



Township of  
**SEVERN**

Wastewater Treatment and Collection System

# **Washago**

# **2020 Annual Report**

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## Executive Summary

Washago utilizes a dual-cell facultative lagoon system for sewage treatment. The effluent quality is monitored before, during and after treatment to verify compliance with the Ministry of the Environment, Conservation and Parks (MECP) Certificate of Approval (C of A). Only Cell No. 1 is equipped to discharge into the Green River. Cell No. 2 is used for the retention of incoming sewage while Cell No. 1 is for discharging. River samples are taken before and during discharge to monitor the effects of the discharge on water quality.

Cell No. 1 was discharged in the spring and the fall of 2020. The mean concentrations and total loadings of all parameters were below their respective C of A compliance limits.

There was no impact on the quality of the Green River due to the spring and fall discharges. The total volume of effluent discharged was 58,556 m<sup>3</sup> - approximately 72% of the facility's operating capacity of 81,900 m<sup>3</sup>/year.

No bypass occurred during the 2020 operating year.

## Introduction

Washago is situated approximately 20 km north of Orillia near the intersection of Highway No. 11 and County Road No. 169. The lagoon is located approximately 1.5 km north west of the village core. Treated effluent from the facility is discharged to the Green River.

## Facility Technical Information

The lagoon is operated under C of A No. 3-1081-83-006. A copy of the C of A is enclosed in Appendix A.

The lagoon consists of two cells operated in series. Sewage is pumped from the main pumping station in Washago into Cell No. 2. Sewage then flows into Cell No. 1 through a valved transfer pipe located in the berm separating the cells.

Storage and treatment of raw sewage are provided in Cell No. 2 during the treatment of Cell No.1. Cell No. 1 discharges to the Green River via an outfall that

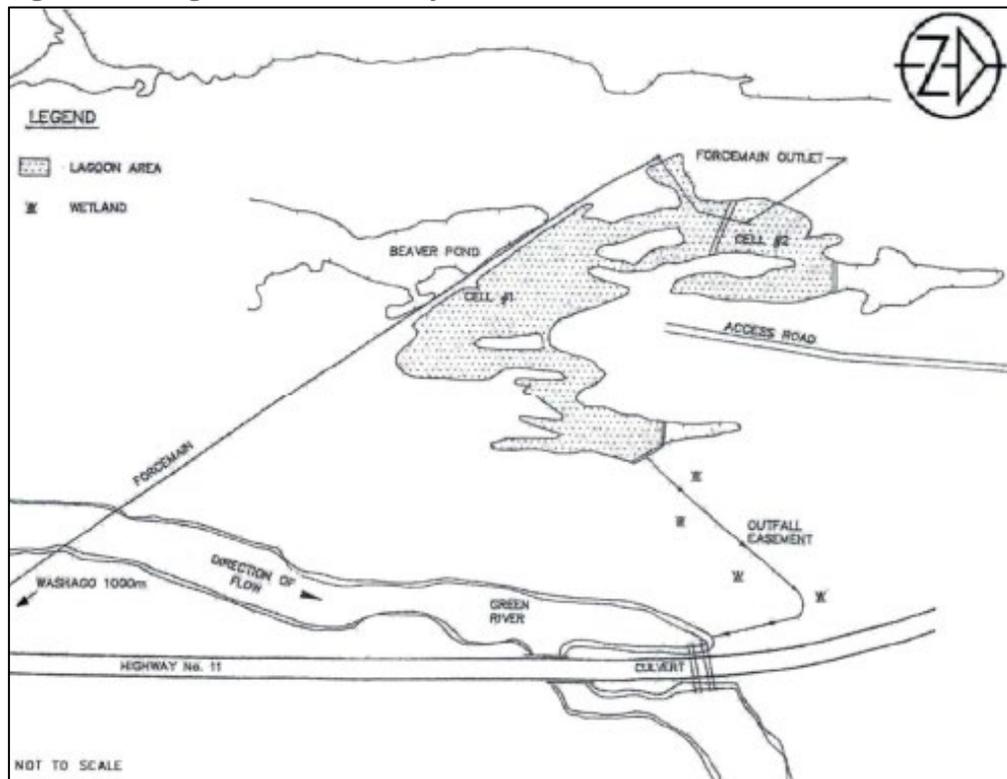
runs through the adjacent wetland. According to the C of A, the seasonal operating capacity of the facility is 40,950 m<sup>3</sup> based on an average day flow of 227.5 m<sup>3</sup>/day over 180 days. A breakdown of the lagoon capacity is shown in Table 1.

Table 1: Lagoon Capacity

	Dead Storage (m <sup>3</sup> )	Active Storage below 0.6 m Freeboard (m <sup>3</sup> )	Active Storage including Freeboard (m <sup>3</sup> )	Total Storage (m <sup>3</sup> )
Cell No. 1	1,700	38,150	63,880	65,580
Cell No. 2	55	6,195	12,745	12,800
Total	1755	44,345	76,625	78,380

The configuration of the lagoon and outfall easement are shown on Figure 1.

Figure 1: Sewage Treatment Facility Site Plan



## Performance Criteria

The C of A objective and compliance limits for effluent quality and the waste loading limits are summarized in Table 2.

Table 2: Performance Criteria

Parameter	Objective Limits		Compliance Limits	
	Concentration (mg/L)	Semi-Annual Loading (kg)	Concentration (mg/L)	Semi-Annual Loading (kg)
BOD <sub>5</sub>	15	614	25	1,024
TSS	20	815	25	1,024
P <sub>t</sub>	1	41	1	41

## Monitoring and Treatment Protocol

Raw sewage samples were collected from Washago Sewage Pumping Station #1 on a monthly basis and analyzed for TSS, BOD<sub>5</sub>, P<sub>t</sub> and TKN. Results of the analysis are shown on the Municipality Monitoring Program Mechanical Plants forms enclosed in Appendix B and summarized in Table 3.

## Raw Sewage Monitoring

Table 3: Raw Sewage Monitoring Results

<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub></b>	<b>TKN (mg/L)</b>
January 8, 2020	97	230	4.78	58.9
February 12, 2020	132	264	4.30	44.7
March 5, 2020	142	181	3.51	35.9
April 8, 2020	217	226	2.49	27.7
May 6, 2020	103	135	3.69	42.4
June 3, 2020	124	136	2.62	28.1
July 7, 2020	177	210	4.95	45.4
August 11, 2020	114	181	4.12	43.0
September 9, 2020	114	66	2.85	35.6
October 5, 2020	144	130	5.89	54.5
November 11, 2020	64	159	2.24	25.0
December 9, 2020	226	264	3.97	42.6
Mean Concentration	138	182	3.78	40.3

## Sewage Flow Monitoring

The volume of sewage pumped from Washago Sewage Pumping Station #1 to the lagoon is estimated on a monthly basis by multiplying the elapsed run time of each pump in the station by the capacity of the pump. Draw down tests are completed by Township staff in the spring and the fall to confirm pump capacity. Draw down test calculations are enclosed in Appendix C. Raw sewage flows are shown on the Municipality Monitoring Program Mechanical Plants forms enclosed in Appendix B.

Based on the influent volumes reported in the Municipal Utility Monitoring Report, the total estimated volume of sewage transferred to the lagoon during the October 14, 2019 to April 3, 2020 winter operating season was 16,388 m<sup>3</sup>. The total estimated volume of sewage transferred to the lagoon during the April 4, 2020 to November 9, 2020 summer operating season was 17,278 m<sup>3</sup>. The total volume of

sewage transferred to the lagoon during the winter and summer operating seasons was 33, 666 m<sup>3</sup>. Sewage flows are summarized in Table 4.

Table 4: Sewage Flow to Lagoon

Winter Operating Season		Summer Operating Season	
Date	Volume (m <sup>3</sup> )	Date	Volume (m <sup>3</sup> )
October 14-31, 2019	1,921	April 4-30, 2020	3,186
November 2019	2,792	May 2020	1,798
December 2019	1,741	June 2020	4,507
January 2020	2,773	July 2020	1,374
February 2020	1,650	August 2020	1,360
March 2020	5,157	September 2020	2,292
April 1-3, 2020	354	October 2020	2,140
		November 1-9, 2020	621
Sub-Total	16,388	Sub-Total	17,278
Total Volume - Summer and Winter Operating Season (m <sup>3</sup> )			33,666

## Treatment and Sampling Protocol

Final treatment of the sewage begins by isolating Cell No. 1 for a period of approximately 30 days. depending on operational constraints. During this period, all sewage received at the lagoon is retained in Cell No. 2. To ensure adequate storage volume in Cell No. 2 during the treatment period, the operator transfers as much of the volume of Cell No. 2 to Cell No. 1 by pump.

During the treatment period, composite samples are collected to determine the quality of the effluent. If the effluent quality is below the C of A compliance limits, the cell is discharged without further treatment. If treatment is required, it is accomplished by batch chemical treatment with liquid aluminum sulphate (alum). Alum is added to the lagoon contents to initiate precipitation of the suspended matter. Although the treatment is essentially to reduce P<sub>t</sub> levels, a significant reduction of BOD<sub>5</sub> and TSS is also achieved. The volume of alum required to treat



the cell is calculated based on jar test results to determine the optimum alum concentration and the estimated gross volume of liquid in the cell. The formulae for calculating the required volume of alum are presented in Appendix D. The stage-storage curves used to estimate the gross volume of liquid in the cells are presented in Appendix E. The addition of liquid alum is carried out using the procedure outlined and recommended by the MECP in a technical report issued January 16, 1974.

Pre and post-treatment samples are obtained from representative locations in Cell No. 1 and analyzed for BOD<sub>5</sub>, P<sub>t</sub>, TSS, pH, TA, TKN and Alkalinity. Discharge samples are collected from the downstream end of the Cell No. 1 discharge pipe and analyzed for the same parameters.

Grab samples are obtained from the Green River, upstream and downstream of the lagoon discharge point to monitor impacts of the discharge on the river. Samples are analyzed for BOD<sub>5</sub>, P<sub>t</sub>, TSS, pH, TA, TKN and Alkalinity.

Laboratory analysis reports for effluent and river samples are enclosed in Appendix F.

## Treatment / Discharge

### Spring Discharge

Three pre-discharge samples were taken from Cell No.1 for the spring discharge and three more during discharge to confirm effluent quality. The concentrations of P<sub>t</sub>, TSS and BOD<sub>5</sub> reported in the pre-discharge samples were below the compliance limit. Based on the results of the pre-discharge samples, the discharge of Cell No. 1 commenced without batch chemical treatment. Results of the analysis are outlined in Table 5.

Table 5: Pre-Discharge Sampling – Spring Discharge

	<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub> (mg/L)</b>	<b>TA (mg/L)</b>
Sample 1	April 9, 2020	12	15	0.17	14.6
Sample 2	April 16, 2020	16	18	0.09	3.8
Sample 3	April 21, 2020	19	17	0.05	2.9
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A

The spring discharge commenced on May 13, 2020. The total volume of effluent discharged was 23, 666 m<sup>3</sup> at a mean discharge rate of 1,127 m<sup>3</sup>/day. During the discharge, the mean concentrations of TSS, BOD<sub>5</sub> and P<sub>t</sub> were below compliance limits. A summary of the effluent quality and waste loadings is illustrated in Table 6.

Table 6: Effluent Discharge Summary – Spring Discharge

	<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub> (mg/L)</b>	<b>TA (mg/L)</b>
Start Discharge	May 13, 2020	3	<4	0.11	2.9
Mid Discharge	May 19, 2020	3	<4	0.16	2.9
End Discharge	June 2, 2020	5	<4	0.35	3.0
Mean Concentration		3.7	<4	0.21	2.9
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A
Effluent Waste loading		88	95	4.97	69

Samples were obtained from the Green River, upstream and downstream of the lagoon discharge point, at the start, middle and end of the discharge. Results of the analysis are illustrated in Table 7. Analysis of the receiving stream samples showed no impact on the Green River due to the discharge of Cell No.1.

