

**MUNICIPALITY OF WEST ELGIN
WEST LORNE WASTEWATER TREATMENT PLANT**

**2018 ANNUAL REPORT
January 1 to December 31, 2018**

Environmental Compliance Approval # 5873-B4RLEJ

Prepared by:



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

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Section 1: Overview

Overall the West Lorne Wastewater Treatment Plant provided effective wastewater treatment in 2018. The wastewater treatment plant was operated under Environmental Compliance Approval 5873-B4RLEJ dated November 30, 2018.

Collection System

The collection system contains gravity sewers that lead to the Main Pumping Station located on Marsh Line. It contains a wet well with three submersible pumps that pump to the treatment plant. There is a receptacle for a portable generator should the need arise for backup power. In emergencies, the wet well contains an overflow pipe that discharges to the West Lorne Lagoon.

Plant Description

The West Lorne Wastewater Treatment Plant is an extended aeration facility which consists of: grit removal and screening, extended aeration, settling, phosphorus removal, filtration and UV disinfection (seasonal). The extended aeration process is designed to remove carbonaceous and nitrogenous organic compounds (BOD). Aluminum Sulphate is used for phosphorus removal. After the clarifier the effluent is seasonally disinfected using ultraviolet light, then discharged to Zoller Drain. Zoller Drain is connected to Brock's Creek and then from there it goes to Lake Erie. Sludge is directed to the lagoon for storage and settling. Decant liquid off the lagoon is returned to the influent of the plant for treatment.

Process Details

- Wastewater is directed into the sewage lift station from the Village of West Lorne by gravity. Wastewater is then pumped from the sewage lift station located on Mash Line into a reinforced concrete inlet channel, provided with a mechanical rake bar screen.
- The secondary treatment system consists of two trains each consisting of: aeration tank, clarifier tank, and two return activated sludge pumps.
- The phosphorous removal system consists of one 15,000L plastic tank with 2 diaphragm type metering pumps 1 duty and 1 standby.
- Lime system for pH and alkalinity control (currently not in use)
- The objective of the system is to remove organics, total Kjeldahl nitrogen (TKN), phosphorous and ammonia-nitrogen.
- Two rotary lobe blowers one duty and one standby supply low pressure air to the aeration tanks.
- The tertiary treatment system consists of three continuous back wash, up flow, deep bed, granular single media sand filtration units housed in the filter building. The disinfection system consists of a ultra-violet (UV) unit through which the effluent is discharged.
- Operations are controlled by a programmable logic controller (PLC). A data logging computer system with local monitoring capability
- Laboratory space is also located at the WWTP to allow for basic laboratory analyses to be conducted by the plant operator

Section 2: Influent Monitoring Data

Sample Collection and Testing

All samples are collected and tested as per the requirements of the Environmental Compliance Approval.

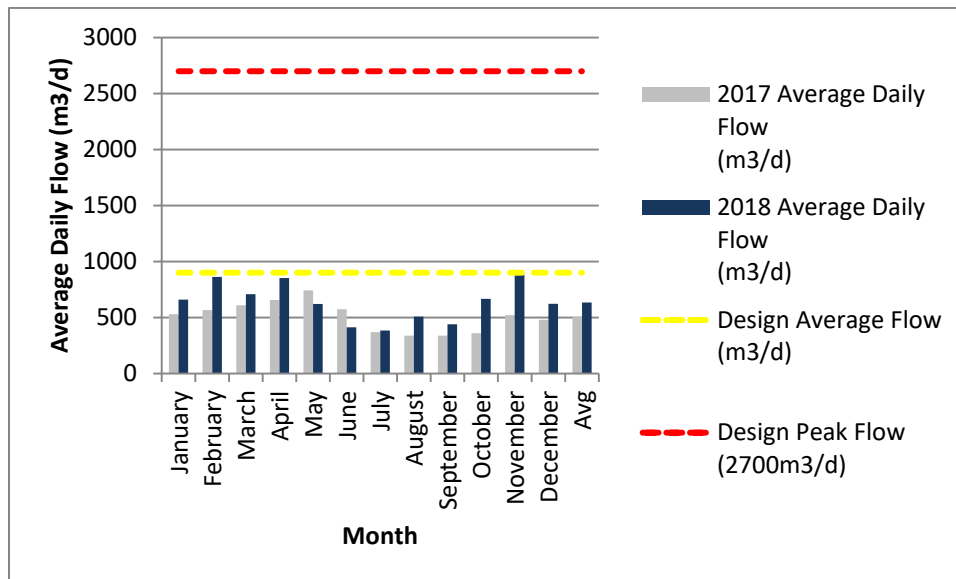
Raw sewage (influent) is sampled bi-weekly and tested for BOD₅, total suspended solids, total phosphorus, total Kjeldahl nitrogen, and alkalinity. The raw samples are collected as 24 hour composite samples.

Flows

Detailed monthly flow information is summarized in Appendix A.

The total flow treated in 2018 was 230,979m³, which corresponds to a 25% increase from 2017 raw flows, refer to Chart 1. The annual average daily flow in 2018 was 635m³/day, or 70.5% of the plant's rated design capacity of 900m³/day.

Chart 1. Average daily raw flow for 2018 compared to 2017.



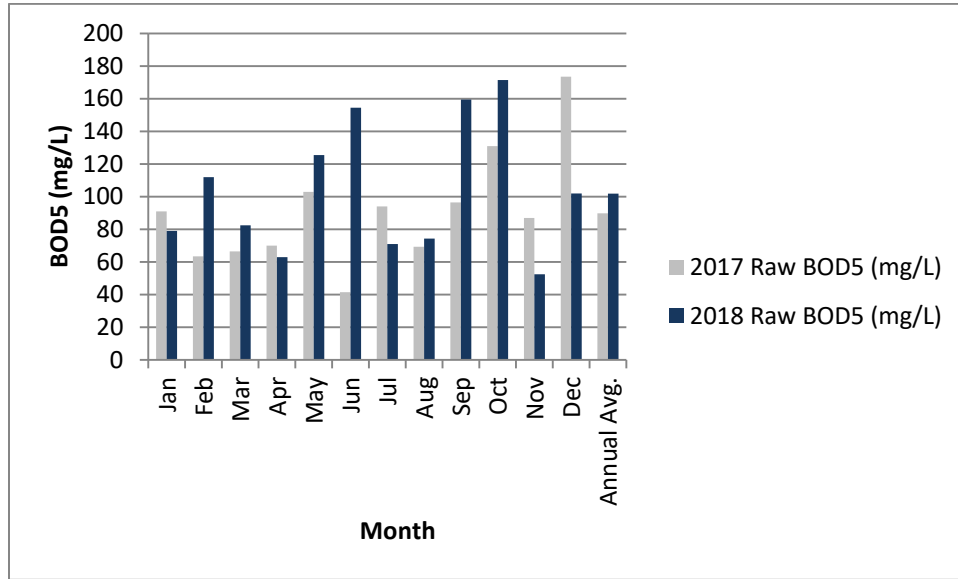
The design average daily flow for the plant was exceeded 41 times during the year, compared to 5 times in 2017. The hydraulic peak flow of 2,700m³/day for the plant was not exceeded in 2018.

Raw Sewage Quality

The annual average raw sewage BOD₅ concentration to the plant was 102mg/L with a maximum concentration of 277mg/L. The average concentration of BOD₅ has increased 13.5% from 2017,

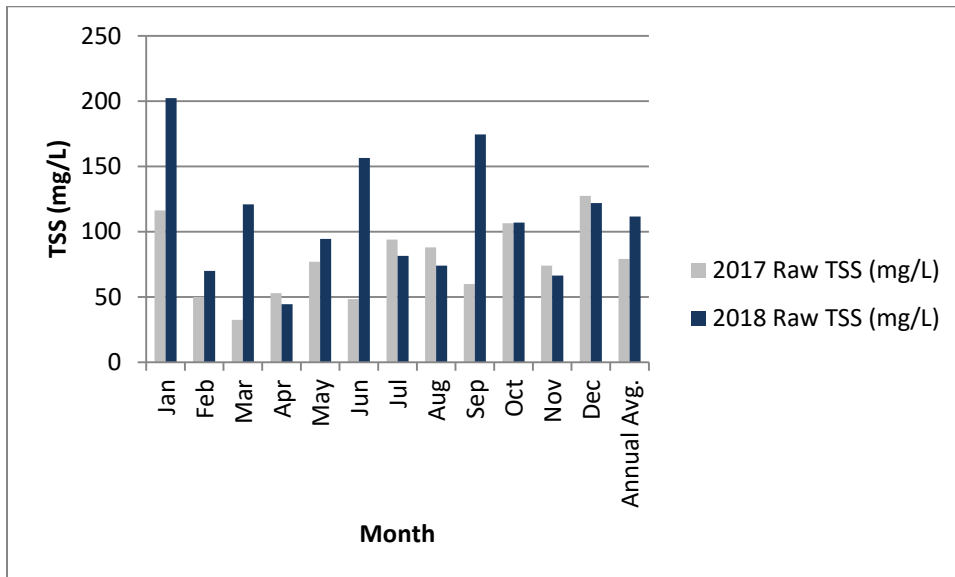
refer to Chart 3. The average BOD₅ loading to the plant was 65kg/d for 2018. Refer to Appendix A for detailed analytical data.

