/04/2020	9,829.00			89	9,829.00	135					0.1		4.8	7	7.3		
10/04/2020	9,352.00			96	9,352.00	130					0.08		2.4	7	7.3		
11/04/2020	9,300.00			91	9,300.00	131					0.09		3.6	7	7.4		
12/04/2020	8,765.00			103	8,765.00	124					0.14		5.6	7	7.4		
13/04/2020	8,719.00			185	8,719.00	126					0.07		2.8	7	7.2		
14/04/2020	8,520.00	84	2.71		8,520.00	121	2.4	4.62	0.669	3.02	0.05	3.2	3.6	7	7.1	20	
15/04/2020	8,468.00			116	8,468.00	131					0.14		6.4	7	7.2		
16/04/2020	8,090.00			119	8,090.00	119					0.09		4.4	7	7.3		
17/04/2020	7,995.00			113	7,995.00	117					0.11		4.4	7	7.2		
18/04/2020	8,135.00			85	8,135.00	148					0.14		8.4	7	7		
19/04/2020	7,857.00			111	7,857.00	116					0.08		5.2	7	7.1		
20/04/2020	7,848.00			117	7,848.00	113					0.12		5.2	7	7.1		
21/04/2020	7,650.00	66	1.67	118	7,650.00	113	3.5	4.44	0.546	4.61	0.08	5.2	2.4	7	7.1	40	
22/04/2020	7,729.00			121	7,729.00	112					0.1		4.4	7	7		
23/04/2020	7,523.00			99	7,523.00	110					0.07		3.6	7	7		
24/04/2020	7,197.00			106	7,197.00	106					0.11		5.2	7	7.1		
25/04/2020	7,406.00			132	7,406.00	112					0.08		2	7.5	7.1		
26/04/2020	7,318.00			107	7,318.00	108					0.06		2.8	7.5	7		
27/04/2020	7,809.00			118	7,809.00	115					0.07		2.4	7.5	7		
28/04/2020	7,724.00	84	2.03	118	7,724.00	113	2.4	4.15	0.479	3.82	0.18	2.4	4.4	7.5	7.2	120	
29/04/2020	7,702.00			144	7,702.00	113					0.05		6.4	7.5	7.1		
30/04/2020	7,349.00			104	7,349.00	108					0.07		2	7.5	7.1		
Total	261,159.00				261,159.00												0.00
Average	8,705.30	69.75	1.88	106.34	8,705.30	125.43	2.85	3.83	0.58	3.98	0.11	4.53	5.09	7.09	7.19	48.99	0.00
Minimum	7,197.00	45.00	1.11	70.00	7,197.00	106.00	2.40	2.10	0.48	3.02	0.05	2.40	2.00	7.00	7.00	20.00	0.00
Maximum	12,162.00	84.00	2.71	185.00	12,162.00	170.00	3.50	4.62	0.67	4.61	0.18	7.30	10.40	7.50	7.40	120.00	0.00
Count	30	4	4	29	30	30	4	4	4	4	30	4	30	29	30	4	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent											E. Coli. (cfu/100 mL)	Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH		
01/05/2020	7,328.00			97	7,328.00	107					0.09		3.2	7.5	7.1		
02/05/2020	7,612.00			153	7,612.00	116					0.12		6.8	7.5	7		
03/05/2020	7,425.00			107	7,425.00	108					0.08		4.4	7.5	7.1		
04/05/2020	7,247.00			107	7,247.00	108					0.06		2.8	7.5	7.1		
05/05/2020	6,911.00	61	1.55	135	6,911.00	101	2.6	4.62	0.837	4.64	0.1	4.4	5.6	7.5	7.1	40	
06/05/2020	6,974.00			121	6,974.00	103					0.08		4	7.5	7.1		
07/05/2020	6,706.00			98	6,706.00	103					0.11		4.8	7.5	7.2		
08/05/2020	6,667.00			126	6,667.00	103					0.09		3.6	7.5	7.2		
09/05/2020	6,851.00			112	6,851.00	104					0.13		5.2	7.5	7.2		
10/05/2020	6,592.00			149	6,592.00	105					0.07		2.4	8	7.1		
11/05/2020	6,520.00			132	6,520.00	100					0.04		1.6	8	7.1		
12/05/2020	6,282.00	68	1.93	118	6,282.00	97	2.1	6.64	0.606	4.69	0.06	2	2	8.5	7.1	10	
13/05/2020	6,701.00			126	6,701.00	99					0.13		5.6	8.5	7.2		
14/05/2020	6,885.00			125	6,885.00	104					0.08		3.2	8.5	7.1		
15/05/2020	6,541.00			127	6,541.00	102					0.08		3.6	8.5	7		
16/05/2020	6,428.00			120	6,428.00	100					0.1		2.4	8.5	7.1		
17/05/2020	6,150.00			120	6,150.00	93					0.09		3.6	8.5	7.1		
18/05/2020	6,058.00			142	6,058.00	91					0.07		3.6	8.5	7.3		
19/05/2020	6,184.00	79	1.91	150	6,184.00	97	2	4.38	0.338	5.22	0.18	2	2	9	7	10	
20/05/2020	6,083.00			150	6,083.00	98					0.1		3.2	8.5	7		
21/05/2020	5,766.00			163	5,766.00	96					0.12		2.8	9	7		
22/05/2020	5,807.00			142	5,807.00	89					0.09		3.6	9	7		
23/05/2020	5,850.00			156	5,850.00	90					0.13		4	9.5	7.2		