Table 7: Green River Monitoring – Spring Discharge

	<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub> (mg/L)</b>	<b>TA (mg/L)</b>
Start Discharge	May 13, 2020				
Upstream		2	<4	<0.03	<0.1
Downstream		2	<4	<0.03	<0.1
Mid Discharge	May 19, 2020				
Upstream		<2	<4	<0.03	<0.1
Downstream		2	<4	<0.03	<0.1
End Discharge	June 2, 2020				
Upstream		<2	7	0.03	<0.1
Downstream		<2	<4	<0.03	<0.1

## Fall Discharge

Three pre-discharge samples were taken from Cell No. 1 to confirm effluent quality prior to the fall discharge. All parameters were below the C of A compliance limits. Based on these results, the discharge of Cell No. 1 commenced without batch chemical treatment. Results of the analysis are illustrated in Table 8.

Table 8: Pre-Discharge Sampling – Fall Discharge

	<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub> (mg/L)</b>	<b>TA (mg/L)</b>
Sample 1	Nov 16, 2020	<2	5	0.20	4.8
Sample 2	Nov 24, 2020	2	4	0.21	5.0
Sample 3	Nov 30, 2020	5	4	0.19	5.3
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A

The discharge of Cell No. 1 commenced December 14, 2020. The total volume of effluent discharged was 34,890 m<sup>3</sup> at a mean discharge rate of 5,815 m<sup>3</sup>/day. During the discharge, the mean concentrations of TSS, BOD<sub>5</sub> and P<sub>t</sub> were below compliance limits. A summary of the effluent quality and waste loadings is illustrated in Table 9.

Table 9: Effluent Discharge Summary – Fall Discharge

	<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub> (mg/L)</b>	<b>TA (mg/L)</b>
Start Discharge	Dec 14, 2020	<2	<4	0.17	4.5
Mid Discharge	Dec 17, 2020	3	4	0.21	6.2
End Discharge	Dec 21, 2020	10	10	0.35	13.6
Mean Concentration		5.0	6.0	0.24	8.1
C of A Objective		20	15	1	N/A
C of A Compliance		25	25	1	N/A
Effluent Waste loading		175	209	8.4	283

Samples were obtained from the Green River, upstream and downstream of the lagoon discharge point, at the start, middle and end of the discharge. Analysis of the receiving stream samples showed no impact on the Green River due to the discharge of Cell No. 1. Results of the analysis are illustrated in Table 10.

Table 10: Green River Monitoring – Fall Discharge

	<b>Date</b>	<b>TSS (mg/L)</b>	<b>BOD<sub>5</sub> (mg/L)</b>	<b>P<sub>t</sub> (mg/L)</b>	<b>TA (mg/L)</b>
Start Discharge	Dec 14, 2020				
Upstream		<2	<4	<0.03	<0.01
Downstream		<2	<4	<0.03	<0.01
Mid Discharge	Dec 17, 2020				
Upstream		<2	<4	<0.03	<0.01
Downstream		10	<4	<0.03	<0.01
End Discharge	Dec 21, 2020				
Upstream		2	<4	<0.03	<0.01
Downstream		<2	<4	<0.03	<0.01

## Efforts and Results in Meeting Effluent Objectives of Certificate of Approval

The lagoon is operated and maintained such that all effluent quality objectives are strived for. Objectives and limits are based on an average.

The BOD objective on the pre-discharge sampling on the spring discharge exceeded the objective of 15 mg/L. The average BOD for the spring discharge was 16.7mg/L.

## 2020 Operating Year Summary

The volumes of influent received, and effluent discharged from the lagoon during the 2020 operating year are summarized in Table 11. The total volume of sewage received plus the net precipitation during the 2020 operating year was 58,556 m<sup>3</sup>. A total effluent volume of 58,556 m<sup>3</sup> was discharged from the lagoon.

Table 11: Influent and Discharge Volume Summary

Total Influent Volume Sewage	33,666 m <sup>3</sup>
Total Effluent Discharged	58,556 m <sup>3</sup>
Approx. Precipitation Volume	24,890 m <sup>3</sup>

The waste loadings during the 2020 operating year are summarized in Table 12.

Table 12: Waste Loading Summary

	<b>Spring 2020 (kg)</b>	<b>Fall 2020 (kg)</b>	<b>Total Loading (kg)</b>
TSS	88	175	263
BOD5	95	209	304
Pt	4.97	8.4	13.37
TA	69	283	352

## Conclusions and Recommendations

The performance of the Washago Sewage Treatment Works during the 2020 operating year satisfied all requirements of the Certificate of Approval. To ensure that the seasonal operating capacity of the lagoon is not exceeded, the spring and fall discharges should continue to be scheduled as early in the spring and as late in the fall as practical to reduce the length of the winter operating season, when the volume of precipitation accumulation is the greatest and the rate of evaporation is the lowest.

# Appendix A

Certificate of Approval



### Certificate of Approval (Sewage)

Whereas ..... TOWNSHIP OF ORILLIA .....

Xf

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:- the construction of a 4.77 ha two celled seasonal discharge waste stabilization pond to be located approximately 1700 m north and northwest of Hamilton Street - Washago (Part of Lots 10 and 11, Concession XV, Township of Orillia) in a natural rock basin and including an influent structure; four (4) berms; inter-connecting piping; and outfall structure and all necessary appurtenances (Total effective storage volume at 1.5 m effective liquid depth = 47,800 m<sup>3</sup>; BOD loading rate = 8.11 kg/ha/d) with effluent discharge via an existing natural drainage coarse to the Severn River,

all in accordance with the final plans prepared by Reid and Associates Limited, Consulting Engineers, at a total estimated cost, including land charges, engineering and contingencies, of ONE HUNDRED THOUSAND DOLLARS (\$100,000.00), subject to the following special terms and conditions which are considered necessary by the undersigned.

SPECIAL TERMS AND CONDITIONS:

(1) The Township will notify homeowners along the Severn River, in the area immediately east of the Highway No. 11 bridge, prior to the discharge of the waste stabilization pond effluent.

(2) TYPE OF SAMPLE

Grab Sample

a) The waste stabilization pond shall be operated in such a manner and with such facilities as to maintain the following objectives in terms of effluent concentrations and waste loadings:

<u>Effluent Parameter</u>	<u>Effluent Concentration</u>	<u>Effluent Waste Loading</u>
BOD <sub>5</sub>	15 mg/L	614 kg
Suspended Solids	20 mg/L	815 kg
Total Phosphorus	1.0 mg/L	41 kg

.../2

**Now therefore** this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of November 1983

- Attn:-Mr. J.B. Mather, Clerk, Twp. of Orillia
- cc:-Mr. G. Mierzynski, MOE C, Reg. Dir.
- Reid and Associates Limited
- Mr. W.A.S. Marshall, Project Supervisor
- Mr. J. Toth, Value Engineering
- Mr. C.W. Brink, Value Engineering



## Certificate of Approval (Sewage)

### Whereas

- 2 -

of

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-  
Special Terms and Conditions Cont'd.

- b) Non-compliance is deemed to occur when any of the following effluent concentrations and/or waste loadings is exceeded based on the analytical results of the sampling programme described in paragraph 2c).

<u>Effluent Parameter</u>	<u>Effluent Concentration</u>	<u>Effluent Waste Loading</u>
BOD <sub>5</sub>	25 mg/L	1024 kg
Suspended Solids	25 mg/L	1024 kg
Total Phosphorus	1 mg/L	41 kg

NOTE:

The foregoing effluent waste loading objectives and effluent waste loading non-compliance values are based upon an average daily inflow to the waste stabilization pond of 227.5 m<sup>3</sup>/d over 180 days and represent the total load discharged to the receiving stream over the discharge period.

- c) The minimum sampling programme to be followed in assessing non-compliance of the BOD<sub>5</sub>, Suspended Solids and Total Phosphorus effluent parameters is as follows:

The waste stabilization pond must be sampled after treatment prior to discharge for checking compliance against the critical parameter (i.e. Total Phosphorus) as noted in Condition 2b).

The waste stabilization pond must be sampled for the effluent parameters noted in Condition 2a) once during discharge and on the final day of discharge.

- d) Non-compliance with respect to effluent concentrations is considered to occur when the arithmetic mean of either BOD<sub>5</sub>, SS or phosphorus concentration of samples collected during the discharge period exceeds the corresponding value as stated in Condition 2b above.

.../3

**Now therefore** this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of November 19 83

  
 Director

# Certificate of Approval (Sewage)

## Whereas

- 3 -

of

has applied in accordance with Section 24 of the Ontario Water Resources Act for approval of:-

### Special Terms and Conditions Cont'd.

- e) Non-compliance with respect to effluent waste loadings is considered to occur when the arithmetic mean of either BOD<sub>5</sub>, suspended solids or phosphorus concentration of samples collected during the discharge period incorporated with the total flow over the discharge period exceeds the corresponding value as stated in Condition 2b above.

#### NOTE:

The total flow referred to above shall be the total flow registered by the magnetic flow meter at the Main Sewage Pumping Station between the end of one discharge period and the end of the next discharge period.

- f) Procedures related to the sampling programme shall be in accordance with the attached Appendix A.
- (3) A routine sampling and analysis programme shall be implemented and maintained in accordance with the following:

#### SAMPLE LOCATIONS

- Raw Sewage (Main Sewage Pumping Station Wet Well)
- Final Effluent (Waste Stabilization Pond)

#### ANALYSIS SAMPLING PARAMETERS

- BOD<sub>5</sub>
- Suspended Solids
- Total Phosphorus
- Ammonia plus ammonia nitrogen (effluent stream only)

#### SAMPLING FREQUENCY

Raw Sewage - minimum one (1) grab sample per month  
Final Effluent - as per Condition 2c above.

**Now therefore** this is to certify that after due enquiry the said proposed works have been approved under Section 24 of the Ontario Water Resources Act.

DATED AT TORONTO this 18th day of November 1983

an



Director

# Appendix B

Municipality Monitoring Program Mechanical Plants Forms

Project Name

Washago Lagoon

Mailing Address

Unit No.

Street No.

Street Name

PO Box

1024
Hurlwood Lane
159

Municipality/City/Town

Orillia

Province

ON

Postal Code

L3V 6J3

Operating Authority

The Corporation of the Township of Severn

Mailing Address

Unit No.

Street No.

Street Name

PO Box

1024
Hurlwood Lane
159

Municipality/City/Town

Orillia

Province

ON

Postal Code

L3V 6J3

File No.	Works Number								Data Period		Days		Discharge Type		Update Code	
4 6	1	2	0	0	0	2	2	7	3	0	1	20	3	1	2	R
1 2	3								11	16		19	20	21	22	80

C.P.	
3	5

**FLOWS**

 12 13 Total Flow  
 Average Daily Flow  
 Maximum Daily Flow

 (10<sup>3</sup>m<sup>3</sup>)  
 (10<sup>3</sup>m<sup>3</sup>/d)  
 (10<sup>3</sup>m<sup>3</sup>/d)

Parameter Code				
5	0	0	1	0
5	0	0	1	5
5	0	0	2	0
30			34	

 Dec  
 3  
 3  
 3

Monthly Results								
				2	.	7	7	3
				0	.	0	9	0
				N	A	.		
38								46

3	5
---	---

**BYPASS**

 12 13 Plant Bypass Volume  
 Duration

 (10<sup>3</sup>m<sup>3</sup>)  
 (hrs)

5	0	2	7	0
8	1	6	8	0
30			34	

 3  
 1

				.			
				.			
38							

No. of Occurrences			

3	6
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**RAW SEWAGE**

 12 13 BOD<sub>5</sub>  
 Suspended Solids  
 TKN  
 Total Phosphorus

 (mg/L)  
 (mg/L)  
 (mg/L)  
 (mg/L)

0	0	0	0	1
0	0	0	0	6
0	0	0	2	0
0	0	0	3	3
30			34	

 0  
 0  
 2  
 1

		2	3	0	.		
		9	7	.			
		5	8	.	9		
		4	.	8			
38							

No. of Samples			
1			
1			
1			
1			
48			51

3	9
---	---

**FINAL EFFLUENT**

 Total Effl. Volume To Watercourse  
 Flow Duration  
 Cell Depth  
 BOD<sub>5</sub>  
 Suspended Solids  
 Ammonia + Ammonium  
 TKN  
 Total Phosphorus

 (10<sup>3</sup>m<sup>3</sup>)  
 (hrs)  
 (m)  
 (mg/L)  
 (mg/L)  
 (mg/L)  
 (mg/L)  
 (mg/L)

5	0	2	8	0
8	1	6	8	0
5	0	2	9	0
0	0	0	0	1
0	0	0	0	6
0	0	0	1	9
0	0	0	2	0
0	0	0	3	3
30			34	