Chart 3. Raw sewage average monthly concentration of BOD₅ for 2018 compared to 2017 concentrations.



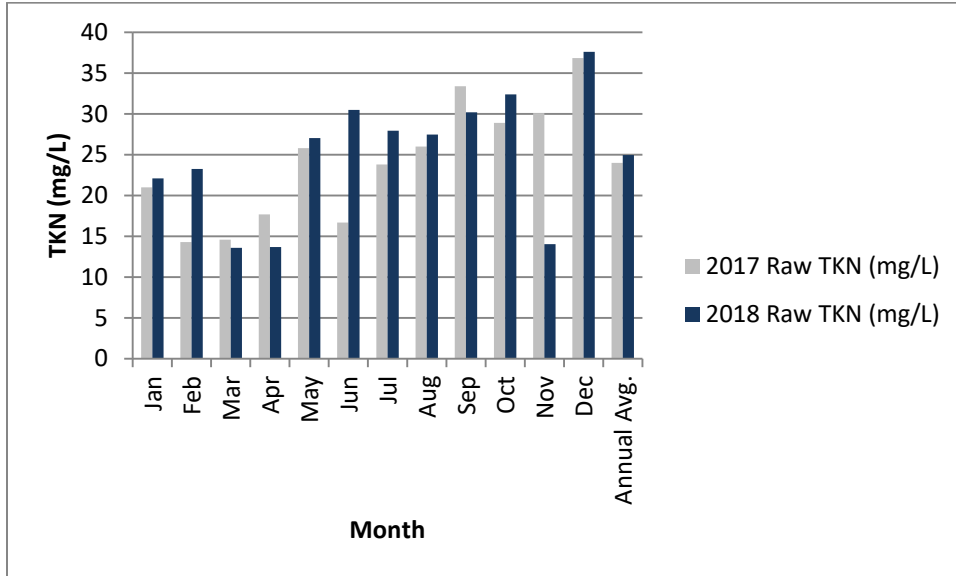
The annual average raw sewage suspended solids (TSS) concentration to the plant was 111.7mg/L, which is a 41% increase from 2017 (refer to Chart 4). This corresponds to an average TSS loading to the plant of 70.9kg/day. Refer to Appendix A for detailed analytical data.

Chart 4. Raw sewage average monthly concentration of TSS for 2018 compared to 2017 concentrations.



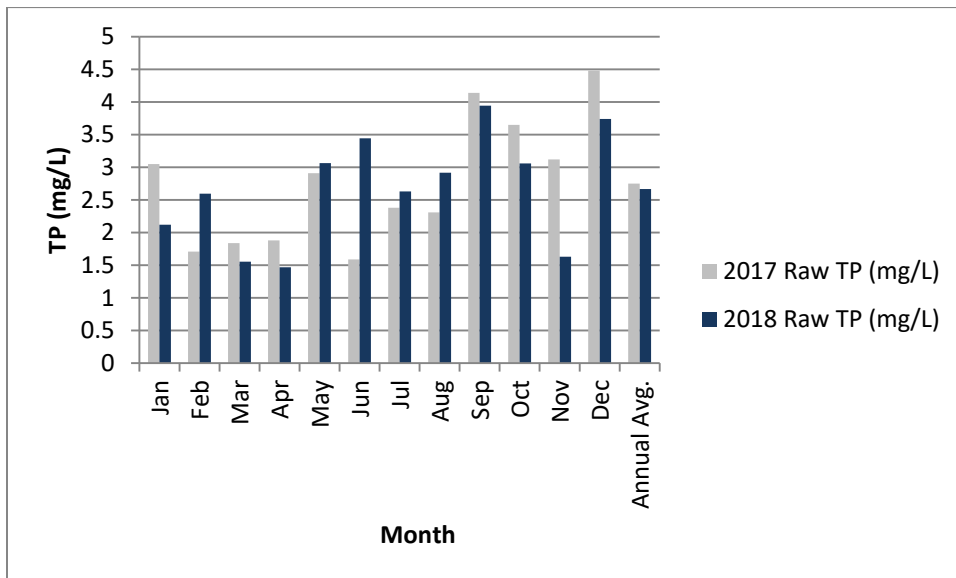
The annual average raw sewage nitrogen concentration (as represented by TKN) to the plant was 25mg/L with a loading of 15.9kg/d. This is an increase of 4.1% from the 2017 annual average concentration, refer to Chart 5. Refer to Appendix A for detailed analytical data.

Chart 5. Raw sewage average monthly concentration of TKN for 2018 compared to 2017 concentrations.



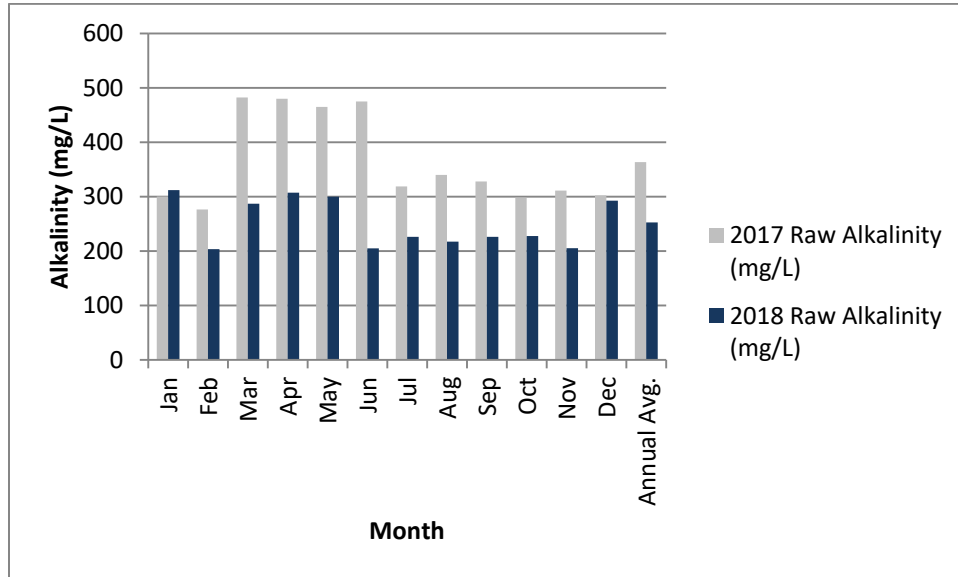
The annual average raw sewage total phosphorus (TP) to the plant was 2.67mg/L, with a loading of 1.69kg/d. This is a decrease of 3% from 2017 annual average of TP, refer to Chart 6. Refer to Appendix A for detailed analytical data.

Chart 6. Raw sewage monthly average concentrations of TP for 2018 compared to 2017 concentrations.



The annual average raw sewage alkalinity to the plant was 252.6mg/L. This is a decrease of 31% from 2017 annual average alkalinity, refer to Chart 7. Refer to Appendix A for detailed analytical data.

Chart 7. Raw sewage average monthly concentrations of alkalinity for 2018 compared to 2017 concentrations.



Section 3: Effluent Monitoring Data

Sample Collection and Testing

Final effluent is sampled bi-weekly and tested for CBOD₅, total suspended solids, total phosphorus, free ammonia nitrogen, total Kjeldahl nitrogen, nitrite, nitrate and alkalinity. Samples are collected using an automatic composite sampler and collected over a 24 hour period. A grab sample of pH, temperature and dissolved oxygen is collected bi-weekly. A grab sample for E. coli is sampled bi-weekly during the disinfection period from April 15 to October 15.

In-house tests are conducted on a weekly basis on the final effluent, raw influent and the mixed liquor suspended solids at the plant to check plant performance and to make any operational changes as required.