24/05/2020	5,652.00			184	5,652.00	88					0.09		2	9.5	7.2		
25/05/2020	5,652.00			167	5,652.00	88					0.07		1.6	10	7.1		
26/05/2020	6,618.00	95	2.21	171	6,618.00	106	2	6.22	0.255	5.45	0.1	2.3	7.6	10	7	10	
27/05/2020	6,748.00			125	6,748.00	111					0.12		5.2	10	7.1		
28/05/2020	6,342.00			123	6,342.00	97					0.11		2	10	7		
29/05/2020	6,114.00			136	6,114.00	96					0.09		5.6	10	7.1		
30/05/2020	6,048.00			116	6,048.00	96					0.12		4.8	10.5	7.1		
31/05/2020	5,786.00			129	5,786.00	90					0.1		6.8	10.5	7		
Total	200,528.00				200,528.00												0.00
Average	6,468.65	75.75	1.90	133.13	6,468.65	99.55	2.18	5.47	0.51	5.00	0.10	2.68	3.86	8.66	7.10	14.14	0.00
Minimum	5,652.00	61.00	1.55	97.00	5,652.00	88.00	2.00	4.38	0.26	4.64	0.04	2.00	1.60	7.50	7.00	10.00	0.00
Maximum	7,612.00	95.00	2.21	184.00	7,612.00	116.00	2.60	6.64	0.84	5.45	0.18	4.40	7.60	10.50	7.30	40.00	0.00
Count	31	4	4	31	31	31	4	4	4	4	31	4	31	31	31	4	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												E. Coli. (cfu/100 mL)	Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH			
01/06/2020	5,879.00	62	1.86	132	5,879.00	95	2	5.55	0.327	6.45	0.09	3	1.6	10.5	6.9	20		
02/06/2020	5,584.00			141	5,584.00	88					0.07		1.2	10.5	7			
03/06/2020	5,658.00			146	5,658.00	94					0.05		2.4	10.5	7			
04/06/2020	5,503.00			136	5,503.00	89					0.07		3.6	10.5	7			
05/06/2020	6,891.00			153	6,891.00	87					0.09		3.2	10.5	7.1	10		
06/06/2020	5,570.00			165	5,570.00	90					0.06		2.4	10.5	7.1			
07/06/2020	6,495.00	101	0.03	207	6,495.00	124	2.6	2.2	0.01	0.02	0.08	4.6	2.8	11	7			
08/06/2020	10,580.00			135	10,580.00	126					0.06		2.4	11	7			
09/06/2020	7,392.00			140	7,392.00	109					0.1		2.4	11.5	7.2	10		
10/06/2020	7,660.00			168	7,660.00	116					0.16		6.8	11.5	7.1			
11/06/2020	6,794.00			86	6,794.00	101					0.12		8	11.5	7.2			
12/06/2020	6,354.00			136	6,354.00	98					0.11		4	11.5	7			
13/06/2020	6,315.00			146	6,315.00	101					0.13		4.4	11.5	7.1	10		
14/06/2020	6,069.00			122	6,069.00	96					0.09		1.6	12	7			
15/06/2020	6,123.00			157	6,123.00	99					0.27		3.6	12	7.1			
16/06/2020	5,861.00	78	2	146	5,861.00	92	2	4.31	0.49	6.24	0.14	3	2	12	7.1			
17/06/2020	6,092.00			180	6,092.00	101					0.17		1.6	12	7.1	10		
18/06/2020	6,647.00			166	6,647.00	104					0.12		3.6	12.5	7			
19/06/2020	6,718.00			173	6,718.00	103					0.19		4	12.5	7			
20/06/2020	6,386.00			201	6,386.00	96					0.11		3.2	12.5	7.1			
21/06/2020	6,427.00			167	6,427.00	97					0.11		1.2	13	7.1	10		
22/06/2020	6,361.00	85	2.02	182	6,361.00	97	2.7	2.68	0.36	7.06	0.13	5.2	6	13	7			
23/06/2020	6,069.00			182	6,069.00	99					0.14		6.8	13	7.1			
24/06/2020	6,197.00			152	6,197.00	100					0.31		7.6	13	7.2			
25/06/2020	5,811.00			152	5,811.00	95					0.2		6.4	13	7.1	40		
26/06/2020	5,736.00			147	5,736.00	94					0.16		6	13	7.1			
27/06/2020	5,540.00			139	5,540.00	89					0.15		3.2	13.5	7.1			
28/06/2020	5,434.00			153	5,434.00	86					0.14		3.6	13.5	7			
29/06/2020	5,586.00	72	2.03	159	5,586.00	91	2	2.02	1.09	7.55	0.14	5.2	2.4	13.5	6.9	40		
30/06/2020	5,520.00			177	5,520.00	94					0.13		4.4	14	7			
Total	189,252.00				189,252.00											0.00		
Average	6,308.40	79.60	1.59	154.87	6,308.40	98.37	2.26	3.35	0.46	5.46	0.13	4.20	3.75	12.02	7.06	15.16	0.00	
Minimum	5,434.00	62.00	0.03	86.00	5,434.00	86.00	2.00	2.02	0.01	0.02	0.05	3.00	1.20	10.50	6.90	10.00	0.00	
Maximum	10,580.00	101.00	2.03	207.00	10,580.00	126.00	2.70	5.55	1.09	7.55	0.31	5.20	8.00	14.00	7.20	40.00	0.00	
Count	30	5	5	30	30	30	5	5	5	5	30	5	30	30	30	5	0	

