

Facility Muskoka Beach Road Wastewater Treatment Plant



2019

Wastewater, 2019 End Report

Environmental Compliance Approval: #7847-ABVPD3

Introduction

The Beach Road Water Pollution Control Plant (WPCP), which services the Town of Gravenhurst, is owned and operated by the District Municipality of Muskoka. The plant is located at 1083 Muskoka Beach Road, and was commissioned in May, 1993. It is capable of servicing a population of 9,500 people.

The Beach Road Plant receives influent wastewater from a gravity sewer main, which runs underneath Muskoka Beach Road. The majority of the wastewater is from the James St Sewage Pumping Station that is located on the site of the original Gravenhurst sewage treatment plant in central Gravenhurst. In addition the collection system contains fourteen other sewage pumping stations. The pumping stations serve residential areas of Gravenhurst as well as customers as diverse as the Taboo Resort and Beaver Creek Correctional Institution. The WPCP also has a septic receiving facility, which processes septic and holding tank wastes that are trucked in.

The Plant operates under the MOE Environmental Compliance Approval (ECA) # 7847-ABVPD3, issued September 9, 2016. Under the terms of the Environmental Compliance Approval, the plant is permitted to treat an average daily flow of 5,165 m³/day, and a peak flow of 13,791 m³/day. Additionally, effluent limit criteria are as follows:

Effluent Parameter		Concentration	Total Effluent Loading
CBOD5		10 mg/l	51.65 kg/day
Suspended Solids		10 mg/l	51.65 kg/day
Ammonia/Ammonia Nitrogen	- Summer	5 mg/l	25.8 kg/day
	- Winter	10 mg/l	51.65 kg/day
Total Phosphorous		0.30 mg/l	1.6 kg/day
E. Coli		100 organisms/100 ml for any month	
pH		To be between 6.0 and 9.5 at all times	

The treatment process is conventional activated sludge with tertiary filtration and ultra violet disinfection before discharge of the effluent to Lake Muskoka. Biosolids from the primary and secondary plant processes are sent to anaerobic digesters. The stabilized biosolids are then dewatered with a centrifuge. The centrifuge cake is hauled off site for disposal at Lystek's Organic Material Recovery Centre in Southgate.

General Information

A review of the District of Muskoka's infrastructure needs is conducted annually by the Director of Water and Sewer Services, Area Manager and Chief Operator, and recommendations for maintenance, rehabilitation and renewal programs are considered.

Efforts to eliminate the discharge of untreated or partially treated wastewater to receiving waters are being accomplished by a long term financial commitment to correct excessive infiltration into the wastewater collection system by means of sewer main rehabilitation / replacement, manhole rehabilitation and pumping station rehabilitation programs.

The treatment facility is capable of effective operation during emergencies; maintenance shut downs, and power failures. This is achieved through such measures as preventive maintenance of duty /

standby units, the duplication of major treatment components, the provision of standby power sources and extensive use of the SCADA (Supervisor control and Data Acquisition) systems. All pumping stations and treatment control systems use SCADA, in combination with Data Highway Plus, and programmable logic controllers.

All operators are qualified and to operate the systems efficiently and effectively in order to achieve the highest level of treatment at all times. A commitment to provide Operator training and certification is being sustained.

Regulatory sampling is carried out to meet the requirements outlined in the ECA, and additional in-house operational sampling beyond these regulatory requirements is being performed on a routine basis. These efforts have resulted in an effective treatment process which ensures that effluent discharges consistently meet effluent objectives and are environmentally safe. All final effluent sample results for the Beach Road Plant met the effluent limits.

All data in this report is a compilation of test results received from SGS Canada and their accredited laboratory, Lakefield Research. All in-plant sampling, analysis and recording of results conforms, in order of precedence, to the following 3 standards: Ministry's Procedure F-10-1, "Procedures for Sampling and Analysis Requirements for Municipal and Private Sewage Treatment Works", Ministry's publication "Protocol for the Sampling and Analysis of Industrial/Municipal Wastewater" and the American Water Works Association/Water Environment Federation (AWWA/WEF) publication "Standard Methods for the Examination of Water and Wastewater".