 3  
 1  
 1  
 1  
 1  
 2  
 2  
 2

				.			
				.			
				.			
				.			
				.			
				.			
				.			
				.			
38							

48			51

0	9
---	---

**DISINFECTION**

 Chlorine Used  
 Chlorine Dosage  
 Chlorine Residual

 (kg as Cl<sub>2</sub>)  
 (mg/L as Cl<sub>2</sub>)  
 (mg/L as Cl<sub>2</sub>)

5	0	3	2	0
8	0	4	1	0
8	0	4	2	0
30			34	

 1  
 1  
 1

				.			
				.			
				.			
38							

48			51

Operator Telephone Number

705-325-2315

Email Address

utilities@townshipofsevern.com

Comments

**Return completed form to:**

- Environmental Monitoring and Reporting Branch, MOE, at [WasteWaterReporting@Ontario.ca](mailto:WasteWaterReporting@Ontario.ca) AND
- Your Environmental Officer at your local District/Area MOE Office. (Find your local MOE office: <http://www.ene.gov.on.ca/environment>)



Project Name

Washago Lagoon

Mailing Address

Unit No.	Street No.	Street Name	PO Box
	1024	Hurlwood Lane	159

Municipality/City/Town

Orillia	Province	Postal Code
	ON	L3V 6J3

Operating Authority

The Corporation of the Township of Severn

Mailing Address

Unit No.	Street No.	Street Name	PO Box
	1024	Hurlwood Lane	159

Municipality/City/Town

Orillia	Province	Postal Code
	ON	L3V 6J3

File No.	Works Number	Data Period	Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month: 0 2    Year: 20	2 9	2	R
1 2	3 11	16 19	20 21	22	80

C.P.	<b>3 5</b>	<b>FLOWES</b>		Parameter Code	Dec	Monthly Results	
12 13		Total Flow	(10 <sup>3</sup> m <sup>3</sup> )	5 0 0 1 0	3	1 . 6 5 0	
		Average Daily Flow	(10 <sup>3</sup> m <sup>3</sup> /d)	5 0 0 1 5	3	0 . 0 6 0	
		Maximum Daily Flow	(10 <sup>3</sup> m <sup>3</sup> /d)	5 0 0 2 0	3	N A . . . .	
				30 34	35	38 46	

<b>3 5</b>	<b>BYPASS</b>		(10 <sup>3</sup> m <sup>3</sup> )	5 0 2 7 0	3	. . . . .	No. of Occurrences
12 13	Plant Bypass Volume	(hrs)		8 1 6 8 0	1	. . . . .	
	Duration			30 34	35	38	48 51

<b>3 6</b>	<b>RAW SEWAGE</b>		(mg/L)	0 0 0 0 1	0	2 6 4 . .	No. of Samples
12 13	BOD <sub>5</sub>	(mg/L)		0 0 0 0 6	0	1 3 2 . .	1
	Suspended Solids	(mg/L)		0 0 0 2 0	2	4 4 . 7	1
	TKN	(mg/L)		0 0 0 3 3	1	4 . 3	1
	Total Phosphorus	(mg/L)		30 34	35	38	48 51

<b>3 9</b>	<b>FINAL EFFLUENT</b>		(10 <sup>3</sup> m <sup>3</sup> )	5 0 2 8 0	3	. . . . .	
	Total Effl. Volume To Watercourse	(hrs)		8 1 6 8 0	1	. . . . .	
	Flow Duration	(m)		5 0 2 9 0	1	. . . . .	
	Cell Depth	(mg/L)		0 0 0 0 1	1	. . . . .	
	BOD <sub>5</sub>	(mg/L)		0 0 0 0 6	1	. . . . .	
	Suspended Solids	(mg/L)		0 0 0 1 9	2	. . . . .	
	Ammonia + Ammonium	(mg/L)		0 0 0 2 0	2	. . . . .	
	TKN	(mg/L)		0 0 0 3 3	2	. . . . .	
	Total Phosphorous			30 34	35	38	48 51

<b>0 9</b>	<b>DISINFECTION</b>		(kg as Cl <sub>2</sub> )	5 0 3 2 0	1	. . . . .	
12 13	Chlorine Used	(mg/L as Cl <sub>2</sub> )		8 0 4 1 0	1	. . . . .	
	Chlorine Dosage	(mg/L as Cl <sub>2</sub> )		8 0 4 2 0	1	. . . . .	
	Chlorine Residual			30 34	35	38	48 51

Operator Telephone Number	Email Address
705-325-2315	utilities@townshipofsevern.com

Comments

**Return completed form to:**

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- Your Environmental Officer at your local District/Area MOE Office. (Find your local MOE office: <http://www.ene.gov.on.ca/environment>)

Project Name

[Washago Lagoon](#)

Mailing Address

Unit No.

Street No.

Street Name

PO Box

1024

[Hurlwood Lane](#)

159

Municipality/City/Town

[Orillia](#)

Province

ON

Postal Code

[L3V 6J3](#)

Operating Authority

[The Corporation of the Township of Severn](#)

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File No.		Works Number									Data Period		Days		Discharge Type		Update Code	
4	6	1	2	0	0	0	2	2	7	3	0	2	20	2	9	2	R	
1	2	3								11	16		19	20	21	22	80	

C.P.		RAW SEWAGE					Dec	Monthly Average Results								No. of Samples			
3	6	Parameter	Unit	Parameter Code				38											
12	13																		

C.P.		FINAL EFFLUENT					Dec	Monthly Average Results								No. of Samples			
3	9	Parameter	Unit	Parameter Code				38											
12	13	Unionized Ammon	mg/L																
		Alkalinity	mg/L																
		pH																	

Operator Telephone Number	Email Address
705-325-2135	utilities@townshipofsevern.com

Comments

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L3V 6J3

File No.	Works Number								Data Period		Days	Discharge Type	Update Code		
4 6	1	2	0	0	0	2	2	7	3	Month	Year	3 1	2	R	
1 2	3								11	16	19	20	21	22	80

C.P.
3 5

**FLOWS**

 12 13 Total Flow  
Average Daily Flow  
Maximum Daily Flow

 (10<sup>3</sup>m<sup>3</sup>)  
(10<sup>3</sup>m<sup>3</sup>/d)  
(10<sup>3</sup>m<sup>3</sup>/d)

Parameter Code				
5	0	0	1	0
5	0	0	1	5
5	0	0	2	0
30			34	

 Dec  
3  
3  
3

Monthly Results				
				5 . 1 5 7
				0 . 1 6 6
				N A . . . .
38				46

3 5
-----

**BYPASS**

 12 13 Plant Bypass Volume  
Duration

 (10<sup>3</sup>m<sup>3</sup>)  
(hrs)

5	0	2	7	0
8	1	6	8	0
30			34	

 3  
1

38									

No. of Occurrences			

3 6
-----

**RAW SEWAGE**

 12 13 BOD<sub>5</sub>  
Suspended Solids  
TKN  
Total Phosphorus

 (mg/L)  
(mg/L)  
(mg/L)  
(mg/L)

0	0	0	0	1
0	0	0	0	6
0	0	0	2	0
0	0	0	3	3
30			34	

 0  
0  
2  
1

38									

No. of Samples			
1			
1			
1			
1			
48			51

3 9
-----

**FINAL EFFLUENT**

 Total Effl. Volume To Watercourse  
Flow Duration  
Cell Depth  
BOD<sub>5</sub>  
Suspended Solids  
Ammonia + Ammonium  
TKN  
Total Phosphorous

 (10<sup>3</sup>m<sup>3</sup>)  
(hrs)  
(m)  
(mg/L)  
(mg/L)  
(mg/L)  
(mg/L)  
(mg/L)  
(mg/L)

5	0	2	8	0
8	1	6	8	0
5	0	2	9	0
0	0	0	0	1
0	0	0	0	6
0	0	0	1	9
0	0	0	2	0
0	0	0	3	3
30			34	

 3  
1  
1  
1  
1  
2  
2  
2

38									

No. of Occurrences			

No. of Samples			

48 51

0 9
-----

**DISINFECTION**

 12 13 Chlorine Used  
Chlorine Dosage  
Chlorine Residual

 (kg as Cl<sub>2</sub>)  
(mg/L as Cl<sub>2</sub>)  
(mg/L as Cl<sub>2</sub>)

5	0	3	2	0
8	0	4	1	0
8	0	4	2	0
30			34	

 1  
1  
1

38									

48 51

No. of Occurrences			

Operator Telephone Number

705-325-2315

Email Address

utilities@townshipofsevern.com

Comments

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[L3V 6J3](#)

Operating Authority

[The Corporation of the Township of Severn](#)

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Postal Code

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File No.		Works Number									Data Period		Days		Discharge Type		Update Code	
4	6	1	2	0	0	0	2	2	7	3	0	3	20	3	1	2	R	
1	2	3								11	16		19	20	21	22	80	

C.P.		RAW SEWAGE					Dec	Monthly Average Results								No. of Samples			
3	6	Parameter	Unit	Parameter Code				38											
12	13																		

C.P.		FINAL EFFLUENT					Dec	Monthly Average Results								No. of Samples			
3	9	Parameter	Unit	Parameter Code				38											
12	13	Unionized Ammon	mg/L																
		Alkalinity	mg/L																
		pH																	

Operator Telephone Number	Email Address
705-325-2135	utilities@townshipofsevern.com

Comments

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L3V 6J3

File No.	Works Number	Data Period	Days	Discharge Type	Update Code
4 6	1 2 0 0 0 2 2 7 3	Month Year 0 4 20	3 0	2	R
1 2	3 11	16 19	20 21	22	80

C.P.
3 5

**FLOWS**

Total Flow	(10 <sup>3</sup> m <sup>3</sup> )	5 0 0 1 0
Average Daily Flow	(10 <sup>3</sup> m <sup>3</sup> /d)	5 0 0 1 5
Maximum Daily Flow	(10 <sup>3</sup> m <sup>3</sup> /d)	5 0 0 2 0

Parameter Code
5 0 0 1 0
5 0 0 1 5
5 0 0 2 0

Dec
3
3
3

Monthly Results
3 . 5 4 1
0 . 1 1 8
N A .

3 5
-----

**BYPASS**

Plant Bypass Volume	(10 <sup>3</sup> m <sup>3</sup> )	5 0 2 7 0
Duration	(hrs)	8 1 6 8 0

5 0 2 7 0
8 1 6 8 0

3
1

.
.

No. of Occurrences

3 6
-----

**RAW SEWAGE**

BOD <sub>5</sub>	(mg/L)	0 0 0 0 1
Suspended Solids	(mg/L)	0 0 0 0 6
TKN	(mg/L)	0 0 0 2 0
Total Phosphorus	(mg/L)	0 0 0 3 3

0 0 0 0 1
0 0 0 0 6
0 0 0 2 0
0 0 0 3 3

0
0
2
1

2 2 6 .
2 1 7 .
2 7 . 7
2 . 5

No. of Samples
1
1
1
1

3 9
-----

**FINAL EFFLUENT**

Total Effl. Volume To Watercourse	(10 <sup>3</sup> m <sup>3</sup> )	5 0 2 8 0
Flow Duration	(hrs)	8 1 6 8 0
Cell Depth	(m)	5 0 2 9 0
BOD <sub>5</sub>	(mg/L)	0 0 0 0 1
Suspended Solids	(mg/L)	0 0 0 0 6
Ammonia + Ammonium	(mg/L)	0 0 0 1 9
TKN	(mg/L)	0 0 0 2 0
Total Phosphorus	(mg/L)	0 0 0 3 3

5 0 2 8 0
8 1 6 8 0
5 0 2 9 0
0 0 0 0 1
0 0 0 0 6
0 0 0 1 9
0 0 0 2 0
0 0 0 3 3

3
1
1
1
1
2
2
2

.
.
.
.
.
.
.
.

No. of Occurrences

0 9
-----

**DISINFECTION**

Chlorine Used	(kg as Cl <sub>2</sub> )	5 0 3 2 0
Chlorine Dosage	(mg/L as Cl <sub>2</sub> )	8 0 4 1 0
Chlorine Residual	(mg/L as Cl <sub>2</sub> )	8 0 4 2 0

5 0 3 2 0
8 0 4 1 0
8 0 4 2 0

1
1
1

.
.
.