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (cfu/100 mL)	Bypass Volume (m3)
01/07/2020	5,282.00			162	5,282.00	87					0.11		3.6	14	7.1	10	178.9
02/07/2020	5,208.00			146	5,208.00	87					0.13		4.4	14	7.1		
03/07/2020	5,056.00			195	5,056.00	84					0.08		3.2	14	7		
04/07/2020	5,264.00			183	5,264.00	85					0.12		4	14	7		
05/07/2020	5,484.00			182	5,484.00	98					0.07		1.2	14.5	7.1		
06/07/2020	5,813.00	82	2.35	163	5,813.00	102	2	0.177	0.079	7.44	0.09	3	2.4	0.09	7.1		
07/07/2020	5,353.00			230	5,353.00	86					0.13			15	7		
08/07/2020	5,660.00			260	5,660.00	98					0.12		3.6	15	7		
09/07/2020	5,576.00			172	5,576.00	92					0.16		3.2	15	7		
10/07/2020	5,403.00			185	5,403.00	90					0.11		2.8	15	6.9		
11/07/2020	5,300.00			166	5,300.00	89					0.09		2.4	14.5	6.9		
12/07/2020	5,136.00			209	5,136.00	86					0.07		2	15	7		
13/07/2020	5,826.00	64	2.06	249	5,826.00	113	2.3	0.102	0.074	7.64	0.1	3	3.2	15	6.9	10	
14/07/2020	6,039.00			211	6,039.00	97					0.08		1.2	15	7		
15/07/2020	5,848.00			203	5,848.00	94					0.11		2	15	7		
16/07/2020	5,617.00			196	5,617.00	89					0.07		2.4	15	6.9		
17/07/2020	5,361.00			183	5,361.00	90					0.09		3.2	15	7		
18/07/2020	5,316.00			174	5,316.00	93					0.12		4	15.5	7		
19/07/2020	5,352.00			152	5,352.00	89					0.1		3.2	15.5	6.9		
20/07/2020	5,349.00	93	2.39	180	5,349.00	87	2	0.07	0.048	6.37	0.07	3	2	15.5	6.9	10	
21/07/2020	5,649.00			167	5,649.00	96					0.1		2.4	15.5	7.1		
22/07/2020	5,540.00			145	5,540.00	95					0.1		2.8	15.5	6.8		
23/07/2020	5,247.00			148	5,247.00	89					0.15		2	15.5	6.9		
24/07/2020	5,302.00			165	5,302.00	89					0.16		1.6	15.5	7		
25/07/2020	5,459.00			102	5,459.00	90					0.15		2.4	16	6.9		
26/07/2020	5,046.00			172	5,046.00	100					0.22		1.2	16	7		
27/07/2020	5,102.00	106	2.57	202	5,102.00	86	2	0.047	0.027	5.48	0.16	3	1.2	16	6.9	10	
28/07/2020	5,024.00			189	5,024.00	85					0.13		3.2	16	6.9		
29/07/2020	5,233.00			206	5,233.00	88					0.09		2.4	16	7		
30/07/2020	4,944.00			191	4,944.00	86					0.14		2	16	7		
31/07/2020	4,892.00			182	4,892.00	81					0.11		3.6	16	6.9		
Total	166,681.00				166,681.00												178.90
Average	5,376.81	86.25	2.34	182.90	5,376.81	91.00	2.08	0.10	0.06	6.73	0.11	3.00	2.63	14.70	6.97	10.00	0.00
Minimum	4,892.00	64.00	2.06	102.00	4,892.00	81.00	2.00	0.05	0.03	5.48	0.07	3.00	1.20	0.09	6.80	10.00	178.90
Maximum	6,039.00	106.00	2.57	260.00	6,039.00	113.00	2.30	0.18	0.08	7.64	0.22	3.00	4.40	16.00	7.10	10.00	178.90
Count	31	4	4	31	31	31	4	4	4	4	31	4	30	31	31	4	1