In 2018, all chemical and microbiological sample analyses were conducted by SGS Lakefield Research. Temperature, pH and dissolved oxygen were conducted by operators at the treatment plant.

The receiving stream temperature is monitored.

Effluent Limits

Detailed analytical data is attached to this report as Appendix A. The following table provides a summary of monthly average effluent result ranges and loading ranges compared to the compliance limits in the Environmental Compliance Approval.

Summary and Comparison of Compliance Data

Table 1. Monthly average Effluent limits and monthly average loading limits compared to sample results received at the West Lorne WWTP.

Parameter	Monthly Average Effluent Limit (mg/L)	Monthly Average Effluent Result Ranges (mg/L)	Average Monthly Loading Limit (kg/d)	Monthly Average Loading Ranges (kg/d)
CBOD ₅	10	<2 – 4.5	9	0.8 – 2.8
Total Suspended Solids	10	4.5 – 11.5	9	2.2 – 7.8
Total Phosphorus	0.5	0.04 – 0.21	0.45	0.02 – 0.17
Total (Ammonia + Ammonium) Nitrogen	3.0(a)	<0.1 - <0.1	2.7(a)	0.04 – 0.09
	5.0(b)	<0.1 – 0.15	4.5(b)	0.06 – 0.11
E. coli (geomean)	200	<2 - 14		

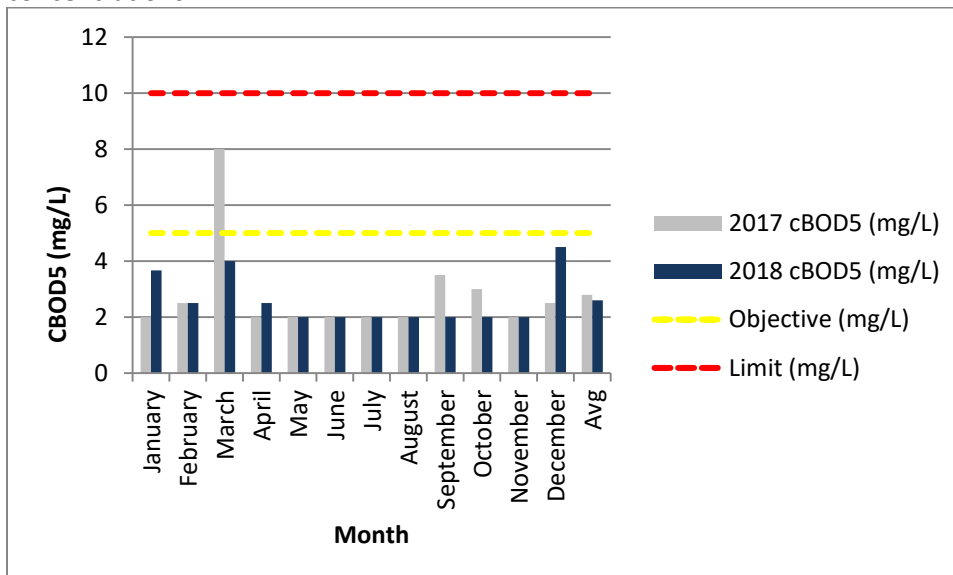
NOTE: (a) limit applies during the non-freezing period May 1 to November 30

(b) limit applies during the freezing period December 1 to April 30

Discussion on Monitoring Data as Compared to the Effluent Limits

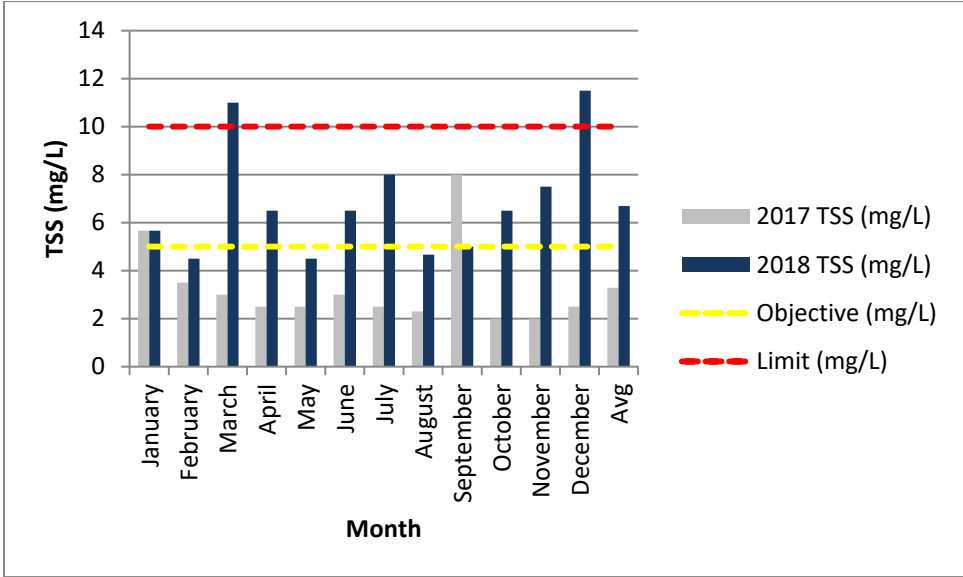
The annual average effluent CBOD₅ in 2018 was 2.6mg/L, which is a decrease by 7% from 2017 (refer to Chart 8). The annual loading of CBOD₅ was 1.65kg/d. Refer to Table 1 for a list of monthly average effluent limits and loading limits.

Chart 8. The effluent monthly average concentration of BOD₅ in 2018 compared to 2017 concentrations.



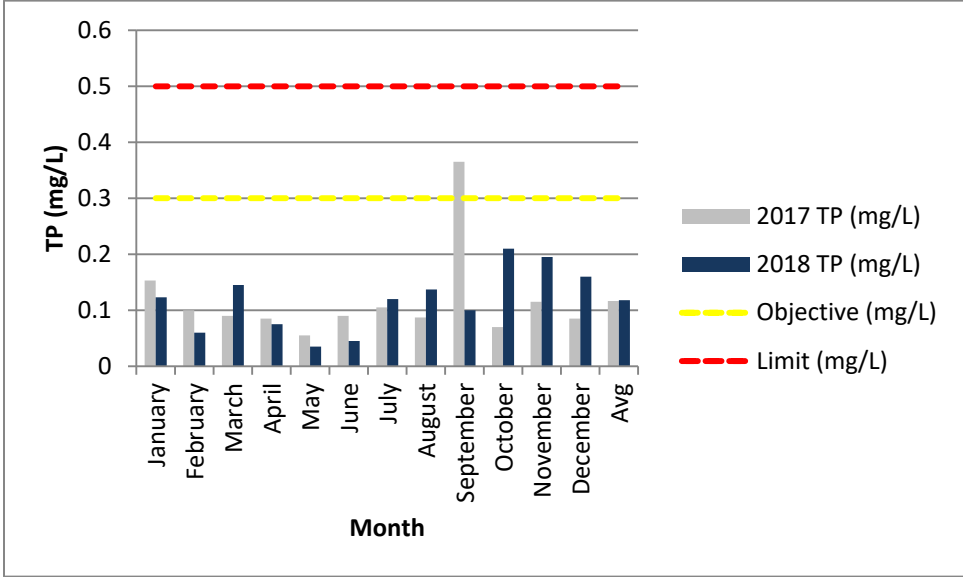
The annual average effluent Total Suspended Solids (TSS) for 2018 was 6.7mg/L, which is a 103% increase from 2017 (refer to Chart 9). This increase is attributed to higher influent flows and the need to adjust alum and wasting volumes. The annual loading of TSS at the plant in 2018 was 4.3kg/d. Refer to Table 1 for a list of monthly average effluent limits and loading limits. The new ECA was issued November 30, 2018, previous to this the limit during the freezing period was 15mg/L therefore there was no limit exceedance in March 2018. However, in December the limit was exceeded based on the new conditions in the ECA.

Chart 9. The effluent monthly average concentration of TSS in 2018 compared to 2017 concentrations.