Executive Summary

In all respects, test results of the treated effluent for the parameters of CBOD5, suspended solids, ammonia, total phosphorous, and E. Coli are in compliance with the limits outlined in the ECA regarding monthly allowable concentrations and total effluent loading throughout the entire 2019.

Overall, the plant treatment processes performed satisfactorily and are deemed to be adequate. All sample test results of the final effluent were within levels outlined in the plant ECA (#7847-ABVPD3).

Quantity of Flow Summary

The plant has a daily average flow design capacity of 5,165 m³/day. The actual average daily flow for the 2019 was 2,938 m³/day, however, the 3 year average is 3,122 m³/day, which represents 59% of the plant capacity. None of the individual system components exceeded the design flow rating.

Plant Operational Upsets or Process Failures

There were no plant operational problems in 2019.

Summary of Maintenance

There were significant upgrades to the grit removal system in 2019 with the replacement of all grit lift slurry piping and valves.

All equipment information at this plant is entered into a computer database. From this information, a scheduled preventive maintenance programme has been established. The maintenance programme includes (and not limited to):

- Monthly testing of emergency testing (under load) of the standby generators.
- Annual servicing of emergency standby generators.
- Annual replacement of U.V. bulbs.
- Annual infrared inspection of Motor Control panels.
- Annual calibration of flow metering devices.
- Annual cleaning of all sewage pumping stations.
- Marine inspection of effluent outfall and diffuser completed in 2017. (5 year cycle)

Evaluation of the Need for Improvement Works

The treatment facility is operating at a plant capacity of 59% and is in compliance with specified effluent parameter criteria. In addition, there has been no significant treatment process upsets and plant bypasses. As a result, there is no compliance need for improvements to the existing works.

Summary of Proposed Work Requiring Approval under OWRA

Since the treatment facility is operating satisfactorily there is no anticipated works requiring an ECA amendment for 2020.

Interpretation of Analytical Results

All sample results for Raw Sewage and Final Effluent are reported in this section. Other tables in this report include Chemical Usage, Biosolids Quality, and Biosolids Quantity.

Raw Sewage

The information reported in the Raw Sewage sample results summary table consists of test results of analysis conducted on composite samples of the plant influent flow as required by the plant ECA. Samples are sent for analysis to Lakefield Research, as well as analysis conducted on site using Standard Methods or equivalent. Weekly analysis has been performed and reported as specified under the terms outline in the ECA.

Influent analysis

	Minimum	4 Week Average Maximum	Annual Average	Average loading kg/day
BOD5 (mg/l)	44	271.8	156.6	443.3
Suspended Solids (mg/l)	85	512	291.8	818.3
Total Phosphorous (mg/l)	0.88	7.56	3.35	7.03
TKN (mg/l)	6.2	52.5	24.0	67.0

Effluent analysis

The information reported in the Final Effluent sample results summary table #7 consists of test results of analysis conducted on final effluent composite samples. Bacteriological samples, however, consisted of grab samples. Weekly analysis has been performed and reported as specified under the terms outlined in the ECA.

Effluent Objectives analysis

There was 1 event (1 day) on January 2, 2019 when the effluent pH was below the objective of 6.5 but in compliance with the effluent pH minimum of 6.0; 53 final effluent pH tests were performed in 2019 and in all months the monthly average conformed to the objective.

There was one month, February, when the Ammonia average exceeded the objective requirement of 1.0 mg/L. The ammonia result for February 5 was 4.8 mg/L due to high influent flows and nitrification quickly recovered with excellent performance for the remainder of the month. Also, in April due to high spring flows there were two events of Ammonia exceeding the objective with a sample result of 2.8 mg/L on April 15 and a result of 1.4 mg/L on April 30.

There were two (2) events of the Suspended Solids in the effluent exceeding the objective with a sample result of 8 mg/L on February 5 and a sample result of 6 mg/L on March 5; for all months of 2019 the monthly Suspended Solids averages met the objective.

Final Effluent Analysis Summary

	Minimum	4 Week Average Maximum	Annual Average	Average loading kg/day
CBOD5 (mg/l)	2.0	2.3	2.0	5.9
Suspended Solids (mg/l)	2.0	3.8	2.3	6.8
Total Phosphorous (mg/l)	0.03	0.09	0.05	0.14
Ammonia (mg/l)	0.10	1.50	0.30	.99
E. Coli (#/100 ml)	0	13.95(Geomean)	0.54 (Geomean)	Not Applicable
pH	Min – 6.34	Max – 7.81	7.13	Not Applicable

All final effluent samples tested for CBOD5, suspended solids, ammonia, E. Coli, and total phosphorous were below non-compliance limits outlined in the ECA.