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent											E. Coli. (cfu/100 mL)	Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH		
01/08/2020	5,061.00			216	5,061.00	87					0.11		3.2	16.5	7		
02/08/2020	4,817.00			193	4,817.00	81					0.09		2.8	16.5	7.1		
03/08/2020	4,893.00			182	4,893.00	83					0.07		1.6	16.5	7.1		
04/08/2020	5,095.00	90	2.77	173	5,095.00	83	2	0.037	0.032	5.17	0.1	3.3	2	17	7.1	10	
05/08/2020	5,132.00			203	5,132.00	90					0.26		4.8	16.5	6.9		
06/08/2020	4,883.00			203	4,883.00	81					0.18		2.4	16.5	6.9		
07/08/2020	4,928.00			188	4,928.00	81					0.26		2	16.5	6.8		
08/08/2020	5,275.00			216	5,275.00	91					0.23		3.2	16.5	6.7		
09/08/2020	5,580.00			170	5,580.00	96					0.24		2.4	16.5	6.9		
10/08/2020	5,311.00	79	2.2	200	5,311.00	88	2	0.125	0.053	5.66	0.21	3	2.8	16.5	6.9	10	
11/08/2020	5,018.00			187	5,018.00	86					0.19		4	16.5	7		
12/08/2020	5,028.00			192	5,028.00	90					0.22		3.6	16.5	6.9		
13/08/2020	5,059.00			339	5,059.00	88					0.27		2.4	16.5	6.9		
14/08/2020	8,831.00			230	8,831.00	164					0.21		2	16.5	7		
15/08/2020	7,486.00			206	7,486.00	122					0.19		3.6	16.5	6.9		
16/08/2020	6,401.00			187	6,401.00	96					0.22		3.2	17	6.9		
17/08/2020	6,253.00	83	2.22	193	6,253.00	105	2	0.036	0.05	3.99	0.24	3	2.8	17	7	10	
18/08/2020	6,044.00			152	6,044.00	96					0.11		2.8	17	7.1		
19/08/2020	6,153.00			167	6,153.00	101					0.17		3.2	17	6.8		
20/08/2020	5,770.00			147	5,770.00	94					0.12		2	17.5	7		
21/08/2020	5,659.00			151	5,659.00	89					0.16		1.2	17.5	7		
22/08/2020	5,736.00			154	5,736.00	89					0.16		2.4	17.5	6.8		
23/08/2020	5,528.00			130	5,528.00	88					0.14		1.6	17.5	7.1		
24/08/2020	5,496.00	67	2.28	152	5,496.00	94	2	0.051	0.047	4.6	0.12	3	0.08	17.5	7	20	
25/08/2020	5,554.00			171	5,554.00	89					0.1		1.2	17.5	7.1		
26/08/2020	5,763.00			182	5,763.00	90					0.12		1.6	17.5	7.1		
27/08/2020	5,497.00			177	5,497.00	93					0.11		2.8	17.5	7.1		
28/08/2020	5,464.00			173	5,464.00	91					0.14		3.6	17.5	7		
29/08/2020	5,505.00			192	5,505.00	90					0.16		4	17.5	7		
30/08/2020	5,423.00			172	5,423.00	91					0.18		1.6	17.5	7.1		
31/08/2020	6,227.00	93	2.83	192	6,227.00	111	2	0.063	0.068	4.54	0.16	3	1.6	17.5	7.1	10	
Total	174,870.00				174,870.00												0.00
Average	5,640.97	82.40	2.46	186.77	5,640.97	94.13	2.00	0.06	0.05	4.79	0.17	3.06	2.53	16.97	6.98	11.49	0.00
Minimum	4,817.00	67.00	2.20	130.00	4,817.00	81.00	2.00	0.04	0.03	3.99	0.07	3.00	0.08	16.50	6.70	10.00	0.00
Maximum	8,831.00	93.00	2.83	339.00	8,831.00	164.00	2.00	0.13	0.07	5.66	0.27	3.30	4.80	17.50	7.10	20.00	0.00