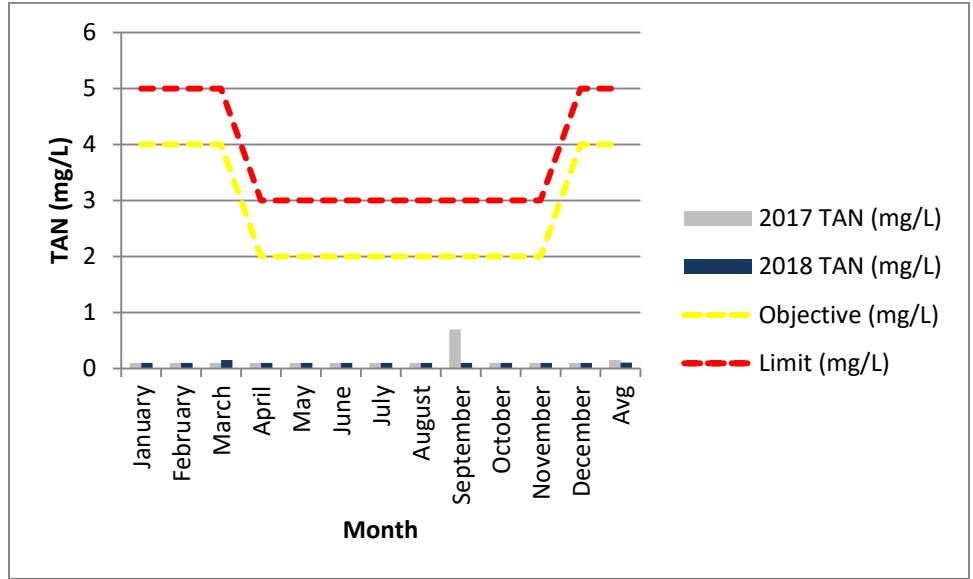
The annual average effluent Total Phosphorus (TP) for 2018 was 0.12mg/L, which is a 1.1% increase from 2017 (refer to Chart 10). The annual loading of TP at the plant in 2018 was 0.07kg/d. Refer to Table 1 for a list of monthly average effluent limits and loading limits.

Chart 10. The effluent monthly average concentration of TP in 2018 compared to 2017 concentrations.



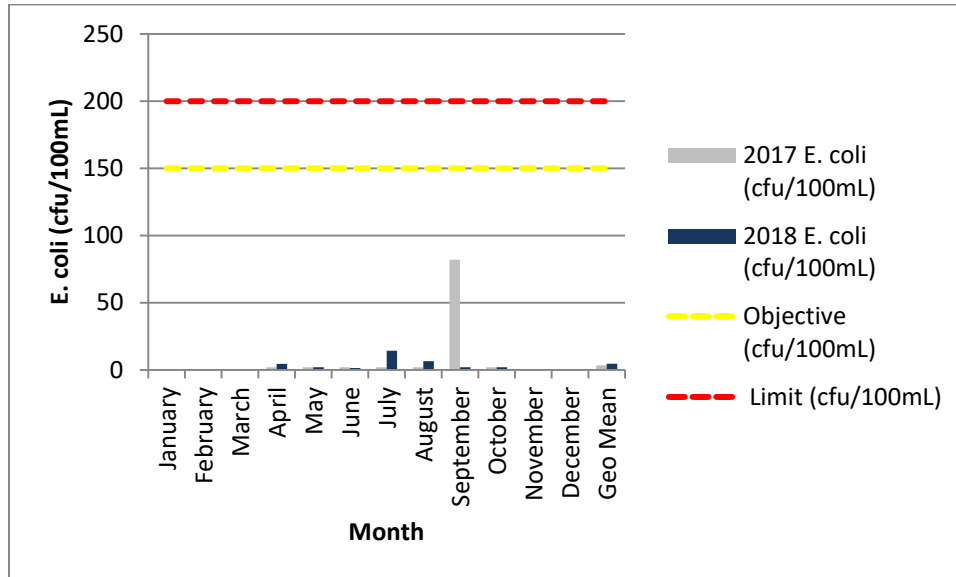
The annual average effluent Total Ammonia + Ammonium Nitrogen (TAN) for 2018 was 0.10mg/L, which is a 30.6% decrease from 2017 (refer to Chart 11). The annual loading of TAN at the plant in 2018 was 0.07kg/d. Refer to Table 1 for a list of monthly average effluent limits and loading limits.

Chart 11. The effluent monthly average concentration of TAN in 2018 compared to 2017 concentrations.



The annual geometric mean effluent E. coli for 2018 was 5cfu/100mL, which is a 37% increase from 2017 (refer to Chart 12). E. coli is monitored only during the disinfection season which is from April 15th to October 15th. Refer to Table 1 for a list of monthly geometric mean effluent concentrations.

Chart 12. The effluent monthly geometric mean concentration of E. coli in 2018 compared to 2017 concentrations.



The West Lorne WWTP provides an effective treatment process complying with all the monthly average limit requirements set out in the Environmental Compliance Approval.

Effluent Objectives

The following table represents the monthly average effluent result ranges and the monthly average loading ranges compared to the objectives outlined in the Environmental Compliance Approval.

Table 2. Effluent objectives compared to monthly average concentrations and loadings.

Parameter	Effluent Objective (mg/L)	Monthly Average Effluent Ranges (mg/L)	Monthly Loading Objective (kg/day)	Monthly Average Loading Ranges (kg/d)
CBOD ₅	5	<2 – 4.5	4.5	0.8 – 2.8
Total Suspended Solids	5	4.5 – 11.5	4.5	2.2 – 7.8
Total Phosphorus	0.3	0.04 – 0.21	0.27	0.02 – 0.17
Total (Ammonia + Ammonium) Nitrogen	2.0(a)	<0.1 - <0.1	1.8(a)	0.04 – 0.09
	4.0(b)	<0.1 – 0.15	3.6(b)	0.06 – 0.11
E. coli	150	<2 - 14		
Dissolved Oxygen*	5	6.61 – 13.03		
Design Flow (m ³ /d)**	900	175 – 2,427		

Note: (a) objective applies during the non-freezing period May 1 to November 30

(b) objective applies during the freezing period December 1 to April 30

*Dissolved Oxygen objective is expressed as a minimum, where all other parameters are expressed as maximums.

**design flow is average daily flows, not monthly average flows.

Discussion of Effluent Objectives

The West Lorne WWTP meet all the effluent objectives identified in the ECA with the exception of total suspended solids. The monthly average concentration objective was not met in January, March, April, June, July, October, November and December (refer to Chart 9). The monthly average loading objective wasn't met in March, April, November and December. Many of these objective exceedances correlate with higher flows being received at the plant. Proper functioning filters would alleviate these objective exceedances. Adjustments were made to ensure compliance with the effluent limits by adjusting wasting, adjusting alum dosages and general cleaning to remove algae build up.

The annual average flow for 2018 was 635m³/d, which is below the design flow of 900m³/d. However, there were 41 instances where the daily design flow was exceeded compared to 5 instances in 2017 (refer to Section 2). These were all due to infiltration into the collection system when there was snow melt and/or rain.

Section 4: Monitoring Schedule

Refer to Appendix B for the monitoring schedule for 2019. Deviations in the sampling schedule for 2018 occurred due to scheduling conflicts. All changes are documented on the sampling calendars that are signed off by the operator.

Section 5: Operating Problems and Corrective Actions

The SCADA system has failed communications several times; an upgrade should be completed to replace the aging equipment.

The sand filters continue to be an ongoing issue. They are also on the capital list for upgrades.

Despite these issues, the plant operated very well in 2018 with only one non-compliance for effluent TSS.

Significant upgrades are expected in 2019, an amended ECA for the upgrades has been received.

Section 6: Maintenance

Regular scheduled monthly preventative maintenance is assigned and monitored using the Workplace Management System (WMS) program. Refer to Appendix C for a schedule of work orders. The following is a summary of maintenance performed other than WMS work orders:

- repairs to alum discharge line
- repairs to bar screen
- repairs to generator
- replace contactor switch for RAS/WAS pump 105

Section 7: Effluent Quality Assurance

Effluent quality assurance is evaluated by monitoring parameters and changes throughout the plant processes. The operators monitor the aeration tank by performing weekly tests on the mixed liquor. These tests include dissolved oxygen, pH, temperature, settling tests, Mixed Liquor Suspended Solids (MLSS), and Mixed Liquor Volatile Suspended Solids (MLVSS). As well, monitoring of the alum dosages, wasting volumes and Return Activated Sludge suspended solids is completed. Data collected from these tests provide information to the operator to make the appropriate adjustments in the treatment process and take corrective actions before the plant reaches its effluent limits.

Section 8: Calibration and Maintenance

Regular scheduled monthly preventative maintenance is assigned and monitored using the Workplace Management System program.

Annual maintenance on the generator was completed in July by Albert's Generator Service. Flow Metrix Technical Services Inc. performed the annual calibration on the flow meter in April, refer to Appendix C.