Final Effluent Sampling Summary

All samples were collected following the frequency and methods required by the facility approval. For the coming year, 2020, no changes to the sampling plan are being considered at this time.

Biosolids Receiving and Generation

The quality and volume of biosolids hauled from the facility for disposal is outlined in the table provided. Dewatered biosolids from the plant is hauled off site for disposal at Lystek's Organic Material Recovery Centre in Southgate. A contractor was used by the District of Muskoka to transfer all material for disposal in 2019, and will continue to do so in 2020. It is not anticipated that there will be a significant increase in the total volume of bio solids produced in 2020.

Biosolids Co-Treatment

The treatment plant has the capability to co-treat additional wastes through the Hauled Waste Receiving Facility, which located on site at headworks of the plant. Septage and holding tank waste are hauled in by vacuum trucks, and dumped into the 76 cubic meter tank, which is then blended into the plant influent flow. Biosolids and water treatment sludge generated by smaller municipal treatment facilities may be processed in this fashion as well. Tables summarizing the septage analytical characteristics and monthly loading rates of the hauled wastes that have been co-treated at the plant in 2019 are included in this report.

Co-Treatment Flow Summary

The plant ECA (Sewage) #7847-ABVPD3, issued September 9, 2016 states that the monthly average quantity of septage and holding tank waste being co-treated at the plant shall not exceed 20 m³/day. The certificate further stipulates that the monthly average volume of biosolids being co-treated shall not exceed a monthly average flow of 20 m³/day, and that volumes of water treatment plant sludges being co-treated shall not exceed a monthly average flow of 20 m³/day as well.

The highest monthly average for septage was 17.2 m³/day in June 2019 with no problems observed by this volume; samples of the septage waste were collected monthly. The highest monthly average for biosolids was 5.4 m³/day which occurred in September 2019. It is noted that no analytical samples were obtained for the biosolids received however, there were no operational issues with the volume and quality of the biosolids hauled in in 2019. For 2020, biosolids being hauled in will have sampling coordination between the District and the local non-municipal wastewater treatment plant. No water plant sludges were received in 2019.

Summary of Complaints received throughout the reporting period

There were no complaints received in the reporting period.

Gravenhurst Wastewater Collection Summary

New or Replaced Sewer Mains

There was 200 m new sewer installed on John St. N. (Bay St. to Brown St.) and 200 m of gravity and 215 m of LPS in the Hutton subdivision in 2019.

New Sewer Services:

Fifteen (15) new customers connected to existing municipal services in 2019.

Sewer Lateral Blockages:

Two lateral blockages on the municipal side were observed in 2019, one manhole was repaired and the other was frozen (it was subsequently thawed)

Sewer Pump Stations:

All stations were cleaned by high velocity water pressure. All debris was vacuumed out and hauled to the appropriate landfill site. The internal air-release vacuum valves at our four newest stations were removed, cleaned, reinstalled and tested for proper operation as part of the annual maintenance program.

Main Line Sewer Blockages:

There were no main line sewer blockages in 2019.

Sewer Force Mains:

All the low pressure sewage force mains within the collection system were flushed by operations staff through the annual preventive maintenance program.

Air Release Valves:

All twenty (22) of the air release vacuum valves connected to the sewage force mains in our collection system were removed, cleaned, tested and reinstalled for the yearly maintenance inspection.

Sewer Flushing and Video Inspections:

Approximately 5,498.0 meters of various size sanitary sewer mains were flushed using high - pressure equipment. 3,871.0 meters were flushed and inspected by video camera. The two 250mm depressed (siphon) sewer mains from our Knister sewage pump station was swabbed from the collection chamber located in the Brydon Bay Road easement, through to the receiving chamber on Brydon Bay Road.

Sewer Rehabilitation:

There was ten (10) sewer manholes repaired (auto stable, top sections)

Locates:

Operations staff addressed 997 locate requests.