Count	31	5	5	31	31	31	5	5	5	5	31	5	31	31	31	5	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (cfu/100 mL)	Bypass Volume (m3)
01/09/2020	6,366.00			157	6,366.00	114					0.19		1.2	17.5	7.1		
02/09/2020	6,647.00			155	6,647.00	103					0.23		3.6	17.5	6.8		
03/09/2020	6,696.00			231	6,696.00	103					0.16		2.4	17	6.9		
04/09/2020	5,962.00			147	5,962.00	97					0.16		1.6	17	6.9		
05/09/2020	5,794.00			184	5,794.00	97					0.23		2	17	6.8		
06/09/2020	5,672.00			164	5,672.00	92					0.22		1.2	17	7		
07/09/2020	5,615.00			150	5,615.00	93					0.22		1.2	17	7		
08/09/2020	5,477.00	93	2.34	159	5,477.00	96	2	0.085	0.085	4.49	0.19	3	4.4	17	6.8	10	
09/09/2020	5,569.00			158	5,569.00	92					0.24		2.8	17	6.9		
10/09/2020	5,404.00			163	5,404.00	95					0.21		4	17	6.9		
11/09/2020	5,286.00			170	5,286.00	92					0.18		2	17	7		
12/09/2020	5,573.00			166	5,573.00	91					0.22		3.6	17	7		
13/09/2020	5,336.00			195	5,336.00	89					0.23		2.8	17	6.9		
14/09/2020	5,324.00	119	3.06	166	5,324.00	90	2	0.069	0.1	5.33	0.16	3	1.6	17	7.1	10	
15/09/2020	5,300.00			174	5,300.00	90					0.19		3.6	17	7.1		
16/09/2020	5,300.00			177	5,300.00	90					0.17		1.6	17	6.9		
17/09/2020	5,121.00			163	5,121.00	95					0.18		2	17	7		
18/09/2020	5,062.00			160	5,062.00	85					0.12		2.4	17	7		
19/09/2020	5,124.00			149	5,124.00	89					0.1		2	16.5	7		
20/09/2020	5,188.00			172	5,188.00	87					0.14		1.6	17	6.8		
21/09/2020	5,200.00	90	2.64	154	5,200.00	92	2	0.063	0.069	5.42	0.21	3	1.2	17	6.7	10	
22/09/2020	4,970.00			149	4,970.00	88					0.12		0.8	17	6.9		
23/09/2020	5,277.00			156	5,277.00	90					0.11		1.2	17	6.9		
24/09/2020	5,036.00			207	5,036.00	86					0.13		1.2	17	6.7		
25/09/2020	5,419.00			193	5,419.00	98					0.09		1.6	17	6.9		
26/09/2020	5,312.00			190	5,312.00	101					0.14		2.8	17	6.9		
27/09/2020	5,238.00			170	5,238.00	89					0.16		1.2	17	6.9		
28/09/2020	5,103.00	95	2.39	190	5,103.00	90	2	0.143	0.068	4.82	0.11	3	2.8	16.5	6.8	10	
29/09/2020	5,151.00			187	5,151.00	97					0.27		1.6	16.5	6.9		
30/09/2020	5,425.00			190	5,425.00	90					0.14		1.2	16.5	6.8		
Total	163,947.00				163,947.00												0.00
Average	5,464.90	99.25	2.61	171.53	5,464.90	93.37	2.00	0.09	0.08	5.02	0.17	3.00	2.11	16.97	6.91	10.00	0.00
Minimum	4,970.00	90.00	2.34	147.00	4,970.00	85.00	2.00	0.06	0.07	4.49	0.09	3.00	0.80	16.50	6.70	10.00	0.00
Maximum	6,696.00	119.00	3.06	231.00	6,696.00	114.00	2.00	0.14	0.10	5.42	0.27	3.00	4.40	17.50	7.10	10.00	0.00