In house meters for pH and dissolved oxygen are calibrated by OCWA operators as per manufacturer's instructions.

Section 9: Effluent Quality

Design objectives were not met more than 50% of the time for total suspended solids. This will be alleviated by the upgrades in 2019 under the amended ECA for filters.

The influent flow is currently at 70.5% of the rated capacity therefore no assessment is to be made at this time.

Section 10: Sludge Generation

The lagoon is used for sludge digestion and storage as per the Environmental Compliance Approval. The waste activated sludge (WAS) is transferred to the lagoon. The sludge settles on the bottom of the lagoon and the liquid is pumped to the head of the plant for treatment. In 2018, the total amount of WAS transferred to the lagoon was approximately 5,050m³. For 2019 this amount will be similar, approximately 5,000m³. The lagoon has ample storage for the sludge and will not require cleanout in the coming year.

Section 11: Community Complaints

There were no community complaints received in 2018.

Section 12: Bypasses, Overflow, Spills, and Other Situations Outside Normal Operating Conditions

There were no bypasses, overflows or other situations outside normal operating conditions for the West Lorne WWTP or for the Pumping Station during 2018.

On January 25, 2018 a notification was received that the west lagoon was overflowing. This was reported to the Spills Action Centre (SAC) report # 901827 with an estimated spill of 5m³. Repairs were made to this low spot in the southwest corner of the lagoon to prevent further overflowing.

Section 13: Modifications to Sewage Works

There have been no modifications to sewage works under condition 10 of the ECA.

Section 14: Bypass/Overflow Elimination

There were no bypasses or overflow events for the West Lorne Wastewater Treatment Plant in 2018. There are no projects at this time planned in the sanitary sewer system.

Section 15: Proposed Works Completion and Commissioning

Over the next reporting period there are some significant replacements that are expected to be undertaken, these amendments are identified as proposed works in the current ECA. The proposed work includes:

- grit and screening replacement
- rebuild 2 blowers and add third blower
- replacement of RAS/WAS pumps
- replacement of scum trough
- replacement of sand filters, addition of air compressor for filters
- replacement of backwash pumps and addition of backwash tank
- installation of effluent flow meter

Refer to Appendix D for a construction and commissioning schedule.

Section 16: Summary

Overall the West Lorne Wastewater Treatment Plant provided effective treatment in 2018 with only one effluent limit exceedance for total suspended solids as identified in Section 3.

APPENDIX A

Analytical Data

APPENDIX B

Monitoring Schedule



Sample Schedule 2019 5526 West Lorne WWTP

Issued: 2018-12-24
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Pages: 1 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

January 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 STAT	2	3 IH Full Raw & Effluent Samples	4	5
6	7	8 IH Full	9	10	11 IH Reduced	12
13	14	15 IH Full Raw & Effluent Samples	16	17	18 IH Reduced	19
20	21	22 IH Full	23 H&S Inspection	24	25 IH Reduced	26
27	28	29 IH Full Raw & Effluent Samples	30	31		

IH (In House) Full:

Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced:

Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples:

24hr Composite (BOD5, SS, TP, TKN)
24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility. At the end of the month hand in to the PCT with folder.

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Revision History

Date	Revision #	Reason for Revision	Revision By
2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019 5526 West Lorne WWTP

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Pages: 2 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

February 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 IH Reduced	2
3	4	5 IH Full	6	7	8 IH Reduced	9
10	11	12 IH Full Raw & Effluent Samples	13	14	15 IH Reduced	16
17	18 STAT	19	20 IH Full	21	22 IH Reduced	23
24	25	26 IH Full Raw & Effluent Samples	27	28		

IH (In House) Full: Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced: Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples: 24hr Composite (BOD5, SS, TP, TKN)

Effluent Samples: 24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

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Sample Schedule 2019 5526 West Lorne WWTP

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March 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 IH Reduced	2
3	4	5 IH Full	6	7	8 IH Reduced	9
10	11	12 IH Full Raw & Effluent Samples	13	14	15 IH Reduced	16
17	18	19 IH Full	20	21	22 IH Reduced	23
24	25	26 IH Full Raw & Effluent Samples	27	28	29 IH Reduced	30
31						

IH (In House) Full:

Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced:

Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples:

24hr Composite (BOD5, SS, TP, TKN)
24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
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Sample Schedule 2019 5526 West Lorne WWTP

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Approved by: Operations Management

April 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1	2 IH Full	3	4	5 IH Reduced	6
7	8	9 IH Full Raw & Effluent Samples	10	11	12 IH Reduced	13
14	15	16 IH Full	17	18 IH Reduced	19 STAT	20
21	22 STAT	23	24 IH Full Raw & Effluent Samples	25 H&S Inspection	26 IH Reduced	27
28	29	30 IH Full				

IH (In House) Full: Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced: Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples: 24hr Composite (BOD5, SS, TP, TKN)

Effluent Samples: 24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
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Sample Schedule 2019 5526 West Lorne WWTP

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May 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1	2	3 IH Reduced	4
5	6	7 IH Full Raw & Effluent Samples	8	9	10 IH Reduced	11
12	13	14 IH Full	15	16	17 IH Reduced	18
19	20 STAT	21	22 IH Full Raw & Effluent Samples	23	24 IH Reduced	25
26	27	28 IH Full	29	30	31 IH Reduced	

IH (In House) Full:

Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced:

Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples:

24hr Composite (BOD5, SS, TP, TKN)
24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
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Approved by: Operations Management

June 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
						1
2	3	4 IH Full Raw & Effluent Samples	5	6	7 IH Reduced	8
9	10	11 IH Full	12	13	14 IH Reduced	15
16	17	18 IH Full Raw & Effluent Samples	19	20	21 IH Reduced	22
23	24	25 IH Full	26	27	28 IH Reduced	29
30						

IH (In House) Full: Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced: Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples: 24hr Composite (BOD5, SS, TP, TKN)

Effluent Samples: 24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

Notes: Initial on date when sample was taken. Add any additional sampling completed for the facility. At the end of the month hand in to the PCT with folder.

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Revision History

Date	Revision #	Reason for Revision	Revision By
2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019 5526 West Lorne WWTP

Issued: 2018-12-24
Rev.#: 0
Pages: 7 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

July 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1 STAT	2	3 IH Full Raw & Effluent Samples	4	5 IH Reduced	6
7	8	9 IH Full	10	11	12 IH Reduced	13
14	15	16 IH Full Raw & Effluent Samples	17	18	19 IH Reduced	20
21	22	23 IH Full	24 H&S Inspection	25	26 IH Reduced	27
28	29	30 IH Full Raw & Effluent Samples	31			

IH (In House) Full: Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced: Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples: 24hr Composite (BOD5, SS, TP, TKN)

Effluent Samples: 24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

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2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019 5526 West Lorne WWTP

Issued: 2018-12-24
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Pages: 8 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

August 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
				1	2 IH Reduced	3
4	5 STAT	6	7 IH Full	8	9 IH Reduced	10
11	12	13 IH Full Raw & Effluent Samples	14	15	16 IH Reduced	17
18	19	20 IH Full	21	22	23 IH Reduced	24
25	26	27 IH Full Raw & Effluent Samples	28	29	30 IH Reduced	31

IH (In House) Full:

Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced:

Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples:

24hr Composite (BOD5, SS, TP, TKN)
24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

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2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019

5526 West Lorne WWTP

Issued: 2018-12-24
 Rev.#: 0
 Pages: 9 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

September 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2 STAT	3	4 IH Full	5	6 IH Reduced	7
8	9	10 IH Full Raw & Effluent Samples	11	12	13 IH Reduced	14
15	16	17 IH Full	18	19	20 IH Reduced	21
22	23	24 IH Full Raw & Effluent Samples	25	26	27 IH Reduced	28
29	30					

IH (In House) Full: Raw 24hr Composite (pH, Alk)
 Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
 RAS (SS)
 Lagoon Decant (TP, NH3+NH4, pH, DO)
 Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
 Receiving Stream (pH, Temp.)

IH (In House) Reduced: Aeration (Set Test, DO, pH, Temp.)
 Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples: 24hr Composite (BOD5, SS, TP, TKN)

Effluent Samples: 24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
 Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

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2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019 5526 West Lorne WWTP

Issued: 2018-12-24
Rev.#: 0
Pages: 10 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

October 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
		1 IH Full	2	3	4 IH Reduced	5
6	7	8 IH Full Raw & Effluent Samples	9	10	11 IH Reduced	12
13	14 STAT	15	16 IH Full	17	18 IH Reduced	19
20	21	22 IH Full Raw & Effluent Samples	23 H&S Inspection	24	25 IH Reduced	26
27	28	29 IH Full	30	31		

IH (In House) Full:

Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced:

Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples:

24hr Composite (BOD5, SS, TP, TKN)
24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
Grab (E. coli—Apr 15 to Oct 15, DO, Temp.)