TABLE 1: EFFLUENT FLOW SUMMARY - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

Month	Total Monthly (m ³)	Average Day Flow (m ³ /d)	Maximum Day Flow (m ³ /d)	Minimum Day Flow (m ³ /d)	Comments
January	74,810	2,413	2992	2073	
February	74,459	2,659	5667	2080	
March	94,382	3,045	6083	2117	
April	141,714	4,724	7303	3184	
May	119,925	3,869	5862	3298	
June	95,860	3,195	3741	2953	
July	86,683	2,796	3046	2622	
August	78,927	2,546	2943	2291	
September	65,872	2,196	2446	1947	
October	71,574	2,309	2965	2094	
November	85,221	2,841	3486	2229	
December	82,865	2,673	3458	2349	

Total 1,072,291

Average Day 2,938

Maximum Day 7,303

Minimum Day 1,947

TABLE 3: INFLUENT QUARTERLY ANALYSIS SUMMARY - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

Sample Date	Sample Identification Number	Weekly 24 Hour Composite Sample					
		BOD5 mg/L	Alkalinity (Total as CaCO3) mg/L	pH	Phosphate mg/L	Total Phosphorus mg/L	Suspended Solids mg/L
Feb 5/19	CA13049	130				3.15	186
May 7/19	CA12348	78				1.82	120
Aug 6/19	CA12183	184				3.7	338
Nov 5/19	CA13136	230				2.47	381
Yearly Average		156				2.8	256
Maximum		230				3.7	381
Minimum		78				1.8	120

Sample Date	Weekly 24 Hour Composite Sample					
	Conductivity mg/L	Total Kjeldahl Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Total Ammonia Nitrogen mg/L	Chloride mg/L
Feb 5/19		15.3				
May 7/19		18.4				
Aug 6/19		18.1				
Nov 5/19		11.1				
Yearly Average		16				
Maximum		18				
Minimum		11				

TABLE 4: CHEMICAL USAGE SUMMARY - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

Month	ALUM		SODA ASH		SODIUM HYPOCHLORITE		POLYMER	
	Average Dosage	Total kg	Average Dosage	Total kg	Average Dosage	Total kg	Average Dosage	Total kg
January	114.7	8580	69.8	9000			105.1	50
February	115.2	8580	77.9	10000			95.2	50
March	90.9	8580	67.6	11000			109.8	100
April	60.5	8580	45.0	11000			159.8	125
May	71.5	8580	53.2	11000			197.0	150
June	89.5	8580	54.5	9000			112.5	50
July	99.0	8580	73.6	11000			214.8	225
August	108.7	8580	73.5	10000			181.1	250
September	130.3	8580	70.4	8000			155.0	150
October	119.9	8580	97.2	12000			150.6	150
November	100.7	8580	68.1	10000			151.5	125
December	103.5	8580	63.0	9000			130.0	75
Average Monthly	100.4	8580	67.8	10083	0	0.0	146.9	125
Total Yearly		102,960		121,000		0		1,500

TABLE 6: EFFLUENT QUARTERLY ANALYSIS SUMMARY - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

Sample Date	Sample Identification Number	BOD5 mg/L	Alkalinity (Total as CaCO3) mg/L	pH	Phosphate mg/L	Total Phosphorus mg/L	Suspended Solids mg/L
Feb 5/19	CA13049		145	7.39		0.16	8
May 7/19	CA12348		89	7.01		0.03	3
Aug 6/19	CA12183		82	7.00		0.04	2
Nov 5/19	CA13136		127	7.81		0.041	3
Yearly Average			111	7.30		0.07	4
Maximum			145	7.81		0.16	8
Minimum			82	7		0.03	2

Sample Date	Conductivity mg/L	Total Kjeldahl Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Total Ammonia Nitrogen mg/L	Chloride mg/L
Feb 5/19		4.9	18.4	0.03	4.8	
May 7/19		0.5	14.8	0.03	0.1	
Aug 6/19		0.5	29.2	0.03	0.1	
Nov 5/19		1.3	22	0.03	0.1	
Yearly Average		1.8	21.2	0.03	1.3	
Maximum		4.9	29.2	0.03	4.8	
Minimum		0.5	14.8	0.03	0.1	