Count	30	4	4	30	30	30	4	4	4	4	30	4	30	30	30	4	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent											E. Coli. (cfu/100 mL)	Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH		
01/10/2020	5,236.00			217	5,236.00	90					0.07		0.8	16.5	6.7		
02/10/2020	5,087.00			170	5,087.00	84					0.12		2	16.5	6.7		
03/10/2020	5,185.00			164	5,185.00	89					0.14		2.8	16.5	6.6		
04/10/2020	5,143.00			186	5,143.00	86					0.12		2.4	16.5	6.9		
05/10/2020	5,127.00	104	2.49	190	5,127.00	88	2	0.174	0.062	5.28	0.1	3.3	2	16.5	6.7	10	
06/10/2020	5,052.00			170	5,052.00	86					0.08		1.2	16.5	6.9		
07/10/2020	5,270.00			183	5,270.00	93					0.11		1.6	16.5	6.9		
08/10/2020	5,001.00			176	5,001.00	89					0.13		2	16.5	7		
09/10/2020	5,026.00			164	5,026.00	85					0.1		1.2	16.5	7		
10/10/2020	5,144.00			181	5,144.00	86					0.08		2	16.5	6.9		
11/10/2020	5,066.00			203	5,066.00	86					0.12		2.4	16	7		
12/10/2020	6,526.00			244	6,526.00	101					0.1		0.8	16	7		
13/10/2020	5,704.00	95	2.45	152	5,704.00	96	2	0.308	0.089	4.17	0.09	3	1.6	16	6.8	20	
14/10/2020	7,408.00			147	7,408.00	126					0.24		5.2	15.5	6.7		
15/10/2020	6,862.00			119	6,862.00	102					0.18		1.2	15.5	6.9		
16/10/2020	6,293.00			136	6,293.00	99					0.16		2.8	15	6.7		
17/10/2020	6,330.00			194	6,330.00	103					0.17		2.8	15	6.8		
18/10/2020	6,165.00			178	6,165.00	96					0.16		1.6	15	6.9		
19/10/2020	5,984.00	64	2.39	151	5,984.00	99	2.2	0.163	0.076	5.47	0.11	3	2.8	15	6.8	30	
20/10/2020	5,928.00			42	5,928.00	99					0.11		1.2	15	6.8		
21/10/2020	6,016.00			162	6,016.00	97					0.13		1.6	15	6.8		
22/10/2020	5,832.00			141	5,832.00	95					0.1		3.6	15	7		
23/10/2020	5,744.00			164	5,744.00	90					0.08		3.2	14.5	7		
24/10/2020	5,947.00			172	5,947.00	95					0.06		1.2	14.5	6.9		
25/10/2020	5,865.00			208	5,865.00	94					0.12		2	14.5	6.9		
26/10/2020	5,869.00	100	2.66	148	5,869.00	98	2	0.276	0.112	6.19	0.15	3	1.2	14.5	7	10	
27/10/2020	6,033.00			173	6,033.00	97					0.17		6	14	6.8		
28/10/2020	6,093.00			127	6,093.00	97					0.23		5.6	14	6.8		
29/10/2020	5,712.00			137	5,712.00	89					0.15		2	14	6.9		
30/10/2020	5,782.00			128	5,782.00	93					0.12		2.4	14	7		
31/10/2020	5,922.00			155	5,922.00	104					0.18		1.6	13.5	6.8		
Total	178,352.00				178,352.00												0.00
Average	5,753.29	90.75	2.50	163.94	5,753.29	94.58	2.05	0.23	0.08	5.28	0.13	3.08	2.28	15.37	6.86	15.65	0.00
Minimum	5,001.00	64.00	2.39	42.00	5,001.00	84.00	2.00	0.16	0.06	4.17	0.06	3.00	0.80	13.50	6.60	10.00	0.00
Maximum	7,408.00	104.00	2.66	244.00	7,408.00	126.00	2.20	0.31	0.11	6.19	0.24	3.30	6.00	16.50	7.00	30.00	0.00
Count	31	4	4	31	31	31	4	4	4	4	31	4	31	31	31	4	0