No. of Occurrences

(Representative of Final Discharge)

Operator Telephone Number

705-325-2315

Email Address

utilities@townshipofsevern.com

Comments

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L3V 6J3

File No.	Works Number								Data Period		Days		Discharge Type		Update Code	
4 6	1	2	0	0	0	2	2	7	3	0	5	20	3	1	2	R
1 2	3								11	16		19	20	21	22	80

C.P.
3 5

**FLOWS**

 Total Flow  
Average Daily Flow  
Maximum Daily Flow

 (10<sup>3</sup>m<sup>3</sup>)  
(10<sup>3</sup>m<sup>3</sup>/d)  
(10<sup>3</sup>m<sup>3</sup>/d)

Parameter Code				
5	0	0	1	0
5	0	0	1	5
5	0	0	2	0
30			34	

 Dec  
3  
3  
3

Monthly Results							
					1	.	7 9 8
					0	.	0 5 8
					N	A	.
38							46

3 5
-----

**BYPASS**

 Plant Bypass Volume  
Duration

 (10<sup>3</sup>m<sup>3</sup>)  
(hrs)

5	0	2	7	0
8	1	6	8	0
30			34	

 3  
1

					.		
					.		
38							

No. of Occurrences			

3 6
-----

**RAW SEWAGE**

 BOD<sub>5</sub>  
Suspended Solids  
TKN  
Total Phosphorus

 (mg/L)  
(mg/L)  
(mg/L)  
(mg/L)

0	0	0	0	1
0	0	0	0	6
0	0	0	2	0
0	0	0	3	3
30			34	

 0  
0  
2  
1

		1	3	5	.		
		1	0	3	.		
			4	2	.	4	
				3	.	7	
38							

No. of Samples			
1			
1			
1			
1			
48			51

3 9
-----

**FINAL EFFLUENT**

 Total Effl. Volume To Watercourse  
Flow Duration  
Cell Depth  
BOD<sub>5</sub>  
Suspended Solids  
Ammonia + Ammonium  
TKN  
Total Phosphorus

 (10<sup>3</sup>m<sup>3</sup>)  
(hrs)  
(m)  
(mg/L)  
(mg/L)  
(mg/L)  
(mg/L)  
(mg/L)  
(mg/L)

5	0	2	8	0
8	1	6	8	0
5	0	2	9	0
0	0	0	0	1
0	0	0	0	6
0	0	0	1	9
0	0	0	2	0
0	0	0	3	3
30			34	

 3  
1  
1  
1  
1  
2  
2  
2

					.		
					.		
					.		
					.		
					.		
					.		
					.		
					.		
38							

No. of Occurrences			

0 9
-----

**DISINFECTION**

 Chlorine Used  
Chlorine Dosage  
Chlorine Residual

 (kg as Cl<sub>2</sub>)  
(mg/L as Cl<sub>2</sub>)  
(mg/L as Cl<sub>2</sub>)

5	0	3	2	0
8	0	4	1	0
8	0	4	2	0
30			34	

 1  
1  
1

					.		
					.		
					.		
38							

No. of Occurrences			

Operator Telephone Number

705-325-2315

Email Address

utilities@townshipofsevern.com

Comments

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Project Name

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[Hurlwood Lane](#)
[159](#)

Municipality/City/Town

[Orillia](#)

Province

[ON](#)

Postal Code

[L3V 6J3](#)

Operating Authority

[The Corporation of the Township of Severn](#)

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File No.		Works Number							Data Period		Days		Discharge Type		Update Code		
4 6		1	2	0	0	0	2	2	7	3	0	6	20	3	0	2	R
1	2	3								11	16		19	20	21	22	80

C.P.	
3	5

**FLOWS**

 12 13 Total Flow (10<sup>3</sup>m<sup>3</sup>)

 (10<sup>3</sup>m<sup>3</sup>)

Parameter Code				
5	0	0	1	0
5	0	0	1	5
5	0	0	2	0
30			34	

Dec
3
3
3
35

Monthly Results						
				4	.	5 0 7
				0	.	1 5 0
				N	A	.
38						46

3	5
---	---

**BYPASS**

 12 13 Plant Bypass Volume  
Duration (10<sup>3</sup>m<sup>3</sup>) (hrs)

 (10<sup>3</sup>m<sup>3</sup>)

5	0	2	7	0
8	1	6	8	0
30			34	

3
1
35

				.		
				.		
38						

No. of Occurrences			

3	6
---	---

**RAW SEWAGE**

 12 13 BOD<sub>5</sub>  
Suspended Solids  
TKN  
Total Phosphorus (mg/L)

(mg/L)

0	0	0	0	1
0	0	0	0	6
0	0	0	2	0
0	0	0	3	3
30			34	

0
0
2
1
35

		1	3	6	.	
		1	2	4	.	
			2	8	.	1
				2	.	6
38						

No. of Samples			
1			
1			
1			
1			
48			51

3	9
---	---

**FINAL EFFLUENT**

 Total Effl. Volume To Watercourse  
Flow Duration  
Cell Depth  
BOD<sub>5</sub>  
Suspended Solids  
Ammonia + Ammonium  
TKN  
Total Phosphorous (10<sup>3</sup>m<sup>3</sup>) (hrs) (m) (mg/L) (mg/L) (mg/L) (mg/L)

 (10<sup>3</sup>m<sup>3</sup>)

5	0	2	8	0
8	1	6	8	0
5	0	2	9	0
0	0	0	0	1
0	0	0	0	6
0	0	0	1	9
0	0	0	2	0
0	0	0	3	3
30			34	

3
1
1
1
1
2
2
2
35

				2	3	.	6	6	6
				5	0	6	.	5	
						.			
				<	4	.			
					3	.	7		
					2	.	9	3	
					4	.	2	0	
					0	.	2	1	
38									

3			
3			
3			
3			
3			
48			51

0	9
---	---

**DISINFECTION**

 Chlorine Used  
Chlorine Dosage  
Chlorine Residual  
(Representative of Final Discharge) (kg as Cl<sub>2</sub>) (mg/L as Cl<sub>2</sub>) (mg/L as Cl<sub>2</sub>)

 (kg as Cl<sub>2</sub>)

5	0	3	2	0
8	0	4	1	0
8	0	4	2	0
30			34	

1
1
1
35

				.		
				.		
				.		
38						

48			51

Operator Telephone Number

[705-325-2315](#)

Email Address

[utilities@townshipofsevern.com](mailto:utilities@townshipofsevern.com)

Comments



Comments

---

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Comments

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Municipality/City/Town

[Orillia](#)

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Postal Code

[L3V 6J3](#)

Operating Authority

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File No.		Works Number							Data Period		Days		Discharge Type		Update Code		
4	6	1	2	0	0	0	2	2	7	3	0	8	20	3	1	2	R
1	2	3								11	16		19	20	21	22	80

C.P.	
3	5

**FLOWS**

 12 13 Total Flow (10<sup>3</sup>m<sup>3</sup>)

Parameter Code				
5	0	0	1	0

Dec

3

Monthly Results								
				1	.	3	6	0

 Average Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

5	0	0	1	5
---	---	---	---	---

3

				0	.	0	4	4
--	--	--	--	---	---	---	---	---

 Maximum Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

5	0	0	2	0
---	---	---	---	---

3

				N	A	.		
--	--	--	--	---	---	---	--	--

30 34

35

38 46

3 5	
12	13

**BYPASS**

12 13 Plant Bypass Volume

5	0	2	7	0
---	---	---	---	---

3

				.				
--	--	--	--	---	--	--	--	--

Duration (hrs)

8	1	6	8	0
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

No. of Occurrences			

3 6	
12	13

**RAW SEWAGE**

 12 13 BOD<sub>5</sub> (mg/L)

0	0	0	0	1
---	---	---	---	---

0

				1	8	1	.	
--	--	--	--	---	---	---	---	--

Suspended Solids (mg/L)

0	0	0	0	6
---	---	---	---	---

0

				1	1	4	.	
--	--	--	--	---	---	---	---	--

TKN (mg/L)

0	0	0	2	0
---	---	---	---	---

2

				4	3	.	0	
--	--	--	--	---	---	---	---	--

Total Phosphorus (mg/L)

0	0	0	3	3
---	---	---	---	---

1

				4	.	1		
--	--	--	--	---	---	---	--	--

30 34

35

38

No. of Samples			
1			
1			
1			
1			

48 51

3 9	
12	13

**FINAL EFFLUENT**

 Total Effl. Volume To Watercourse (10<sup>3</sup>m<sup>3</sup>)

5	0	2	8	0
---	---	---	---	---

3

				.				
--	--	--	--	---	--	--	--	--

Flow Duration (hrs)

8	1	6	8	0
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

Cell Depth (m)

5	0	2	9	0
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

 BOD<sub>5</sub> (mg/L)

0	0	0	0	1
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

Suspended Solids (mg/L)

0	0	0	0	6
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

Ammonia + Ammonium (mg/L)

0	0	0	1	9
---	---	---	---	---

2

				.				
--	--	--	--	---	--	--	--	--

TKN (mg/L)

0	0	0	2	0
---	---	---	---	---

2

				.				
--	--	--	--	---	--	--	--	--

Total Phosphorous (mg/L)

0	0	0	3	3
---	---	---	---	---

2

				.				
--	--	--	--	---	--	--	--	--

30 34

35

38

No. of Occurrences			

48 51

0 9	
12	13

**DISINFECTION**

 Chlorine Used (kg as Cl<sub>2</sub>)

5	0	3	2	0
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

 Chlorine Dosage (mg/L as Cl<sub>2</sub>)

8	0	4	1	0
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

 Chlorine Residual (mg/L as Cl<sub>2</sub>)

8	0	4	2	0
---	---	---	---	---

1

				.				
--	--	--	--	---	--	--	--	--

(Representative of Final Discharge)

30 34

35

38

No. of Occurrences			

48 51

Operator Telephone Number

[705-325-2315](#)

Email Address

[utilities@townshipofsevern.com](mailto:utilities@townshipofsevern.com)

Comments



Comments

---

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2. Your Environmental Officer at your local District/Area MOE Office. (Find your local MOE office: <http://www.ene.gov.on.ca/environment>)

Project Name

[Washago Lagoon](#)

Mailing Address

Unit No.

Street No.

Street Name

PO Box

[1024](#)
[Hurlwood Lane](#)
[159](#)

Municipality/City/Town

[Orillia](#)

Province

[ON](#)

Postal Code

[L3V 6J3](#)

Operating Authority

[The Corporation of the Township of Severn](#)

Mailing Address

Unit No.

Street No.