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2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019 5526 West Lorne WWTP

Issued: 2018-12-24
Rev.#: 0
Pages: 11 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

November 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 IH Reduced	2
3	4	5 IH Full Raw & Effluent Samples	6	7	8 IH Reduced	9
10	11 STAT	12	13 IH Full	14	15 IH Reduced	16
17	18	19 IH Full Raw & Effluent Samples	20	21	22 IH Reduced	23
24	25	26 IH Full	27	28	29 IH Reduced	30

IH (In House) Full:

Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced:

Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples:

24hr Composite (BOD5, SS, TP, TKN)
24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
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2018-12-24	0	Create Schedule	Terri-Lynn Thomson



Sample Schedule 2019 5526 West Lorne WWTP

Issued: 2018-12-24
Rev.#: 0
Pages: 12 of 12

Reviewed by: QEMS Representative

Approved by: Operations Management

December 2019

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3 IH Full Raw & Effluent Samples	4	5	6 IH Reduced	7
8	9	10 IH Full	11	12	13 IH Reduced	14
15	16	17 IH Full Raw & Effluent Samples	18	19	20 IH Reduced	21
22	23	24 IH Full	25 STAT	26 STAT	27 IH Reduced	28
29	30 IH Full Raw & Effluent Samples	31				

IH (In House) Full: Raw 24hr Composite (pH, Alk)
Aeration (Set Test, MLSS, MLVSS, DO, pH, Temp.)
RAS (SS)
Lagoon Decant (TP, NH3+NH4, pH, DO)
Effluent 24hr Composite (pH, TP, NH3+NH4, Alk, SS); Grab (DO, Temp.)
Receiving Stream (pH, Temp.)

IH (In House) Reduced: Aeration (Set Test, DO, pH, Temp.)
Effluent (DO, pH, Temp., TP, NH3+NH4)

Raw Samples: 24hr Composite (BOD5, SS, TP, TKN)

Effluent Samples: 24hr Composite (BOD5, SS, NH3+NH4, TKN, NO3, NO2, TP, Alkalinity, pH)
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Revision History

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2018-12-24	0	Create Schedule	Terri-Lynn Thomson

APPENDIX C

Flow Meter Verification

Western Office Eastern Office
2088 Jetstream Road 1602 Old Wooler Road
London, Ontario Wooler, Ontario
N5V 3P6 K0K 3M0

AS FOUND CERTIFICATION
FORWARD FLOW DIRECTION
PASS

CLIENT DETAIL

CUSTOMER OCWA - West Elgin Middlesex
CONTACT Cindy Sigurdson
Compliance Manager
9210 Graham Road, West Lorne
c: 226-377-3563
e: csigurdson@ocwa.com

EQUIPMENT DETAIL

[MUT] MANUFACTURER Fisher & Porter
MODEL 50XM1000
CONVERTER SERIAL NUMBER 9409B2039/6/B2
FUSE Pull Plug on Unit

PLANT ID West Lorne WWTP
METER ID Influent Raw Meter
FIT ID n/a
CLIENT TAG OCWA# 123540
OTHER ORG# 5526
GPS COORDINATES N42 35.162 W081 35.770

VERIFICATION DATE April 17, 2018
CAL. FREQUENCY Annual
CAL. DUE DATE April, 2019

VER. BY - FM Joel Van Veller

Quality Management Standards Information -
Reference equipment and instrumentation used to
conduct this verification test is found in our AC-
QMS document at the time this test was

PROGRAMMING PARAMETERS

DIAMETER (DN) mm 200
F.S. FLOW - MAG M3/H 1097.0
F.S. RANGE - O/P M3/H 144.0

FORWARD TOTALIZER INFORMATION

AS FOUND 1935616 M3
AS LEFT 1935626 M3
DIFFERENCE 10 M3

TEST CRITERIA

AS FOUND CERTIFICATION TEST Yes
FORWARD FLOW DIRECTION Yes
ALLOWABLE [%] ERROR 5

COMPONENTS TESTED

CONVERTER DISPLAY Yes
mA OUTPUT Yes
TOTALIZER Yes
ACCURACY BASED ON [% o.r.] Yes
ERROR DOCUMENTED IN THIS REPORT; BASED ON % o.r.

FLOW TUBE SIMULATION

		0.00	0.33	0.66	0.98	1.31	% Dial (m/s)
		0.00	3.28	6.56	9.85	13.13	% F.S. Flow
		0.0	25.0	50.0	75.0	100.0	% F.S. Range
REF. FLOW RATE		0.000	36.000	72.000	108.000	144.000	M3/H
MUT [Reading]		0.000	35.550	71.370	107.100	141.800	M3/H
MUT [Difference]		0.000	-0.450	-0.630	-0.900	-2.200	M3/H
MUT [% Error]		n/a	-1.25	-0.87	-0.83	-1.53	%
mA OUTPUT		4.000	8.000	12.000	16.000	20.000	mA
MUT [Reading]	min. 4.000 mA	3.991	7.948	11.910	15.876	19.736	mA
MUT [Difference]	max. 20.000 mA	-0.009	-0.052	-0.090	-0.124	-0.264	mA
MUT [% Error]		-0.22	-0.65	-0.75	-0.78	-1.32	%
TOTALIZER - REF. FLOW RATE						144.000	M3/H
TOTALIZER [MUT]						3	M3
TEST TIME						75.89	SECONDS
CALC. TOTALIZER						3.036	M3
ERROR						-1.19	%

COMMENTS

			QUALITY MANAGEMENT STANDARDS INFO.			RESULTS		
			[QMS] INFORMATION	IDENT.	ID #	TEST	AVG % o.r.	PASS FAIL
			[REFERENCE] FTS	ABBMM	1	DISPLAY	-1.12	PASS
			PROCESS METER	DMM	1	mA OUTPUT	-0.74	PASS
			ANALOG METER	AM	N/A	TOTALIZER	-1.19	PASS
			STOP WATCH	SW	Yes			

This report reflects the test results of the overall accuracy for the above flow converter using the specified manufacturers flow tube simulator to within the specified tolerance as identified within this report.

APPENDIX D

Work Order Schedule

Work Management Plan Report

PM Location 5526-SPP1 - 5526, West Lorne Sewage Pumping Stn

Report: 5526-WWWL - 5526, West Lorne WWTP

User Executing sigurdci

Asset Num	Asset Description	Asset Status	Asset Location	PM Location	PM	PM Description	PM Status	Work Type	WO Status	FREQUENCY	FREQUNIT	NEXTDATE
				5526-WWWL	22436	Building & Grounds Maintenance (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM
				5526-WWWL	27688	FEP Contact List Review West Lorne (6m) - 5526	ACTIVE	PM	APPR	6	MONTHS	May 1, 2019 12:00 AM
				5526-WWWL	22471	OHSA Inspection & Report West Lorne (3m) - 5526	ACTIVE	PM	APPR	3	MONTHS	Jun 1, 2019 12:00 AM
				5526-WWWL	22550	OHSA Inspection West Lorne (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM
				5526-WWWL	29540	FEP Review West Lorne (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
				5526-WWWL	29541	Emergency Generator Trailer Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
				5526-WWWL	29614	FEP Site Plan Review West Lorne (2y) - 5526	ACTIVE	PM	APPR	2	YEARS	Nov 1, 2019 12:00 AM
				5526-WWWL	22516	Daily O&M Activities West Lorne WWTP (1y) - 5526	ACTIVE	OPER	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123193	ANALYZER 02 TRI-DETECTOR PORTABLE	OPERATING	5526-WWWL		27179	Analyzer Gas Insp/Service (6m) - 5526	ACTIVE	PM	APPR	6	MONTHS	Apr 1, 2019 12:00 AM
0000123605	BLOWER POSITIVE DISPLACEMENT B100 AERATION	OPERATING	5526-WWWL		22821	Blower B100 Aeration Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123608	BLOWER POSITIVE DISPLACEMENT B101 AERATION	OPERATING	5526-WWWL		22822	Blower B101 Aeration Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123677	ENGINE DIESEL STAND-BY LIFE STATION	OPERATING	5526-WWWL		27910	Engine Diesel Stand-By Life Station Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jun 1, 2019 12:00 AM
0000123677	ENGINE DIESEL STAND-BY LIFE	OPERATING	5526-WWWL		22310	Engine Diesel Test/Insp (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM

