



West Lorne Wastewater Treatment Plant & Collection System

Facility Information:

Facility Name: West Lorne Wastewater Treatment Plant & Collection System
Facility Type: Municipal
Classification: Class 2 Wastewater Collection, Class 2 Wastewater Treatment

Operational Description:

The village of West Lorne is served by an extended aeration Wastewater Treatment Plant, comprised of aeration, clarification, filtration, disinfection and sludge disposal. Also included is the collection system with one pumping station and a sanitary sewer system. The operations are in accordance to ECA # 3-0442-90-938, which covers the entire plant including the pumping stations.

The collection system consists of sewers and one submersible pumping station. The treatment facility main elements are an extended aeration process designed for combined carbon removal and nitrification. The discharge of secondary clarifier: effluent is filtered and disinfected with ultraviolet light before being reaerated and discharged to the Zoller Drain and then Brocks Creek. The waste activated sludge is discharged to a lagoon for storage. Dual-point chemical addition alum: is used for phosphorus removal. Sodium hydroxide is added for control of alkalinity.

Service Information

Areas Served: Village of West Lorne

Design Capacity:

Total Design Capacity: 900 m³/day
Total Annual Flow (2017 Data): 181,074 m³/year
Average Day Flow (2017 Data): 496 m³/day
Maximum Day Flow (2017 Data): 1,512 m³/day

Treatment Process Features:

Effluent Receiver: Zoller Drain to Brocks Creek to Lake Erie
Major Process: Extended aeration
Phosphorus Removal: Continuous, Alum addition
Additional Treatment: Effluent filtration
Discharge Mode: Continuous discharge
Effluent Disinfection Practice: UV Disinfection
Sludge Stabilization: Lagoon storage

Contacts:

Regional Manager: Dale LeBritton 519-476-5898
Sr. Operations Manager: Sam Smith 226-377-1540
Business Development Manager: Susan Budden 519-318-3271

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SECTION 1: COMPLIANCE SUMMARY

FIRST QUARTER:

Monthly average TSS was exceeded in January. Due to high flows, daily sampling was needed as per the ECA. High TSS was experienced during high flows. When flows returned to normal the TSS was also within the ECA limit. The RV Anderson reviewed sand filter performance and adjustments were made.

SECOND QUARTER:

There were no non-compliances reported for the second quarter.

SECTION 2: INSPECTIONS

FIRST QUARTER:

There were no MECP or MOL inspections during the first quarter.

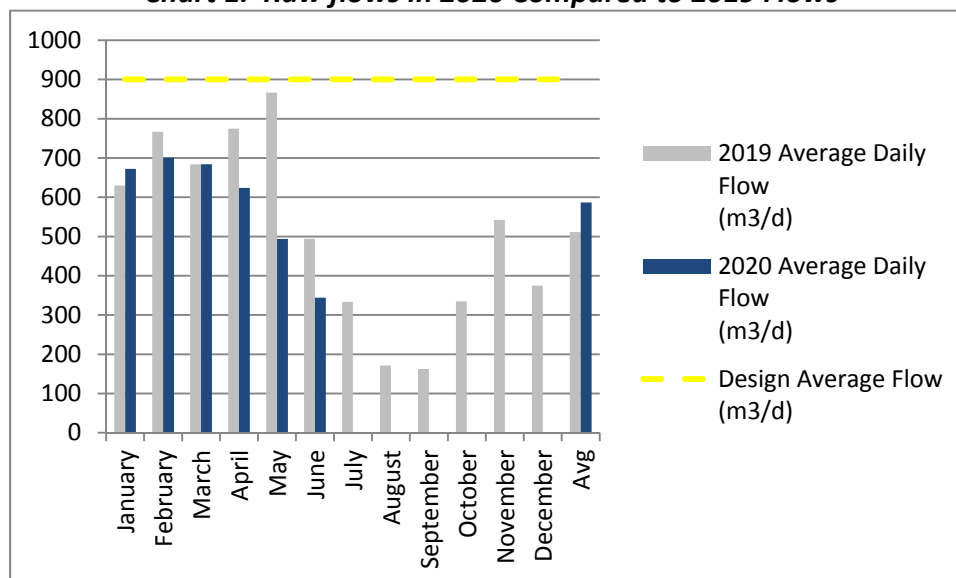
SECOND QUARTER:

There were no MECP or MOL inspections during the second quarter.

SECTION 3: PERFORMANCE ASSESSMENT REPORT

The average daily raw flow for the wastewater treatment plant in 2020 is 586.49 m³/d. The average daily flow in 2019 was 511.26 m³/d, therefore the flow for 2020 is up 14.7% when compared to 2019. The plant is currently at 65 % of its rated capacity of 900m³/d.