Street Name

PO Box

[1024](#)
[Hurlwood Lane](#)
[159](#)

Municipality/City/Town

[Orillia](#)

Province

[ON](#)

Postal Code

[L3V 6J3](#)

File No.		Works Number							Data Period		Days		Discharge Type		Update Code		
4	6	1	2	0	0	0	2	2	7	3	1	0	20	3	1	2	R
1	2	3								11	16		19	20	21	22	80

C.P.	
3	5

**FLOWS**

 Total Flow (10<sup>3</sup>m<sup>3</sup>)

Parameter Code				
5	0	0	1	0

Dec

3

Monthly Results

					2	.	1	4	0
--	--	--	--	--	---	---	---	---	---

 Average Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

5	0	0	1	5
---	---	---	---	---

3

					0	.	0	7	0
--	--	--	--	--	---	---	---	---	---

 Maximum Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

5	0	0	2	0
---	---	---	---	---

3

					N	A	.		
--	--	--	--	--	---	---	---	--	--

3		5	
12	13		

**BYPASS**

 Plant Bypass Volume (10<sup>3</sup>m<sup>3</sup>)

5	0	2	7	0
---	---	---	---	---

3

					.				
--	--	--	--	--	---	--	--	--	--

Duration (hrs)

8	1	6	8	0
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

No. of Occurrences			

3		6	
12	13		

**RAW SEWAGE**

 BOD<sub>5</sub> (mg/L)

0	0	0	0	1
---	---	---	---	---

0

					1	3	0	.	
--	--	--	--	--	---	---	---	---	--

Suspended Solids (mg/L)

0	0	0	0	6
---	---	---	---	---

0

					1	4	4	.	
--	--	--	--	--	---	---	---	---	--

TKN (mg/L)

0	0	0	2	0
---	---	---	---	---

2

					5	4	.	5	
--	--	--	--	--	---	---	---	---	--

Total Phosphorus (mg/L)

0	0	0	3	3
---	---	---	---	---

1

					5	.	9		
--	--	--	--	--	---	---	---	--	--

No. of Samples			
1			

1			
---	--	--	--

1			
---	--	--	--

1			
---	--	--	--

3		9	
12	13		

**FINAL EFFLUENT**

 Total Effl. Volume To Watercourse (10<sup>3</sup>m<sup>3</sup>)

5	0	2	8	0
---	---	---	---	---

3

					.				
--	--	--	--	--	---	--	--	--	--

Flow Duration (hrs)

8	1	6	8	0
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

Cell Depth (m)

5	0	2	9	0
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

 BOD<sub>5</sub> (mg/L)

0	0	0	0	1
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

Suspended Solids (mg/L)

0	0	0	0	6
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

Ammonia + Ammonium (mg/L)

0	0	0	1	9
---	---	---	---	---

2

					.				
--	--	--	--	--	---	--	--	--	--

TKN (mg/L)

0	0	0	2	0
---	---	---	---	---

2

					.				
--	--	--	--	--	---	--	--	--	--

Total Phosphorous (mg/L)

0	0	0	3	3
---	---	---	---	---

2

					.				
--	--	--	--	--	---	--	--	--	--

No. of Occurrences			

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

0		9	
12	13		

**DISINFECTION**

 Chlorine Used (kg as Cl<sub>2</sub>)

5	0	3	2	0
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

 Chlorine Dosage (mg/L as Cl<sub>2</sub>)

8	0	4	1	0
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

 Chlorine Residual (mg/L as Cl<sub>2</sub>)

8	0	4	2	0
---	---	---	---	---

1

					.				
--	--	--	--	--	---	--	--	--	--

(Representative of Final Discharge)

No. of Occurrences			

--	--	--	--

--	--	--	--

--	--	--	--

Operator Telephone Number

[705-325-2315](#)

Email Address

[utilities@townshipofsevern.com](mailto:utilities@townshipofsevern.com)

Comments



Comments

---

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2. Your Environmental Officer at your local District/Area MOE Office. (Find your local MOE office: <http://www.ene.gov.on.ca/environment>)

Project Name

Washago Lagoon

Mailing Address

Unit No.

Street No.

Street Name

PO Box

1024

Hurlwood Lane

159

Municipality/City/Town

Orillia

Province

ON

Postal Code

L3V 6J3

Operating Authority

The Corporation of the Township of Severn

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Unit No.

Street No.

Street Name

PO Box

1024

Hurlwood Lane

159

Municipality/City/Town

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ON

Postal Code

L3V 6J3

File No.		Works Number							Data Period		Days		Discharge Type		Update Code		
4	6	1	2	0	0	0	2	2	7	3	1	1	20	3	0	2	R
1	2	3								11	16		19	20	21	22	80

C.P.	
3	5

**FLOWS**

Total Flow (10<sup>3</sup>m<sup>3</sup>)

(10<sup>3</sup>m<sup>3</sup>)

Parameter Code				
5	0	0	1	0
5	0	0	1	5
5	0	0	2	0
30			34	

Dec
3
3
3
35

Monthly Results					
				2	. 0 8 0
				0	. 0 6 9
				N	A .
38					46

Average Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

Maximum Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

3		5	
12	13		

**BYPASS**

Plant Bypass Volume (10<sup>3</sup>m<sup>3</sup>)

Duration (hrs)

(10<sup>3</sup>m<sup>3</sup>)

(hrs)

5	0	2	7	0
8	1	6	8	0
30			34	

3
1
35

					.
					.
38					

No. of Occurrences			

3		6	
12	13		

**RAW SEWAGE**

BOD<sub>5</sub> (mg/L)

Suspended Solids (mg/L)

TKN (mg/L)

Total Phosphorus (mg/L)

(mg/L)

(mg/L)

(mg/L)

(mg/L)

0	0	0	0	1
0	0	0	0	6
0	0	0	2	0
0	0	0	3	3
30			34	

0
0
2
1
35

		2	0	7	.
		1	5	9	.
		2	5	.	0
		2	.	2	
38					

No. of Samples			
1			
1			
1			
1			
48			51

3		9	
12	13		

**FINAL EFFLUENT**

Total Effl. Volume To Watercourse (10<sup>3</sup>m<sup>3</sup>)

Flow Duration (hrs)

Cell Depth (m)

BOD<sub>5</sub> (mg/L)

Suspended Solids (mg/L)

Ammonia + Ammonium (mg/L)

TKN (mg/L)

Total Phosphorous (mg/L)

(10<sup>3</sup>m<sup>3</sup>)

(hrs)

(m)

(mg/L)

(mg/L)

(mg/L)

(mg/L)

(mg/L)

5	0	2	8	0
8	1	6	8	0
5	0	2	9	0
0	0	0	0	1
0	0	0	0	6
0	0	0	1	9
0	0	0	2	0
0	0	0	3	3
30			34	

3
1
1
1
1
2
2
2
35

					.
					.
					.
					.
					.
					.
					.
					.
38					

48			51

0		9	
12	13		

**DISINFECTION**

Chlorine Used (kg as Cl<sub>2</sub>)

Chlorine Dosage (mg/L as Cl<sub>2</sub>)

Chlorine Residual (mg/L as Cl<sub>2</sub>)

(Representative of Final Discharge)

(kg as Cl<sub>2</sub>)

(mg/L as Cl<sub>2</sub>)

(mg/L as Cl<sub>2</sub>)

5	0	3	2	0
8	0	4	1	0
8	0	4	2	0
30			34	

1
1
1
35

					.
					.
					.
38					

48			51

Operator Telephone Number

705-325-2315

Email Address

utilities@townshipofsevern.com

Comments



Comments

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2. Your Environmental Officer at your local District/Area MOE Office. (Find your local MOE office: <http://www.ene.gov.on.ca/environment>)

Project Name

[Washago Lagoon](#)

Mailing Address

Unit No.

Street No.

Street Name

PO Box

[1024](#)
[Hurlwood Lane](#)
[159](#)

Municipality/City/Town

[Orillia](#)

Province

[ON](#)

Postal Code

[L3V 6J3](#)

Operating Authority

[The Corporation of the Township of Severn](#)

Mailing Address

Unit No.

Street No.

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PO Box

[1024](#)
[Hurlwood Lane](#)
[159](#)

Municipality/City/Town

[Orillia](#)

Province

[ON](#)

Postal Code

[L3V 6J3](#)

File No.		Works Number							Data Period		Days		Discharge Type		Update Code	
4	6	1	2	0	0	0	2	2	7	3	1	2	2	2	R	
1	2	3								11	16	19	20	21	22	80

C.P.	
3	5

**FLOWS**

 12 13 Total Flow (10<sup>3</sup>m<sup>3</sup>)

Parameter Code				
5	0	0	1	0

Dec

3

Monthly Results				
			2	. 5 8 3

 Average Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

5	0	0	1	5
---	---	---	---	---

3

			0	. 0 8 3
--	--	--	---	---------

 Maximum Daily Flow (10<sup>3</sup>m<sup>3</sup>/d)

5	0	0	2	0
---	---	---	---	---

3

			N	A .
--	--	--	---	-----

30 34

35

38 46

3 5	
<b>BYPASS</b>	
12	13

Plant Bypass Volume

 (10<sup>3</sup>m<sup>3</sup>)

5	0	2	7	0
---	---	---	---	---

3

				.
--	--	--	--	---

Duration

(hrs)

8	1	6	8	0
---	---	---	---	---

1

				.
--	--	--	--	---

No. of Occurrences			

3 6	
<b>RAW SEWAGE</b>	
12	13

 BOD<sub>5</sub>

(mg/L)

0	0	0	0	1
---	---	---	---	---

0

		2	6	4 .
--	--	---	---	-----

Suspended Solids

(mg/L)

0	0	0	0	6
---	---	---	---	---

0

		2	2	6 .
--	--	---	---	-----

TKN

(mg/L)

0	0	0	2	0
---	---	---	---	---

2

		4	2 .	6
--	--	---	-----	---

Total Phosphorus

(mg/L)

0	0	0	3	3
---	---	---	---	---

1

		4	. 0
--	--	---	-----

30 34

35

38

No. of Samples			
1			

3 9	
<b>FINAL EFFLUENT</b>	
12	13

Total Effl. Volume To Watercourse

 (10<sup>3</sup>m<sup>3</sup>)

5	0	2	8	0
---	---	---	---	---

3

			3	4 .
--	--	--	---	-----

Flow Duration

(hrs)

8	1	6	8	0
---	---	---	---	---

1

		1	4	5 .
--	--	---	---	-----

Cell Depth

(m)

5	0	2	9	0
---	---	---	---	---

1

				.
--	--	--	--	---

 BOD<sub>5</sub>

(mg/L)

0	0	0	0	1
---	---	---	---	---

1

		6	.
--	--	---	---

Suspended Solids

(mg/L)

0	0	0	0	6
---	---	---	---	---

1

		5	.
--	--	---	---

Ammonia + Ammonium

(mg/L)

0	0	0	1	9
---	---	---	---	---

2

		8	. 1
--	--	---	-----

TKN

(mg/L)

0	0	0	2	0
---	---	---	---	---

2

		9	. 2
--	--	---	-----

Total Phosphorous

(mg/L)

0	0	0	3	3
---	---	---	---	---

2

		0	. 2 4
--	--	---	-------

30 34

35

38

No. of Occurrences			
3			

0 9	
<b>DISINFECTION</b>	
12	13

Chlorine Used

 (kg as Cl<sub>2</sub>)

5	0	3	2	0
---	---	---	---	---

1

				.
--	--	--	--	---

Chlorine Dosage

 (mg/L as Cl<sub>2</sub>)

8	0	4	1	0
---	---	---	---	---

1

				.
--	--	--	--	---

Chlorine Residual

 (mg/L as Cl<sub>2</sub>)

8	0	4	2	0
---	---	---	---	---

1

				.
--	--	--	--	---

(Representative of Final Discharge)

30 34

35

38

No. of Occurrences			

Operator Telephone Number

[705-325-2315](#)

Email Address

[utilities@townshipofsevern.com](mailto:utilities@townshipofsevern.com)

Comments





Comments

---

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2. Your Environmental Officer at your local District/Area MOE Office. (Find your local MOE office: <http://www.ene.gov.on.ca/environment>)

# Appendix C

## Sewage Pump Station Draw Down Tests

## Pump Drawdown Test Results at Pumping Station #1 in Washago

**Completed: May 20/20**

**Performed By: Jenna**

**Data:**

### *Influent*

Influent testing completed immediately before and after each trial for the pump drawdown. The increase in waste collected from an initial starting point over a 1 minute period. Results shown are in inches.

### *Drawdown*

Drawdown testing was completed by measuring the drop of waste from an initial starting point over a 1 minute period. Results shown are in inches.

	Trial No.	Influent			Drawdown		
		Initial	Final	Result	Initial	Final	Result
<b>Pump 1</b>	1	96	95.5	0.5	97	100	3
	2	100	99	1	99	102.5	3.5
	3	102.5	101.5	1	101.5	104.5	3
<b>Pump 2</b>	1	104.5	104	0.5	104	109.5	5.5
	2	109.5	108.5	1	108.5	114.5	6
	3	114.5	113	1.5	113	119.5	6.5

### **Volume Calculations:**

$$\begin{aligned}
 V &= \pi r^2 h, \text{ where } r = 1.2 \text{ m and} \\
 & \quad h = \frac{\text{drawdown result (inches)} \times 0.0254 \text{ m/inch}}{1 \text{ minute}} \\
 &= 4.5216 \text{ h} \times \frac{1000 \text{ litres}}{60 \text{ seconds}} \\
 &= (1.914144) \times \text{result (inches)}
 \end{aligned}$$

Pump Capacity:

$$V_{\text{total}} = V_{\text{pump}} + V_{\text{influent}}$$

### **Results:**

Using the calculations shown above, the results of the average pump capacity of the pumps are indicated in L/s.