**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent												Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH	E. Coli. (cfu/100 mL)	
01/11/2020	5,961.00			175	5,961.00	93					0.19		4	13.5	7		
02/11/2020	5,736.00	90	3.59	176	5,736.00	97	2	0.148	0.085	6.71	0.33	3	4.8	14	6.9	10	
03/11/2020	5,775.00			192	5,775.00	95					0.15		3.2	14	7		
04/11/2020	5,851.00			184	5,851.00	96					0.17		4	14	7		
05/11/2020	5,622.00			193	5,622.00	90					0.13		0.8	14	6.9		
06/11/2020	5,573.00			198	5,573.00	87					0.15		1.6	13.5	7		
07/11/2020	5,893.00			181	5,893.00	96					0.16		3.6	13.5	7		
08/11/2020	5,768.00			226	5,768.00	94					0.21		2	13.5	6.9		
09/11/2020	5,997.00	82	2.71	199	5,997.00	98	2	0.345	0.145	5.62	0.19	3	4	13.5	6.9	370	
10/11/2020	5,909.00			155	5,909.00	100					0.23		1.6	13.5	7		
11/11/2020	5,934.00			175	5,934.00	96					0.2		4.4	13	6.8		
12/11/2020	5,652.00			151	5,652.00	90					0.16		2	13	6.7		
13/11/2020	5,722.00			237	5,722.00	93					0.16		3.2	13	7		
14/11/2020	5,858.00			165	5,858.00	96					0.17		4.4	13	6.9		
15/11/2020	5,687.00			149	5,687.00	91					0.12		3.2	13	6.8		
16/11/2020	5,383.00	78	2.33	165	5,383.00	93	2	0.359	0.119	6.5	0.14	3	3.2	13	7.1	60	
17/11/2020	5,551.00			160	5,551.00	96					0.12		4.8	13	6.8		
18/11/2020	5,616.00			171	5,616.00	93					0.15		3.6	13	6.8		
19/11/2020	5,487.00			214	5,487.00	94					0.11		1.2	13	6.7		
20/11/2020	5,335.00			196	5,335.00	86					0.13		3.2	13	6.8		
21/11/2020	5,614.00			183	5,614.00	101					0.15		4	12.5	6.8		
22/11/2020	5,598.00			190	5,598.00	93					0.17		4.4	12.5	6.7		
23/11/2020	5,503.00	108	2.43	147	5,503.00	92	2.1	0.695	0.123	5.85	0.14	3	2.4	12.5	6.8	10	
24/11/2020	5,496.00			267	5,496.00	91					0.16		3.6	12.5	7		
25/11/2020	5,558.00			169	5,558.00	89					0.18		4.8	12.5	6.7		
26/11/2020	5,412.00			172	5,412.00	85					0.12		4.4	12.5	6.6		
27/11/2020	5,388.00			155	5,388.00	86					0.16		4	12.5	6.8		
28/11/2020	5,478.00			173	5,478.00	93					0.12		1.6	12.5	7		
29/11/2020	5,373.00			179	5,373.00	87					0.13		4	12.5	6.7		
30/11/2020	5,319.00	105	3.37	193	5,319.00	90	2	0.451	0.098	6.29	0.1	3.3	2	12.5	7	20	
Total	169,049.00				169,049.00												0.00
Average	5,634.97	92.60	2.89	183.00	5,634.97	92.70	2.02	0.40	0.11	6.19	0.16	3.06	3.27	13.07	6.87	33.84	0.00
Minimum	5,319.00	78.00	2.33	147.00	5,319.00	85.00	2.00	0.15	0.09	5.62	0.10	3.00	0.80	12.50	6.60	10.00	0.00
Maximum	5,997.00	108.00	3.59	267.00	5,997.00	101.00	2.10	0.70	0.15	6.71	0.33	3.30	4.80	14.00	7.10	370.00	0.00
Count	30	5	5	30	30	30	5	5	5	5	30	5	30	30	30	5	0