Chart 1. Raw flows in 2020 Compared to 2019 Flows



Raw samples are taken on a biweekly basis following the ECA requirements. The table below shows the raw sample results for 2020 so far.

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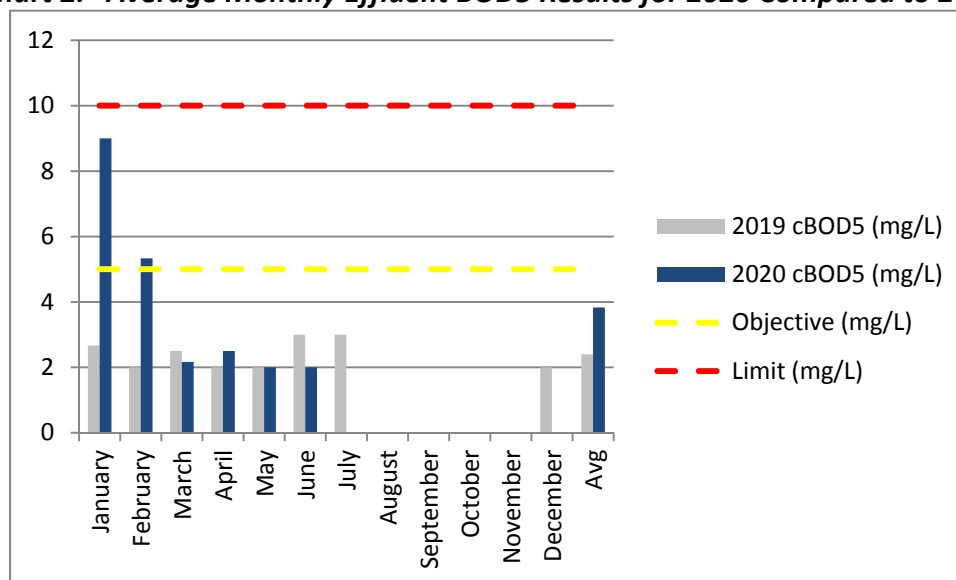
Table 1. Raw Water Sample Results for 2020.

	BOD5 (mg/L)	TKN (mg/L)	TP (mg/L)	TSS (mg/L)	Alkalinity (mg/L)
January Results	82	21.35	2.015	83.5	183.5
February Results	45.5	14.7	1.5	54.5	252
March Results	54.5	17.55	1.465	65	290.75
April Results	70	19.9	1.885	79	255.6
May Results	22.5	7.35	0.65	29.5	267
June Results	130.5	41.25	3.815	143	243.75
July Results					
August Results					
September Results					
October Results					
November Results					
December Results					
Annual Average	67.5	20.35	1.888	75.75	249.04

The effluent is sampled on a bi-weekly basis following the requirements of the ECA.

The average effluent cBOD5 for 2020 is 3.8 mg/L, meeting the limits identified in the ECA. The effluent objective was exceeded in January and February due to high flows and filter performance from the December commissioning. The annual average result for BOD5 in 2019 was 2.4mg/L, therefore the results for 2020 are up by 60% when compared to 2019 (refer to Chart 2).

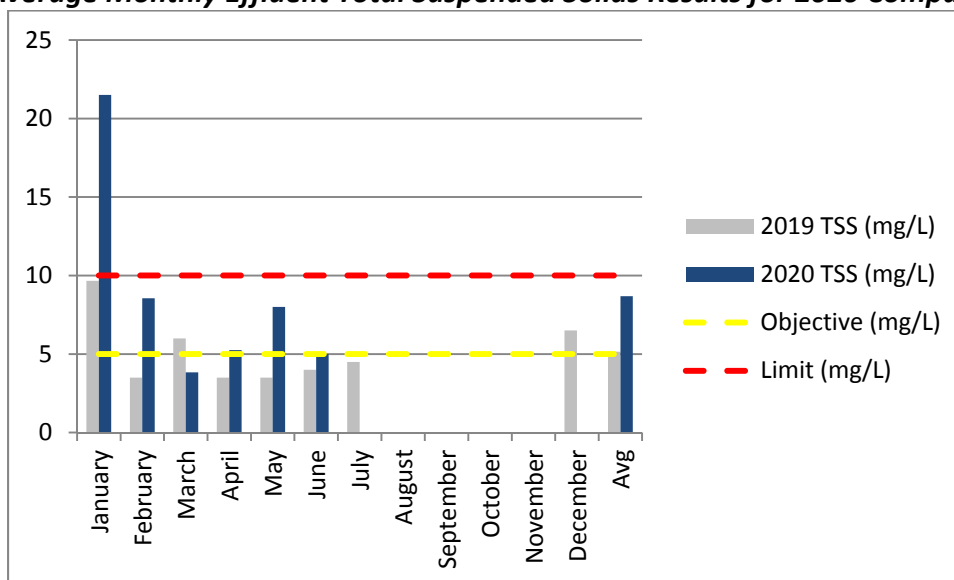
Chart 2. Average Monthly Effluent BOD5 Results for 2020 Compared to 2019