	Trial 1	Trial 2	Trial 3	Average
<b>Pump 1</b>	6.7	8.6	7.7	7.67
<b>Pump 2</b>	11.5	13.4	15.3	13.4

**Therefore the pump capacity of Pump 1 is 7.67 L/s and Pump 2 is 13.4 L/s.**

**Prepared On: May 21/20**

**Prepared By: Brad**

**Signature: \_\_\_\_\_**

## Pump Drawdown Test Results at Pumping Station #1 in Washago

**Completed: Nov. 13/2020**

**Performed By: Silas and Aaron**

**Data:**

### *Influent*

Influent testing completed immediately before and after each trial for the pump drawdown. The increase in waste collected from an initial starting point over a 1 minute period. Results shown are in inches.

### *Drawdown*

Drawdown testing was completed by measuring the drop of waste from an initial starting point over a 1 minute period. Results shown are in inches.

	Trial No.	Influent			Drawdown		
		Initial	Final	Result	Initial	Final	Result
<b>Pump 1</b>	1	0.91	0.92	0.01	1.05	0.87	0.18
	2	0.99	1.00	0.01	1.01	0.81	0.20
	3	1.00	1.01	0.01	1.04	0.87	0.17
<b>Pump 2</b>	1	0.95	0.96	0.01	0.99	0.80	0.19
	2	1.00	1.01	0.01	1.02	0.85	0.17
	3	1.02	1.03	0.01	1.04	0.89	0.15

### **Volume Calculations:**

$$\begin{aligned}
 V &= \pi r^2 h, \text{ where } r = 1.2 \text{ m and} \\
 & \quad h = \frac{\text{drawdown result (inches)} \times 0.0254 \text{ m/inch}}{1 \text{ minute}} \\
 &= 4.5216 \text{ h} \times \frac{1000 \text{ litres}}{60 \text{ seconds}} \\
 &= (1.914144) \times \text{result (inches)}
 \end{aligned}$$

Pump Capacity:

$$V_{\text{total}} = V_{\text{pump}} + V_{\text{influent}}$$

### **Results:**

Using the calculations shown above, the results of the average pump capacity of the pumps are indicated in L/s.

	Trial 1	Trial 2	Trial 3	Average
<b>Pump 1</b>	12.80	14.31	12.03	13.04
<b>Pump 2</b>	13.55	12.03	10.54	12.04

**Therefore the pump capacity of Pump 1 is 13.04 L/s and Pump 2 is 12.04 L/s.**

**Prepared On: May 21/20**

**Prepared By: Brad**

**Signature: \_\_\_\_\_**

# Appendix D

## Alum Dosing Formula

## **Alum Dosing**

### **Dry Alum**

$$\text{Mass of Alum (kg)} = \frac{\text{Gross Volume of Cell (m}^3\text{)} \times \text{Optimum Alum Dosage (mg/L)} \times 1000\text{L/m}^3}{1,000,000 \text{ mg/kg}}$$

### **Liquid Alum**

Volume of Alum (L) =

$$\frac{\text{Gross Volume of Cell (m}^3\text{)} \times 1,000\text{L/m}^3 \times \text{Optimum Alum Dosage (mg/L)}}{1,000,000 \text{ mg/kg} \times \text{Density of Alum (1.335 kg/L)} \times \% \text{ of alum concentration (48.5%)}}$$

OR

$$\frac{\text{Gross Volume of Cell (m}^3\text{)} \times \text{Optimum Alum Dosage (mg/L)}}{647.5 \text{ mg/L}}$$

# Appendix E

## Lagoon Stage Storage Graphs

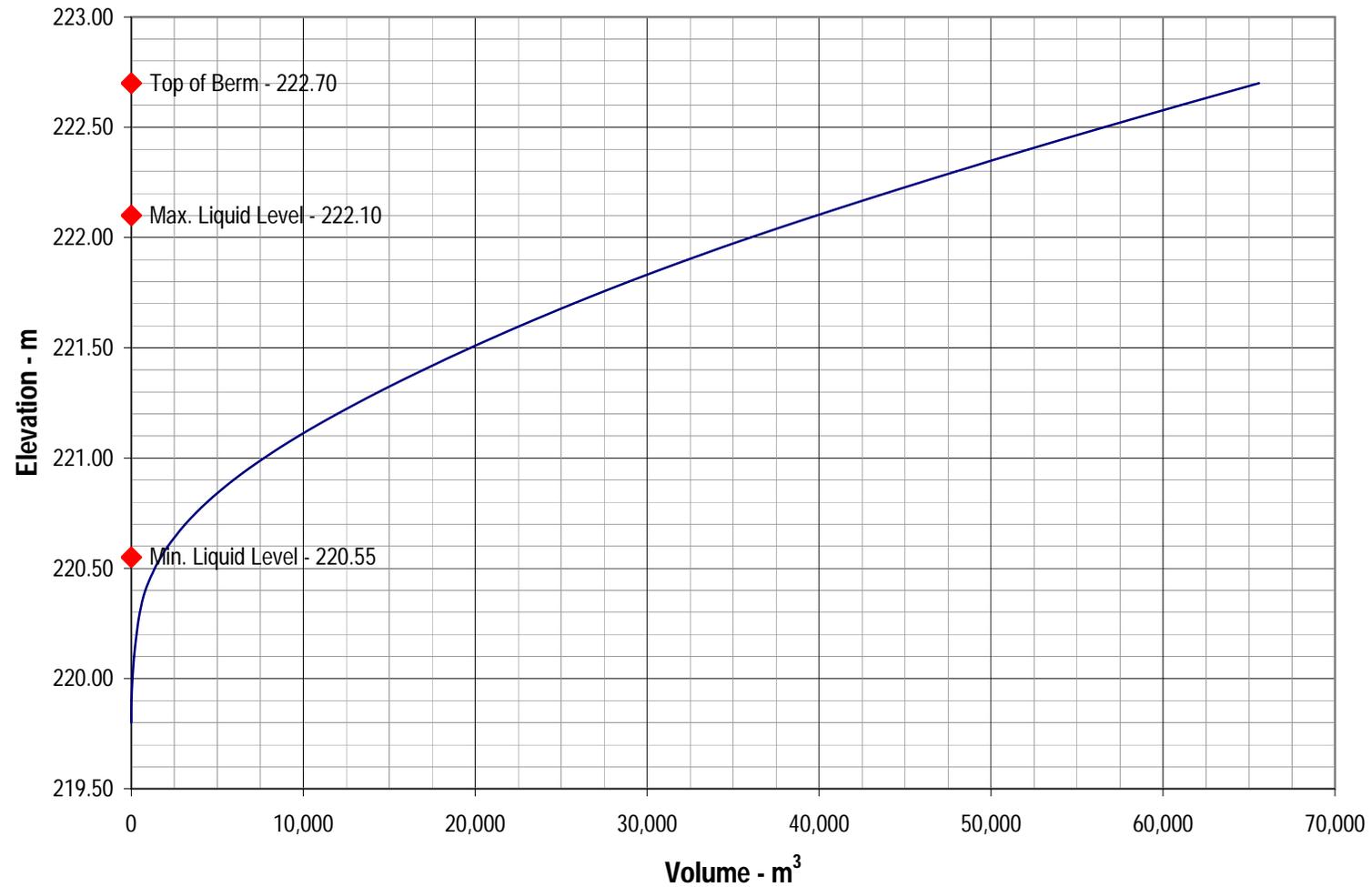


**Note**

Elevations are referenced to the following temporary benchmarks:

TBM No. 1 - Bolt in rock outcrop 37m north of Cell No. 1 outlet structure - Elev. 223.51

TBM No. 2 - Bolt in rock outcrop 26 m north of Cell No. 1 outlet structure - Elev. 223.51



**C.C. Tatham & Associates Ltd.**  
Consulting Engineers

Collingwood    Bracebridge    Orillia    Barrie

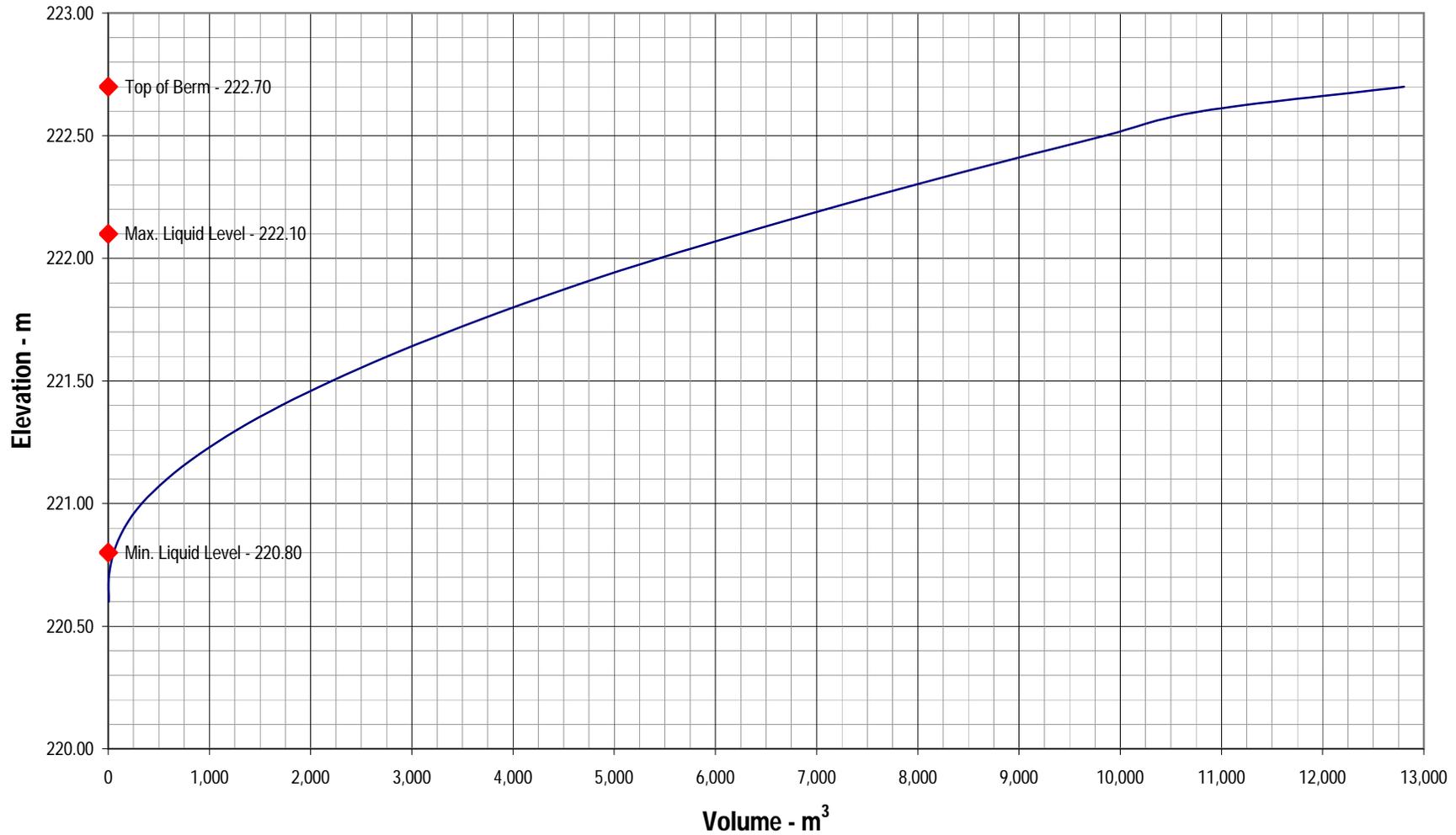
**Township of Severn  
Village of Washago  
Sewage Treatment Works  
Stage Storage Graph - Cell No. 1  
February 2012**

**Note**

Elevations are referenced to the following temporary benchmarks:

TBM No. 1 - Bolt in rock outcrop 37m north of Cell No. 1 outlet structure - Elev. 223.51

TBM No. 2 - Bolt in rock outcrop 26 m north of Cell No. 1 outlet structure - Elev. 223.51



**C.C. Tatham & Associates Ltd.**

Consulting Engineers

Collingwood    Bracebridge    Orillia    Barrie

Township of Severn  
Village of Washago  
Sewage Treatment Works  
Stage Storage Graph - Cell No. 2  
February 2012

# Appendix F

Laboratory Analysis Reports



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

15-January-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 09 January 2020  
**LR Report:** CA12222-JAN20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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Phone: 705-345-2338 (cell)  
Fax:705-325-1247