**Fort Frances Wastewater Treatment Plant  
Monthly Operations Summary**

2020	Raw Sewage				Final Effluent											E. Coli. (cfu/100 mL)	Bypass Volume (m3)
	Raw Flow: Sum (m3/d)	BOD5 (mg/L)	Total Phosphorus (mg/L)	SS (mg/L) IH	Final Eff. Flow: Sum (m3/d)	Final Eff. Flow: Max. (L/s)	CBOD5 (mg/L)	NH3 + NH4 as N (mg/L)	Nitrite - N (mg/L)	Nitrate-N(mg/L)	Total Phosphorus (mg/L)	Suspended Solids (mg/L)	SS (mg/L) IH	Temperature (C)	pH		
01/12/2020	5,278.00			193	5,278.00	88					0.1		1.6	12.5	6.7		
02/12/2020	5,388.00			186	5,388.00	90					0.12		2	12.5	6.7		
03/12/2020	5,238.00			196	5,238.00	88					0.1		2.8	12.5	6.6		
04/12/2020	5,146.00			182	5,146.00	82					0.13		3.6	12.5	6.6		
05/12/2020	5,424.00			175	5,424.00	93					0.09		1.6	12.5	6.6		
06/12/2020	5,386.00			191	5,386.00	87					0.14		2.8	12	6.7		
07/12/2020	5,345.00	131	3.45	219	5,345.00	91	2	1.66	0.278	4.16	0.11	4.8	1.6	12	6.7	10	
08/12/2020	5,182.00			186	5,182.00	88					0.11		5.2	12	6.9		
09/12/2020	5,289.00			181	5,289.00	91					0.12		3.6	12	6.8		
10/12/2020	5,220.00			181	5,220.00	85					0.11		2	12	6.8		
11/12/2020	5,049.00			174	5,049.00	83					0.11		2.8	11.5	6.8		
12/12/2020	5,232.00			169	5,232.00	93					0.1		2	11.5	6.7		
13/12/2020	5,243.00			179	5,243.00	85					0.08		1.6	11	7		
14/12/2020	5,180.00	92	2.72	206	5,180.00	86	2	0.634	0.121	6.4	0.08	4	2	11	7	10	
15/12/2020	5,219.00			171	5,219.00	93					0.05		1.6	11	6.9		
16/12/2020	5,285.00			170	5,285.00	89					0.05		3.2	11	6.9		
17/12/2020	5,210.00			192	5,210.00	87					0.02		2.4	11	7		
18/12/2020	5,100.00			187	5,100.00	87					0.04		2.8	11	7		
19/12/2020	5,325.00			177	5,325.00	92					0.06		3.2	10.5	7		
20/12/2020	5,135.00			260	5,135.00	86					0.06		2.4	10.5	7.1		
21/12/2020	5,062.00	135	3.41	257	5,062.00	88	2	0.687	0.168	6.21	0.11	3.1	6	11	7	10	
22/12/2020	5,142.00			162	5,142.00	89					0.06		1.6	10.5	6.7		
23/12/2020	5,186.00			160	5,186.00	85					0.11		3.2	10.5	6.7		
24/12/2020	5,143.00			200	5,143.00	87					0.06		1.2	10.5	6.7		
25/12/2020	5,018.00			153	5,018.00	83					0.04		1.2	10.5	6.8		
26/12/2020	5,077.00			173	5,077.00	89					0.03		2.8	10	6.7		
27/12/2020	4,970.00			216	4,970.00	84					0.05		2	10	6.9		
28/12/2020	4,985.00	135	2.49	226	4,985.00	84	2.7	0.868	0.151	6.09	0.03	4.2	1.2	10	6.8	10	
29/12/2020	5,190.00			189	5,190.00	86					0.05		1.2	10	6.6		
30/12/2020	5,088.00			157	5,088.00	84					0.01		1.2	10	6.7		
31/12/2020	4,967.00			168	4,967.00	84					0.03		1.6	10	6.7		
Total	160,702.00				160,702.00												0.00
Average	5,183.94	123.25	3.02	188.26	5,183.94	87.32	2.18	0.96	0.18	5.72	0.08	4.03	2.39	11.15	6.80	10.00	0.00
Minimum	4,967.00	92.00	2.49	153.00	4,967.00	82.00	2.00	0.63	0.12	4.16	0.01	3.10	1.20	10.00	6.60	10.00	0.00
Maximum	5,424.00	135.00	3.45	260.00	5,424.00	93.00	2.70	1.66	0.28	6.40	0.14	4.80	6.00	12.50	7.10	10.00	0.00
Count	31	4	4	31	31	31	4	4	4	4	31	4	31	31	31	4	0

# **Biosolids Quality Report**

**From:** 01/01/2020 to 31/12/2020

**Facility Classification:** Class 3 Wastewater Treatment

[illegible]

## **Flow Meter Calibrations**

# Instrument Verification Report

Ontario Clean Water Agency, 200 McIlrvine Road, Fort Frances, ON

**Test Date:** July 26, 2020

**Device:** Miltronics OCM III 25C TS-2, Identifier # 120296126 HM

**For:** Plant Final Effluent flow as measured using a 12 inch Parshal flume

**Table 1: Verification Data for Miltronics OCM and Final Effluent Parshal Flume**

Measured Effluent Head (mm)	Indicated flow on OCM (L/s)	Calculated flow (L/s)	Percent error
195	55.8	56.7	1.6
260	82.6	89.3	-7.7
300	103.0	109.2	-5.7
395	162.7	165.9	-1.9
460	208.7	209.2	0.2

**Notes:** For the Parshal Flume: Flow rate,  $Q \text{ (ft}^3/\text{s)} = 3.95 * (\text{Head} / ((12) * (25.4)))^{1.522}$

Flow rate,  $Q \text{ (L/s)} = Q \text{ (ft}^3/\text{s)} * 28.31 \text{ (L/ft}^3)$

## Summary:

The error in indicated values for final effluent flow rate is within the range of +/- 10%.

The alarm condition for flow in excess of UV capability operated at 208 L/sec.



Geoff Pearce

July 26, 2020

O&M Team Lead

Ontario Clean Water Agency

# Instrument Verification Report

Ontario Clean Water Agency, 200 McIlrvine Road, Fort Frances, ON

**Test Date:** July 26, 2020

**Device:** Miltronics Multiranger Plus XPS 10, Identifier 04-235-96-432 MU

**For:** Plant influent Bypass Overflow Level, as measured in Manhole #8

## Detail:

- 1) Influent water level of 1.945 m was simulated with a fixture in manhole #8.  
The bypass warning alarm (high level) was activated.
- 2) Influent water level of 1.960 m was simulated with a fixture in manhole #8.  
The bypass high-high alarm was activated and a bypass flow value 10 L/sec was indicated.

## Summary:

The DeltaV alarms response for bypass high level and bypass high-high level were tested and they both functioned as required.



Geoff Pearce

July 26, 2020

Ontario Clean Water Agency

Fort Frances, Ontario