TABLE 7B: EFFLUENT LOADING and CONCENTRATION SUMMARY - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

MONTH	CBOD ₅			SUSPENDED SOLIDS			TOTAL AMMONIA NITROGEN						FECAL COLIFORM		TOTAL PHOSPHOROUS		
	Average		Maximum Daily	Average		Maximum Daily	Summer (May to Oct)			Winter (Nov to Apr)			Average	Maximum Daily	Average		Maximum Daily
	mg/L	kg/d	kg/d	mg/L	kg/d	kg/d	mg/L	kg/d	kg/d	mg/L	kg/d	kg/d	#/100 mL	#/100 mL	mg/L	kg/d	kg/d
January	2.00	4.83	5.98	2.00	4.83	5.98				0.10	0.24	0.30	0.20		0.04	0.10	0.13
February	2.00	5.32	11.33	2.25	5.98	12.75				1.50	3.99	8.50	0.50		0.09	0.23	0.50
March	2.00	6.09	12.17	3.50	10.66	21.29				0.30	0.91	1.82	1.00		0.07	0.21	0.41
April	2.00	9.45	14.61	2.00	9.45	14.61				0.90	4.25	6.57	0.40		0.04	0.20	0.31
May	2.00	7.74	11.72	2.25	8.70	13.19	0.10	0.39	0.59				0.50		0.03	0.12	0.18
June	2.00	6.39	7.48	2.50	7.99	9.35	0.10	0.32	0.37				0.25		0.03	0.10	0.11
July	2.00	5.59	6.09	2.60	7.27	7.92	0.10	0.28	0.30				22.40		0.03	0.09	0.10
August	2.00	5.09	5.89	2.00	5.09	5.89	0.10	0.25	0.29				30.00		0.06	0.15	0.17
September	2.00	4.39	4.89	2.25	4.94	5.50	0.20	0.44	0.49				25.50		0.06	0.13	0.14
October	2.00	4.62	5.93	2.20	5.08	6.52	0.10	0.23	0.30				0.40		0.04	0.08	0.11
November	2.00	5.68	6.97	2.25	6.39	7.84				0.10	0.28	0.35	3.50		0.04	0.12	0.15
December	2.00	5.35	6.92	2.00	5.35	6.92				0.10	0.27	0.35	0.00		0.04	0.11	0.15
Average Monthly	2.00	5.88	8.33	2.32	6.81	9.81	0.12	0.32	0.39	0.50	1.66	2.98	7.05		0.05	0.14	0.20
Average Yearly																	
Effluent Objective	5	25.82		5.00	25.82		1	5.16		1.00	5.16		0.00		0.30	1.55	
Non-Compliance	10	51.65		10.00	51.65		5	25.8		10.00	51.65		80.00		0.30	1.55	

Note: Bracketed and Bolded Values indicate non-compliance ()

TABLE 8: DEWATERED SLUDGE PRODUCTION SUMMARY - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

No.	Date	Hauler	Sludge			Sample		Destination	Comments
			Liquid Volume m ³	Cake Weight kg	Type	Sample To	Type		
1	January		476	27,100				Lystek	
2	February		525	74,300				Lystek	
3	March		911	78,050				Lystek	
4	April		782	71,580				Lystek	
5	May		761	89,140				Lystek	
6	June		444	39,730				Lystek	
7	July		1047	73,290				Lystek	
8	August		1380	105,530				Lystek	
9	September		968	61,120				Lystek	
10	October		996	88,530				Lystek	
11	November		825	64,890				Lystek	
12	December		577	42,740				Lystek	
Yearly Total			9,693	816,000					
Yearly Average			808	68,000					
Maximum			1,380	105,530					
Minimum			444	27,100					