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					08-Jan-20 10:55
Temperature Upon Receipt [°C]	---	---	---	---	3.0
Biochemical Oxygen Demand (BOD5) [mg/L]	09-Jan-20	17:55	14-Jan-20	13:33	230
Total Suspended Solids [mg/L]	10-Jan-20	10:59	15-Jan-20	10:29	97
Phosphorus (total) [mg/L]	09-Jan-20	16:14	13-Jan-20	10:51	4.78
Total Kjeldahl Nitrogen [as N mg/L]	09-Jan-20	16:45	14-Jan-20	09:35	58.9

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

21-February-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 13 February 2020  
**LR Report:** CA13248-FEB20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					12-Feb-20 11:02
Temperature Upon Receipt [°C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	13-Feb-20	17:03	18-Feb-20	13:41	264
Total Suspended Solids [mg/L]	14-Feb-20	07:34	19-Feb-20	15:42	132
Phosphorus (total) [mg/L]	13-Feb-20	07:03	14-Feb-20	14:50	4.30
Total Kjeldahl Nitrogen [as N mg/L]	13-Feb-20	18:01	14-Feb-20	13:21	44.7

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - KOL 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

11-March-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 06 March 2020  
**LR Report:** CA13110-MAR20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago PS #1
Sample Date & Time						05-Mar-20 10:27
Temperature Upon Receipt [°C]	---	---	---	---	---	9.5
Biochemical Oxygen Demand (BOD5) [mg/L]	06-Mar-20	16:10	11-Mar-20	13:48	25	181
Total Suspended Solids [mg/L]	09-Mar-20	15:42	11-Mar-20	09:34	25	142
Phosphorus (total) [mg/L]	06-Mar-20	17:00	10-Mar-20	07:58	1	3.51
Total Kjeldahl Nitrogen [as N mg/L]	09-Mar-20	21:25	10-Mar-20	13:04	---	35.9

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

17-April-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 09 April 2020  
**LR Report:** CA13177-APR20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					08-Apr-20 09:45
Temperature Upon Receipt [°C]	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	09-Apr-20	20:14	14-Apr-20	14:05	226
Total Suspended Solids [mg/L]	15-Apr-20	19:33	17-Apr-20	10:16	217
Phosphorus (total) [mg/L]	13-Apr-20	08:30	14-Apr-20	08:22	2.49
Total Kjeldahl Nitrogen [as N mg/L]	13-Apr-20	20:17	14-Apr-20	19:16	27.7

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

21-April-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 13 April 2020  
**LR Report:** CA12532-APR20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						09-Apr-20 10:40
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	13-Apr-20	20:46	20-Apr-20	12:57	25	15
Total Suspended Solids [mg/L]	15-Apr-20	10:01	17-Apr-20	14:41	25	12
pH [no unit]	13-Apr-20	13:14	15-Apr-20	11:23		7.96
Alkalinity [mg/L as CaCO3]	13-Apr-20	13:14	15-Apr-20	11:23		92
Phosphorus (total) [mg/L]	13-Apr-20	19:30	14-Apr-20	18:41	1	0.17
Total Kjeldahl Nitrogen [as N mg/L]	13-Apr-20	20:17	15-Apr-20	10:36	---	5.4
Ammonia+Ammonium (N) [as N mg/L]	14-Apr-20	12:00	16-Apr-20	08:27		4.6

**Patti Stark**  
*Project Specialist,*  
*Environment, Health & Safety*





**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - KOL 2HO  
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24-April-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 17 April 2020  
**LR Report:** CA12838-APR20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						16-Apr-20 10:38
Temperature Upon Receipt [°C]	---	---	---	---	---	7.5
Biochemical Oxygen Demand (BOD5) [mg/L]	17-Apr-20	21:49	22-Apr-20	11:23	25	18
Total Suspended Solids [mg/L]	20-Apr-20	08:39	23-Apr-20	09:42	25	16
pH [no unit]	19-Apr-20	09:21	20-Apr-20	10:51		8.04
Alkalinity [mg/L as CaCO3]	19-Apr-20	09:21	20-Apr-20	10:51		97
Phosphorus (total) [mg/L]	20-Apr-20	16:58	21-Apr-20	19:30	1	0.09
Total Kjeldahl Nitrogen [as N mg/L]	21-Apr-20	17:24	23-Apr-20	17:19	---	5.1
Ammonia+Ammonium (N) [as N mg/L]	22-Apr-20	16:03	24-Apr-20	00:45		3.8

**Patti Stark**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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Lakefield - Ontario - K0L 2H0  
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25-April-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 22 April 2020  
**LR Report:** CA12947-APR20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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Fax:705-325-1247

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						21-Apr-20 10:15
Temperature Upon Receipt [°C]	---	---	---	---	---	8.0
Biochemical Oxygen Demand (BOD5) [mg/L]	22-Apr-20	22:03	27-Apr-20	13:25	25	17
Total Suspended Solids [mg/L]	23-Apr-20	06:15	27-Apr-20	09:36	25	19
pH [no unit]	23-Apr-20	06:55	27-Apr-20	09:29		8.46
Alkalinity [mg/L as CaCO3]	23-Apr-20	06:55	27-Apr-20	09:29		90
Phosphorus (total) [mg/L]	22-Apr-20	16:51	24-Apr-20	00:02	1	0.05
Total Kjeldahl Nitrogen [as N mg/L]	23-Apr-20	07:51	27-Apr-20	10:59	---	4.6
Ammonia+Ammonium (N) [as N mg/L]	23-Apr-20	20:00	24-Apr-20	21:07		2.9

**Patti Stark**  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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13-May-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 07 May 2020  
**LR Report:** CA12153-MAY20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					06-May-20 08:54
Temperature Upon Receipt [°C]	---	---	---	---	11.0
Biochemical Oxygen Demand (BOD5) [mg/L]	07-May-20	19:13	12-May-20	10:54	135
Total Suspended Solids [mg/L]	08-May-20	06:09	10-May-20	16:37	103
Phosphorus (total) [mg/L]	08-May-20	17:06	11-May-20	16:13	3.69
Total Kjeldahl Nitrogen [as N mg/L]	08-May-20	19:58	12-May-20	13:00	42.4

**Patti Stark**  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

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Lakefield - Ontario - KOL 2HO  
Phone: 705-652-2000 FAX: 705-652-6365

25-May-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 14 May 2020  
**LR Report:** CA12309-MAY20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						13-May-20 08:40	13-May-20 08:53	13-May-20 09:05
Temperature Upon Receipt [°C]	---	---	---	---	---	12.0	12.0	12.0
Field pH [no unit]	---	---	---	---	---	7.7	8.0	8.0
Field Temperature [celcius]	---	---	---	---	---	10.5	7.5	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	14-May-20	22:05	19-May-20	16:18	25	< 4	< 4	< 4
Total Suspended Solids [mg/L]	15-May-20	08:04	21-May-20	10:19	25	3	2	< 2
Phosphorus (total) [mg/L]	14-May-20	16:00	19-May-20	16:33	1	0.11	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	15-May-20	17:00	20-May-20	12:22	---	4.4	0.6	< 0.5
Alkalinity [mg/L as CaCO3]	15-May-20	13:46	19-May-20	19:13		90	103	102
Ammonia+Ammonium (N) [as N mg/L]	15-May-20	18:00	20-May-20	17:06		2.9	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	15-May-20	18:00	20-May-20	17:06		0.028	< 0.001	< 0.001

**Patti Stark**  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

25-May-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 19 May 2020  
**LR Report:** CA14700-MAY20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						19-May-20 08:28	19-May-20 08:35	19-May-20 08:46
Temperature Upon Receipt [°C]	---	---	---	---	---	13.0	13.0	13.0
Field pH [no unit]	---	---	---	---	---	7.7	7.9	8.0
Field Temperature [celcius]	---	---	---	---	---	14	12	12
Biochemical Oxygen Demand (BOD5) [mg/L]	20-May-20	22:12	25-May-20	14:23	25	< 4	< 4	< 4
Total Suspended Solids [mg/L]	21-May-20	18:35	24-May-20	22:53	25	3	< 2	< 2
Phosphorus (total) [mg/L]	20-May-20	22:19	21-May-20	20:13	1	0.16	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	20-May-20	17:47	21-May-20	12:48	---	3.8	< 0.5	0.5
Alkalinity [mg/L as CaCO3]	21-May-20	13:49	25-May-20	10:11		90	101	101
Ammonia+Ammonium (N) [as N mg/L]	20-May-20	17:00	21-May-20	21:24		2.9	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	20-May-20	17:00	21-May-20	21:24		0.036	< 0.001	< 0.001

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.

**Patti Stark**  
**Project Specialist,**  
**Environment, Health & Safety**



SGS Canada Inc.

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Lakefield - Ontario - KOL 2H0  
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**Twp of Severn (Washago STP)**

Attn : Tony Drouin

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

Phone: 705-345-2338 (cell)  
Fax:705-325-1247

10-June-2020

Date Rec. : 03 June 2020  
LR Report: CA12102-JUN20

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						02-Jun-20 10:41	02-Jun-20 10:50	02-Jun-20 10:26
Temperature Upon Receipt [°C]	---	---	---	---	---	14.0	14.0	14.0
Field pH [no unit]	---	---	---	---	---	7.4	7.3	7.4
Field Temperature [celcius]	---	---	---	---	---	17	16	16
Biochemical Oxygen Demand (BOD5) [mg/L]	04-Jun-20	17:35	09-Jun-20	13:42	25	< 4	7	< 4
Total Suspended Solids [mg/L]	04-Jun-20	09:50	09-Jun-20	17:31	25	5	< 2	< 2
Alkalinity [mg/L as CaCO3]	04-Jun-20	09:59	09-Jun-20	13:12		96	97	99
Phosphorus (total) [mg/L]	03-Jun-20	16:08	08-Jun-20	13:49	1	0.35	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	03-Jun-20	18:03	04-Jun-20	15:04	---	4.3	< 0.5	< 0.5
Ammonia+Ammonium (N) [as N mg/L]	03-Jun-20	18:26	04-Jun-20	17:41		3.0	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	03-Jun-20	18:26	04-Jun-20	17:41		0.024	< 0.001	< 0.001

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - KOL 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

LR Report :

**CA12102-JUN20**

---

*Patti Stark*  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

10-June-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 04 June 2020  
**LR Report:** CA12226-JUN20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Washago PS #1
Sample Date & Time					03-Jun-20 09:57
Temperature Upon Receipt [°C]	---	---	---	---	16.0
Biochemical Oxygen Demand (BOD5) [mg/L]	04-Jun-20	17:35	09-Jun-20	13:57	136
Total Suspended Solids [mg/L]	05-Jun-20	11:28	08-Jun-20	10:23	124
Phosphorus (total) [mg/L]	05-Jun-20	11:24	09-Jun-20	13:31	2.62
Total Kjeldahl Nitrogen [as N mg/L]	04-Jun-20	20:53	05-Jun-20	17:09	28.1

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*





**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - KOL 2HO  
Phone: 705-652-2000 FAX: 705-652-6365

14-July-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 08 July 2020  
**LR Report:** CA12286-JUL20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago PS #1
Sample Date & Time						07-Jul-20 11:40
Temperature Upon Receipt [°C]	---	---	---	---	---	19.0
Biochemical Oxygen Demand (BOD5) [mg/L]	09-Jul-20	17:26	14-Jul-20	13:00	25	210
Total Suspended Solids [mg/L]	10-Jul-20	06:38	13-Jul-20	17:11	25	177
Phosphorus (total) [mg/L]	08-Jul-20	17:23	09-Jul-20	12:47	1	4.95
Total Kjeldahl Nitrogen [as N mg/L]	08-Jul-20	22:28	10-Jul-20	13:12	---	45.4

**Patti Stark**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - KOL 2HO  
Phone: 705-652-2000 FAX: 705-652-6365

19-August-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 12 August 2020  
**LR Report:** CA12307-AUG20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS#1
Sample Date & Time					11-Aug-20 11:22
Temperature Upon Receipt [°C]	---	---	---	---	19.0
Biochemical Oxygen Demand (BOD5) [mg/L]	12-Aug-20	18:03	17-Aug-20	15:25	181
Total Suspended Solids [mg/L]	15-Aug-20	11:07	17-Aug-20	11:59	114
Phosphorus (total) [mg/L]	12-Aug-20	17:53	13-Aug-20	16:23	4.12
Total Kjeldahl Nitrogen [as N mg/L]	12-Aug-20	17:35	13-Aug-20	15:23	43.0