Asset Num	Asset Description	Asset Status	Asset Location	PM Location	PM	PM Description	PM Status	Work Type	WO Status	FREQUENCY	FREQUNIT	NEXTDATE
0000123442	ENGINE DIESEL STAND-BY PLANT	OPERATING	5526-WWWL		27909	Engine Diesel Stand-By Plant Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jun 1, 2019 12:00 AM
0000123442	ENGINE DIESEL STAND-BY PLANT	OPERATING	5526-WWWL		22309	Engine Diesel Test/Insp (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM
0000123418	LIFTING DEVICE 01 PORTABLE	OPERATING	5526-WWWL	5526-WWWL	22794	Lifting Device Insp Route (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123420	LIFTING DEVICE 02 PORTABLE	OPERATING	5526-WWWL	5526-WWWL	22794	Lifting Device Insp Route (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123417	LIFTING DEVICE A FRAME	OPERATING	5526-WWWL	5526-WWWL	22794	Lifting Device Insp Route (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123419	LIFTING DEVICE BEAM	OPERATING	5526-WWWL	5526-WWWL	22794	Lifting Device Insp Route (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123492	LIFTING DEVICE LIME ROOM	OPERATING	5526-WWWL	5526-WWWL	22794	Lifting Device Insp Route (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123530	LIFTING DEVICE PORTABLE	OPERATING	5526-SPP1	5526-WWWL	22794	Lifting Device Insp Route (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jan 1, 2020 12:00 AM
0000123506	MCC MCCE1 EMERGENCY	OPERATING	5526-WWWL		22343	MCC Insp/Service (3y) - 5526	ACTIVE	PM	APPR	3	YEARS	Dec 1, 2020 12:00 AM
0000123505	MCC MCCN1 NORMAL	OPERATING	5526-WWWL		22344	MCC Insp/Service (3y) - 5526	ACTIVE	PM	APPR	3	YEARS	Dec 1, 2020 12:00 AM
0000123215	METER FLOW FE170 RAW SEWAGE	OPERATING	5526-WWWL		27180	Meter Flow Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Apr 1, 2019 12:00 AM
0000123592	METER FLOW FIT300 AIR	OPERATING	5526-WWWL		29081	Meter Flow Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Sep 1, 2019 12:00 AM
0000123533	PANEL ALARM/DIALER 01 PS	OPERATING	5526-SPP1		22179	Alarm Dialer Test/Insp (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM
0000123216	PANEL ALARM/DIALER	OPERATING	5526-WWWL		22178	Alarm Dialer Test/Insp (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM
0000123586	PUMP 01 ALUM CHEMIC RM	OPERATING	5526-WWWL		22391	Pump Diaphragm 01 Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Dec 1, 2019 12:00 AM
0000123565	PUMP 02 SANITARY SUMP	OPERATING	5526-WWWL		28836	Pump 02 Sanitary Sump Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Aug 1, 2019 12:00 AM
0000123478	PUMP CENT 110 EFFLUENT	OPERATING	5526-WWWL		26135	Pump Cent 110 Effluent Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Mar 1, 2020 12:00 AM
0000123474	PUMP CENT P118 BACKWASH	INACTIVE	5526-WWWL		26134	Pump Cent P118 Backwash Insp/Service (1y) - 5526	INACTIVE	PM	APPR	1	YEARS	Mar 1, 2019 12:00 AM
0000123472	PUMP CENT P119 BACKWASH	INACTIVE	5526-WWWL		26133	Pump Cent P119 Backwash Insp/Service (1y) - 5526	INACTIVE	PM	APPR	1	YEARS	Mar 1, 2019 12:00 AM
0000123480	PUMP CENT P120 FOAM CONTROL	OPERATING	5526-WWWL		26136	Pump Cent P120 Foam Control Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Mar 1, 2020 12:00 AM

Asset Num	Asset Description	Asset Status	Asset Location	PM Location	PM	PM Description	PM Status	Work Type	WO Status	FREQUENCY	FREQUNIT	NEXTDATE
0000123585	PUMP DIAPHRAGM 02 ALUM CHEMIC RM	OPERATING	5526-WWWL		22394	Pump Diaphragm 02 Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Dec 1, 2019 12:00 AM
0000123557	PUMP SUBMERSIBLE	OPERATING	5526-WWWL		29568	Pump Submersible Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123566	PUMP SUBMERSIBLE 01 SANITARY SUMP	OPERATING	5526-WWWL		28837	Pump Submersible 01 Sanitary Sump Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Aug 1, 2019 12:00 AM
0000123571	PUMP SUBMERSIBLE CP7 SCUM PIT	OPERATING	5526-WWWL		29569	Pump Submersible Cp 7 Scum Pit Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123538	PUMP SUBMERSIBLE P100 PS-1	OPERATING	5526-SPP1		28835	Pump Submersible P10 0 Ps-1 Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Aug 1, 2019 12:00 AM
0000123537	PUMP SUBMERSIBLE P101 RAW PS-1	OPERATING	5526-SPP1		28834	Pump Submersible P10 1 Raw Ps-1 Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Aug 1, 2019 12:00 AM
0000123536	PUMP SUBMERSIBLE P102 RAW PS-1	OPERATING	5526-SPP1		28833	Pump Submersible P10 2 Raw Ps-1 Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Aug 1, 2019 12:00 AM
0000123778	PUMP SUBMERSIBLE P105 RAS-WAS	OPERATING	5526-WWWL		29572	Pump Submersible P10 5 Ras-WAS Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123779	PUMP SUBMERSIBLE P106 RAS-WAS	OPERATING	5526-WWWL		29573	Pump Submersible P10 6 Ras-WAS Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123776	PUMP SUBMERSIBLE P107 RAS-WAS	OPERATING	5526-WWWL		29571	Pump Submersible P10 7 Ras-WAS Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123692	PUMP SUBMERSIBLE PS PUMP 100 SPARE SCUM	OPERATING	5526-SPP1		28838	Pump Submersible Ps Pump 100 Spare Scum Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Aug 1, 2019 12:00 AM
0000123693	PUMP SUBMERSIBLE SPARE	OPERATING	5526-WWWL		29570	Pump Submersible Spa re Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123443	SAMPLER FINAL EFFLUENT	OPERATING	5526-WWWL		27711	Sampler Final Effluent Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	May 1, 2019 12:00 AM

Asset Num	Asset Description	Asset Status	Asset Location	PM Location	PM	PM Description	PM Status	Work Type	WO Status	FREQUENCY	FREQUNIT	NEXTDATE
0000123415	SAMPLER RAW SEWAGE	OPERATING	5526-WWWL		27712	Sampler Raw Sewage Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	May 1, 2019 12:00 AM
0000123569	SCREEN BAR	OPERATING	5526-WWWL									
0000123549	SEPARATOR GRIT CYCLONE	OPERATING	5526-WWWL		23542	Separator Grit Cyclone Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Feb 1, 2020 12:00 AM
0000123589	TANK PROCESS	OPERATING	5526-WWWL									
0000123009	TANK PROCESS CLARIFIER EAST	OPERATING	5526-WWWL		28356	Tank Process Clarifier East Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jul 1, 2019 12:00 AM
0000123010	TANK PROCESS CLARIFIER WEST	OPERATING	5526-WWWL		28357	Tank Process Clarifier West Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jul 1, 2019 12:00 AM
0000123532	UPS	OPERATING	5526-SPP1		29567	UPS Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123502	UPS BATTERY BANK PLANT	OPERATING	5526-WWWL		29566	UPS Battery Bank Plant Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Nov 1, 2019 12:00 AM
0000123567	UV LIGHT EFFLUENT	OPERATING	5526-WWWL		22416	UV Light Insp (1m) - 5526	ACTIVE	PM	APPR	1	MONTHS	Apr 1, 2019 12:00 AM
0000123567	UV LIGHT EFFLUENT	OPERATING	5526-WWWL		27181	UV Light Effluent Insp/Service (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Apr 1, 2019 12:00 AM
0000164709	VALVE BACKFLOW PREVENTER	OPERATING	5526-WWWL		28358	Valve Backflow Preventer Insp (1y) - 5526	ACTIVE	PM	APPR	1	YEARS	Jul 1, 2019 12:00 AM