TABLE 10: SLUDGE QUALITY ANALYSIS - 2019

District of Muskoka - Beach Road WPCP - Gravenhurst

Parameter Sampled Date	Quarterly Analysis				Average	Comments
	Feb 5/19	May 07/19	Aug 07/19	Nov05/19		
Sample ID	CA13050	CA12349	CA12182	CA14145		
Nitrate mg/L	0.03	0.3	0.3	0.3		
Mercury mg/L	0.007	0.006	0.008	0.009		
Chromium mg/L	0.28	0.27	0.28	0.45		
Cobalt mg/L	0.05	0.07	0.04	0.07		
Copper mg/L	11	9.2	10	15		
Lead mg/L	0.4	0.2	0.3	0.40		
Molybdenum mg/L	0.07	< 0.080	0.11	0.15		
Nickel mg/L	0.2	0.23	0.22	0.36		
Selenium mg/L	< 0.10	<.1	< 0.10	>0.1		
Arsenic mg/L	< 0.1	<.1	< 0.1	>0.1		
Zinc mg/L	9.7	9.4	11	16		
Cadmium mg/L	0.011	0.01	0.012	0.018		
Ammonia mg/L	693	630	459	778		
Total Kjeldahl Nitrogen mg/L	1490	1340	1180	1600		
Total Phosphorus mg/L	57.7	100	127	108		
Total Solids mg/L	19200	21300	18100	20800		
TSS mg/L	18400	20600	16200	19100		
Nitrite mg/L	0.2	0.2	0.2	0.2		
PO4 mg/L	580	500	490	750		

TABLE 9: SEPTAGE QUALITY & QUANTITY

District of Muskoka - Beach Road WPCP - Gravenhurst

DATA	BOD5	TSS	TOTAL SOLIDS	COD	TOT PHOS	TKN	VOL	VOL
FREQ-TYPE	D	D	D	W-C	W-G	N	SEPTAGE	BIOSOLIDS
UNITS	m/l	mg/l	mg/L	mg/L	mg/l	mg/l	m3	m3
Jan	1230	1470	2890	2900	52.4	426	73.07	17.42
Feb	3300	4640	6270	5650	49	368	128.2	34.24
Mar	166	364	800	495	13.7	91.1	239.29	96.5
Apr	1430	1900	4230	5000	24.6	163	386.87	42.18
May	879	10800	11300	12900	78.1	476	383.72	0
Jun	200	493	5920	1100	7.2	54.9	516.28	0
Jul	1530	6400	8000	8600	77.5	193	461.56	53
Aug	1580	9460	12300	21200	110	754	471.97	57
Sep	636	1580	2130	2720	22.3	195	367.62	163
Oct	2050	7140	8150	10100	68.3	476	413.54	79.5
Nov	1520	2940	11800	15400	131	596	242.72	0
Dec	2210	6330	7370	8600	60.8	412	116.76	19.17
Total							3801.6	562.01

BYPASS AND/OR OVERFLOW EVENT REPORT

Location	Date	Event Start Time	Event End Time	Event Duration (hours)	Total Volume (m3)	Sampled	Flow Mes/Mod/Est	Level of Treatment Received	Disinfection status	Reason(s)	Comments
Tim Hortons Gravenhurst MH F28	22/10/2019	unknown	5:00:00 PM	4 hours approx	0.2	no	Est	Sewage, Raw	No	Manhole plugged with paper	repairs to MH benching November 5, 2019
							Est	Sewage, Raw	No		
							Mes	Sewage, Raw	No		
							Est	Sewage, Final Effluent	No		
							Est		No		

Flow	Level of Treatment Received	Disinfection	Reason
Mod = Modelled	Sewage, Raw	No	1 = Precipitation
Mes = Measured	Sewage, Primary Treatment received	Yes, Chlorinated	2 = Spring Thaw / Snow Melt
Est = Estimated	Sewage, Secondary treatment received	Yes, UV	3 = Infiltration
	Sewage, Tertiary	Yes, Ozone	4 = Mechanical/Equipment Failure
	Sewage, Final Effluent		5 = Pipe Failure (break/leak/plugged)
			6 = Process Upsets
			7 = Power Failure
			8 = Planned Maintenance
			9 = Exceed Design Capacity
			10 = Other

Information about this sheet

- This sheet will contain each bypass and/or overflow event with associated information
- Each event will be associated with a Location
- When submitted will contain a log of each “Event” that occurred in the submitted time period
- When the event is reported to SAC please try to obtain a reference number to assist with tracking the events

Certification of Reports

I certify that the information in this document and all attachments are correct, accurate, and complete to the best of my knowledge.

Marcus Firman, C.E.T.
Director of Water and Wastewater Operations

Mark Pringle, C.E.T.
Manager of Water and Wastewater Operations