**Patti Stark**  
*Project Specialist,*  
*Environment, Health & Safety*



**SGS Canada Inc.**

P.O. Box 4300 - 185 Concession St.  
Lakefield - Ontario - K0L 2H0  
Phone: 705-652-2000 FAX: 705-652-6365

22-September-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 10 September 2020  
**LR Report:** CA12411-SEP20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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Phone: 705-345-2338 (cell)  
Fax:705-325-1247

# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					09-Sep-20 10:58
Temperature Upon Receipt [°C]	---	---	---	---	17.0
Biochemical Oxygen Demand (BOD5) [mg/L]	10-Sep-20	17:33	15-Sep-20	14:31	151
Total Suspended Solids [mg/L]	14-Sep-20	09:54	15-Sep-20	17:55	66
Phosphorus (total) [mg/L]	11-Sep-20	10:27	21-Sep-20	08:45	2.85
Total Kjeldahl Nitrogen [as N mg/L]	11-Sep-20	17:00	15-Sep-20	15:50	35.6

**Patti Stark**  
**Project Specialist,**  
**Environment, Health & Safety**



**SGS Canada Inc.**

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16-October-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 07 October 2020  
**LR Report:** CA12266-OCT20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					05-Oct-20 10:20
Temperature Upon Receipt [°C]	---	---	---	---	13.0
Biochemical Oxygen Demand (BOD5) [mg/L]	08-Oct-20	18:46	13-Oct-20	16:57	130
Total Suspended Solids [mg/L]	09-Oct-20	15:00	13-Oct-20	17:17	144
Phosphorus (total) [mg/L]	13-Oct-20	14:56	14-Oct-20	19:12	5.89
Total Kjeldahl Nitrogen [as N mg/L]	13-Oct-20	07:11	16-Oct-20	11:53	54.5

\_\_\_\_\_  
Kimberley Didsbury  
Project Specialist,  
Environment, Health & Safety



**SGS Canada Inc.**

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18-November-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 12 November 2020  
**LR Report:** CA12377-NOV20

P.O. Box 159  
Orillia, ON  
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					11-Nov-20 13:55
Temperature Upon Receipt [°C]	---	---	---	---	6.0
Biochemical Oxygen Demand (BOD5) [mg/L]	12-Nov-20	17:33	17-Nov-20	15:38	207
Total Suspended Solids [mg/L]	13-Nov-20	07:25	18-Nov-20	09:04	159
Phosphorus (total) [mg/L]	13-Nov-20	13:26	16-Nov-20	10:33	2.24
Total Kjeldahl Nitrogen [as N mg/L]	13-Nov-20	08:35	17-Nov-20	09:58	25.0

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*



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23-November-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 16 November 2020  
**LR Report:** CA12490-NOV20

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Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						16-Nov-20 11:24
Temperature Upon Receipt [°C]	---	---	---	---	---	6.0
Biochemical Oxygen Demand (BOD5) [mg/L]	18-Nov-20	17:47	23-Nov-20	14:03	25	5
Total Suspended Solids [mg/L]	18-Nov-20	14:31	20-Nov-20	10:15	25	< 2
Alkalinity [mg/L as CaCO3]	17-Nov-20	08:40	19-Nov-20	10:36		105
pH [No unit]	17-Nov-20	08:40	19-Nov-20	10:36		7.65
Ammonia+Ammonium (N) [as N mg/L]	17-Nov-20	19:05	18-Nov-20	13:20		4.8
Phosphorus (total) [mg/L]	19-Nov-20	09:02	20-Nov-20	10:01	1	0.20
Total Kjeldahl Nitrogen [as N mg/L]	18-Nov-20	17:12	19-Nov-20	11:14	---	6.8

**Patti Stark**  
*Project Specialist,  
Environment, Health & Safety*



**SGS Canada Inc.**

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03-December-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 25 November 2020  
**LR Report:** CA12732-NOV20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						24-Nov-20 09:16
Temperature Upon Receipt [°C]	---	---	---	---	---	11.0
Biochemical Oxygen Demand (BOD5) [mg/L]	25-Nov-20	17:10	30-Nov-20	14:31	25	4
Total Suspended Solids [mg/L]	27-Nov-20	13:44	01-Dec-20	16:49	25	2
Phosphorus (total) [mg/L]	25-Nov-20	15:43	26-Nov-20	12:24	1	0.21
Total Kjeldahl Nitrogen [as N mg/L]	01-Dec-20	16:20	02-Dec-20	14:46	---	5.2
Ammonia+Ammonium (N) [as N mg/L]	01-Dec-20	18:24	02-Dec-20	15:06	---	5.0
pH [No unit]	25-Nov-20	16:57	26-Nov-20	16:10	---	8.02
Alkalinity [mg/L as CaCO3]	25-Nov-20	16:57	26-Nov-20	16:10	---	105

**Patti Stark**  
*Project Specialist,*  
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**SGS Canada Inc.**

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07-December-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 30 November 2020  
**LR Report:** CA14837-NOV20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Washago Lagoon
Sample Date & Time						30-Nov-20 10:14
Temperature Upon Receipt [°C]	---	---	---	---	---	9.0
Biochemical Oxygen Demand (BOD5) [mg/L]	01-Dec-20	16:42	07-Dec-20	11:25	25	4
Total Suspended Solids [mg/L]	02-Dec-20	06:24	04-Dec-20	08:33	25	5
pH [No unit]	01-Dec-20	15:03	02-Dec-20	14:35		8.03
Alkalinity [mg/L as CaCO3]	01-Dec-20	15:03	02-Dec-20	14:35		104
Phosphorus (total) [mg/L]	01-Dec-20	18:20	02-Dec-20	12:59	1	0.19
Total Kjeldahl Nitrogen [as N mg/L]	03-Dec-20	15:30	04-Dec-20	14:21	---	5.3
Ammonia+Ammonium (N) [as N mg/L]	01-Dec-20	18:24	02-Dec-20	15:19		4.8

**Patti Stark**  
*Project Specialist,*  
*Environment, Health & Safety*





**SGS Canada Inc.**

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15-December-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 10 December 2020  
**LR Report:** CA13255-DEC20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

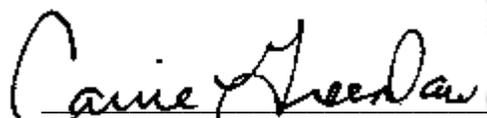
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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	6: Washago PS #1
Sample Date & Time					09-Dec-20 13:42
Temperature Upon Receipt [°C]	---	---	---	---	7.0
Biochemical Oxygen Demand (BOD5) [mg/L]	10-Dec-20	17:26	15-Dec-20	13:56	264
Total Suspended Solids [mg/L]	12-Dec-20	10:18	15-Dec-20	13:01	226
Phosphorus (total) [mg/L]	10-Dec-20	15:00	11-Dec-20	14:07	3.97
Total Kjeldahl Nitrogen [as N mg/L]	10-Dec-20	17:00	15-Dec-20	09:55	42.6



Carrie Greenlaw  
Project Specialist,  
Environment, Health & Safety



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**Twp of Severn (Washago STP)**

Attn : Tony Drouin

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Phone: 705-345-1841 (cell)  
Fax:705-325-1247

21-December-2020

Date Rec. : 14 December 2020  
LR Report: CA13460-DEC20

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						14-Dec-20 08:52	14-Dec-20 09:01	14-Dec-20 08:41
Temperature Upon Receipt [°C]	---	---	---	---	---	8.0	8.0	8.0
Field pH [no unit]	---	---	---	---	---	7.6	7.8	7.7
Field Temperature [celcius]	---	---	---	---	---	4.5	3.0	3.0
Biochemical Oxygen Demand (BOD5) [mg/L]	15-Dec-20	16:57	21-Dec-20	15:25	25	< 4	< 4	< 4
Total Suspended Solids [mg/L]	16-Dec-20	08:05	17-Dec-20	07:47	25	< 2	< 2	< 2
Alkalinity [mg/L as CaCO3]	15-Dec-20	10:00	17-Dec-20	07:57		95	100	97
Phosphorus (total) [mg/L]	15-Dec-20	16:13	16-Dec-20	14:44	1	0.17	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	16-Dec-20	15:16	18-Dec-20	14:28	---	6.0	< 0.5	< 0.5
Ammonia+Ammonium (N) [as N mg/L]	15-Dec-20	19:00	16-Dec-20	13:13		4.5	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	15-Dec-20	19:00	16-Dec-20	13:13		0.022	< 0.001	< 0.001

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.



**SGS Canada Inc.**

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LR Report :

**CA13460-DEC20**

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*Patti Stark*  
*Project Specialist,*  
*Environment, Health & Safety*



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Lakefield - Ontario - K0L 2H0  
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24-December-2020

**Twp of Severn (Washago STP)**

Attn : Tony Drouin

**Date Rec. :** 18 December 2020  
**LR Report:** CA12814-DEC20

P.O. Box 159  
Orillia, ON  
L3V 6J3, Canada

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						17-Dec-20 08:33	17-Dec-20 08:41	17-Dec-20 08:17
Temperature Upon Receipt [°C]	---	---	---	---	---	6.0	6.0	6.0
Field pH [no unit]	---	---	---	---	---	7.3	7.6	7.6
Field Temperature [celcius]	---	---	---	---	---	4.0	2.0	2.5
Biochemical Oxygen Demand (BOD5) [mg/L]	18-Dec-20	15:59	23-Dec-20	13:30	25	4	< 4	< 4
Total Suspended Solids [mg/L]	21-Dec-20	07:40	23-Dec-20	09:59	25	3	< 2	10
Alkalinity [mg/L as CaCO3]	21-Dec-20	08:38	23-Dec-20	17:50		118	110	104
Phosphorus (total) [mg/L]	18-Dec-20	14:54	21-Dec-20	10:24	1	0.21	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	21-Dec-20	14:56	23-Dec-20	09:58	---	7.3	< 0.5	0.6
Ammonia+Ammonium (N) [as N mg/L]	23-Dec-20	14:58	24-Dec-20	11:23		6.2	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	23-Dec-20	14:58	24-Dec-20	11:23		0.014	< 0.001	< 0.001

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.

**Patti Stark**  
**Project Specialist,**  
**Environment, Health & Safety**



SGS Canada Inc.

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**Twp of Severn (Washago STP)**

Attn : Tony Drouin

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29-December-2020

Date Rec. : 22 December 2020  
LR Report: CA12834-DEC20

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# CERTIFICATE OF ANALYSIS

## Final Report

Analysis	1: Analysis Start Date	2: Analysis Start Time	3: Analysis Completed Date	4: Analysis Completed Time	5: Client Limits	6: Lagoon Effluent	7: Green River Upstream	8: Green River Downstream
Sample Date & Time						21-Dec-20 08:56	21-Dec-20 09:22	21-Dec-20 08:45
Temperature Upon Receipt [°C]	---	---	---	---	---	10.0	10.0	10.0
Field pH [no unit]	---	---	---	---	---	7.3	7.8	7.9
Field Temperature [celcius]	---	---	---	---	---	2	5	3
Biochemical Oxygen Demand (BOD5) [mg/L]	22-Dec-20	15:27	29-Dec-20	10:23	25	10	< 4	< 4
Total Suspended Solids [mg/L]	23-Dec-20	10:33	24-Dec-20	12:53	25	10	2	< 2
Phosphorus (total) [mg/L]	22-Dec-20	18:00	23-Dec-20	14:10	1	0.35	< 0.03	< 0.03
Total Kjeldahl Nitrogen [as N mg/L]	23-Dec-20	13:30	24-Dec-20	09:17	---	14.3	< 0.5	< 0.5
Alkalinity [mg/L as CaCO3]	22-Dec-20	17:22	24-Dec-20	12:35		210	110	113
Ammonia+Ammonium (N) [as N mg/L]	22-Dec-20	15:51	24-Dec-20	11:24		13.6	< 0.1	< 0.1
Unionized Ammonia [mg/L as N]	22-Dec-20	15:51	24-Dec-20	11:24		0.026	< 0.001	< 0.001

Note: Provincial unionized ammonia calculated from field pH and temperature provided on the chain of custody form.



**SGS Canada Inc.**

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LR Report :

**CA12834-DEC20**

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*Patti Stark*  
*Project Specialist,*  
*Environment, Health & Safety*