3/19/19 14:04:50





APPENDIX E

Construction and Commissioning Schedule of Proposed Works

WEST LORNE WATER POLLUTION CONTROL PLANT UPGRADES

ID	Task Name	Duration	Start	Finish	2019																	
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec						
1	Shop Drawing Submittal & Review	60 days	Mon 19-02-0	Fri 19-04-26																		
2	Horizontal End Suction Pipes	40 days	Mon 19-02-0	Fri 19-03-29																		
3	Chemical Storage Tank	50 days	Mon 19-02-0	Fri 19-04-12																		
4	Raw Sewage Pumps	40 days	Mon 19-02-0	Fri 19-03-29																		
5	Sludge & Scum Collector Mechanism	50 days	Mon 19-02-0	Fri 19-04-12																		
6	Grit Classifier Equipment	50 days	Mon 19-02-0	Fri 19-04-12																		
7	Basket & Fine Screen	50 days	Mon 19-02-0	Fri 19-04-12																		
8	Air Blowers	50 days	Mon 19-02-0	Fri 19-04-12																		
9	Filter Equipment	50 days	Mon 19-02-0	Fri 19-04-12																		
10	FRP Enclosure	60 days	Mon 19-02-0	Fri 19-04-26																		
11	Piping	50 days	Mon 19-02-0	Fri 19-04-12																		
12	Valves	50 days	Mon 19-02-0	Fri 19-04-12																		
13	Controls	50 days	Mon 19-02-0	Fri 19-04-12																		
14	Insulation	50 days	Mon 19-02-0	Fri 19-04-12																		
15	HVAC	40 days	Mon 19-02-0	Fri 19-03-29																		
16	Delivery Of Equipment	50 days	Mon 19-02-0	Fri 19-04-12																		
17	Horizontal End Suction Pipes	120 days	Mon 19-04-0	Fri 19-09-13																		
18	Chemical Storage Tank	30 days	Mon 19-04-0	Fri 19-05-10																		
19	Raw Sewage Pumps	60 days	Mon 19-04-1	Fri 19-07-05																		
20	Sludge & Scum Collector Mechanism	60 days	Mon 19-04-0	Fri 19-06-21																		
21	Grit Classifier Equipment	70 days	Mon 19-04-1	Fri 19-07-19																		
22	Basket & Fine Screen	70 days	Mon 19-04-1	Fri 19-07-19																		
23	Air Blowers	90 days	Mon 19-04-1	Fri 19-08-16																		
24	Filter Equipment	60 days	Mon 19-04-1	Fri 19-07-05																		
25	FRP Enclosure	100 days	Mon 19-04-2	Fri 19-09-13																		
26	Piping	90 days	Mon 19-04-1	Fri 19-08-16																		
27	Valves	30 days	Mon 19-04-1	Fri 19-05-24																		
28	Controls	40 days	Mon 19-04-1	Fri 19-06-07																		
29	Insulation	70 days	Mon 19-04-1	Fri 19-07-19																		
30	HVAC	15 days	Mon 19-04-0	Fri 19-04-19																		
31	Demolition & Architectural Works	70 days	Mon 19-04-1	Fri 19-07-19																		
32	Grit Removal	40 days	Mon 19-04-0	Fri 19-05-24																		
33	Demo Existing decant tote & assoicated piping	19 days	Mon 19-07-1	Thu 19-08-08																		
34	Grit Classifier Delivery	5 days	Mon 19-07-1	Fri 19-07-19																		
35	Install New Grit Classifier	1 day	Mon 19-07-2	Mon 19-07-2																		
36	Install New Piping at Grit Classifier	7 days	Tue 19-07-23	Wed 19-07-3																		
37	Electrical & Controls	5 days	Thu 19-08-01	Wed 19-08-0																		
38	Commission New Classifier	5 days	Thu 19-08-01	Wed 19-08-0																		
		1 day	Thu 19-08-08	Thu 19-08-08																		

K&L Construction
Date: Mon 18-12-10

Task  Milestone  Summary  Progress 

WEST LORNE WATER POLLUTION CONTROL PLANT UPGRADES

ID	Task Name	Duration	Start	Finish	2019													
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
39	Aeration Basins / Clarifiers	53 days?	Mon 19-06-1	Wed 19-08-2														
40	Demo Submersible Pumps & Grit Collector at Clarifier 1	5 days	Mon 19-06-1	Fri 19-06-21														
41	Install New Submersible Pumps	2 days	Mon 19-06-2	Tue 19-06-25														
42	Install New Scum Collector Mechanism	3 days	Mon 19-07-2	Wed 19-07-2														
43	Electrical & Controls	3 days	Thu 19-07-25	Mon 19-07-2														
44	Commission Clarifier 1 Equipment	1 day	Tue 19-07-30	Tue 19-07-30														
45	Demo Submersible Pumps & Grit Collector at Clarifier 2	2 days	Wed 19-07-3	Thu 19-08-01														
46	Install New Submersible Pumps	2 days	Fri 19-08-02	Mon 19-08-0														
47	Install New Scum Collector Mechanism	3 days	Fri 19-08-02	Tue 19-08-06														
48	Electrical & Controls	3 days	Wed 19-08-0	Fri 19-08-09														
49	Commission Clarifier 2 Equipment	1 day	Mon 19-08-1	Mon 19-08-1														
50	Demo Existing Bar Screen & Stop Gate	1 day?	Tue 19-08-13	Tue 19-08-13														
51	Basket & Conveyor Fine Screen Delivery	1 day?	Mon 19-08-1	Mon 19-08-1														
52	Install New Basket & Conveyor Fine Screen	1 day?	Tue 19-08-20	Tue 19-08-20														
53	Install New FRP Enclosure	5 days	Mon 19-08-1	Fri 19-08-23														
54	Install HVAC at FRP Enclosure	3 days	Mon 19-08-2	Wed 19-08-2														
55	Blowers	99 days	Mon 19-07-0	Thu 19-11-21														
56	Install New Blower 102	2 days	Mon 19-07-0	Tue 19-07-09														
57	Install Piping at Blower 102	10 days	Wed 19-07-1	Tue 19-07-23														
58	Install HVAC ductwork to Blower 102	3 days	Wed 19-07-2	Fri 19-07-26														
59	Install Electrical & Controls to Blower 102	3 days	Mon 19-07-2	Wed 19-07-3														
60	Commission Blower 102	1 day	Thu 19-08-01	Thu 19-08-01														
61	Remove Existing Blower 101	2 days	Fri 19-08-02	Mon 19-08-0														
62	Return Existing Blower 101 to vendor for refurbishment	35 days	Tue 19-08-06	Mon 19-09-2														
63	Reinstall Blower 101 once refushed	2 days	Tue 19-09-24	Wed 19-09-2														
64	Commission Blower 101	1 day	Thu 19-09-26	Thu 19-09-26														
65	Remove Existing Blower 100	2 days	Fri 19-09-27	Mon 19-09-3														
66	Return Existing Blower 100 to vendor for refurbishment	35 days	Tue 19-10-01	Mon 19-11-1														
67	Reinstall Blower 100 once refushed	2 days	Tue 19-11-19	Wed 19-11-2														
68	Commission Blower 100	1 day	Thu 19-11-21	Thu 19-11-21														
69	Filters	82 days	Mon 19-06-2	Tue 19-10-15														
70	Demo Existing Filters	15 days	Mon 19-06-2	Fri 19-07-12														
71	Install New Filter building Piping	10 days	Mon 19-08-0	Fri 19-08-16														
72	Install New Pumps	1 day	Mon 19-07-1	Mon 19-07-1														
73	Install Backwash Tanks	1 day	Tue 19-07-16	Tue 19-07-16														
74	Install compressor & air piping	3 days	Mon 19-09-2	Wed 19-09-2														
75	Install New filter equipment	10 days	Mon 19-09-1	Fri 19-09-27														
76	Install New Filter Media	3 days	Mon 19-09-3	Wed 19-10-0														

K&L Construction
Date: Mon 18-12-10

Task  Milestone  Summary  Progress 

WEST LORNE WATER POLLUTION CONTROL PLANT UPGRADES

ID	Task Name	Duration	Start	Finish	2019															
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec				
77	Electrical & Controls	10 days	Mon 19-09-3	Fri 19-10-11																
78	Commission New Filter Equipment	2 days	Mon 19-10-1	Tue 19-10-15																
79	Yard Piping	10 days	Mon 19-04-0	Fri 19-04-19																
80	Electrical Ductbanks	15 days	Mon 19-04-2	Fri 19-05-10																