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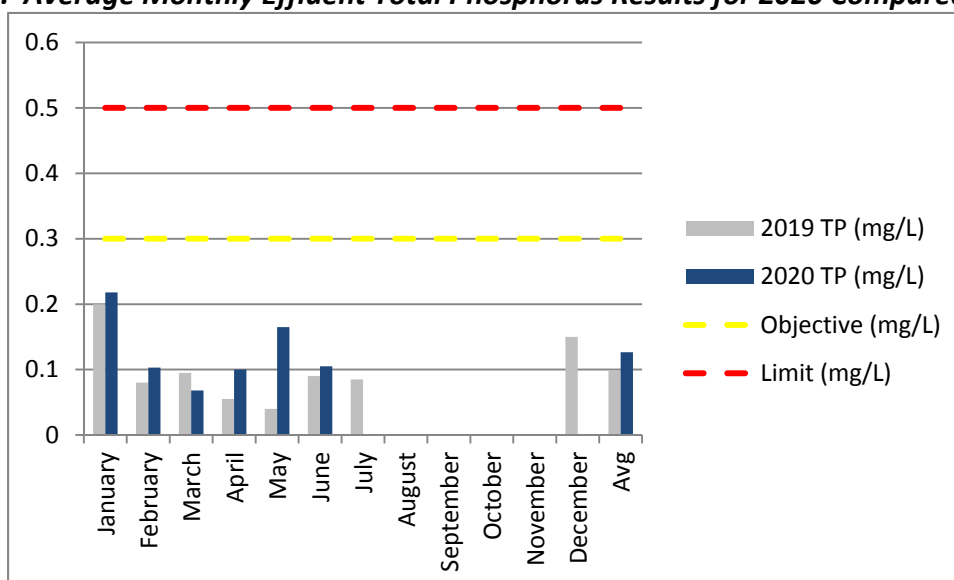
The average effluent TSS for 2020 is 8.7mg/L, exceeding effluent limits identified in the ECA in January as discussed in the compliance section, and exceeding the effluent objective in January and March due to high flows and filter performance. The annual average result for TSS in 2019 was 5.1mg/L; therefore the results for 2020 are up by 69% when compared to 2019 (refer to Chart 3).

Chart 3. Average Monthly Effluent Total Suspended Solids Results for 2020 Compared to 2019



The average effluent TP for 2020 is 0.13 mg/L, meeting effluent limits and objectives identified in the ECA. The annual average result for TP in 2019 was 0.10mg/L, therefore the results for 2020 is up 27% when compared to 2019 (refer to Chart 4).

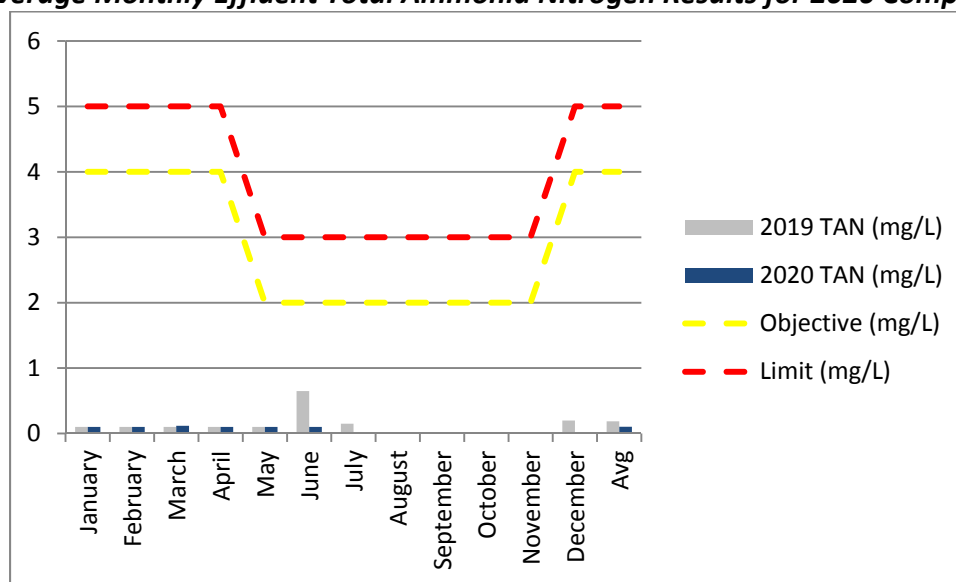
Chart 4. Average Monthly Effluent Total Phosphorus Results for 2020 Compared to 2019



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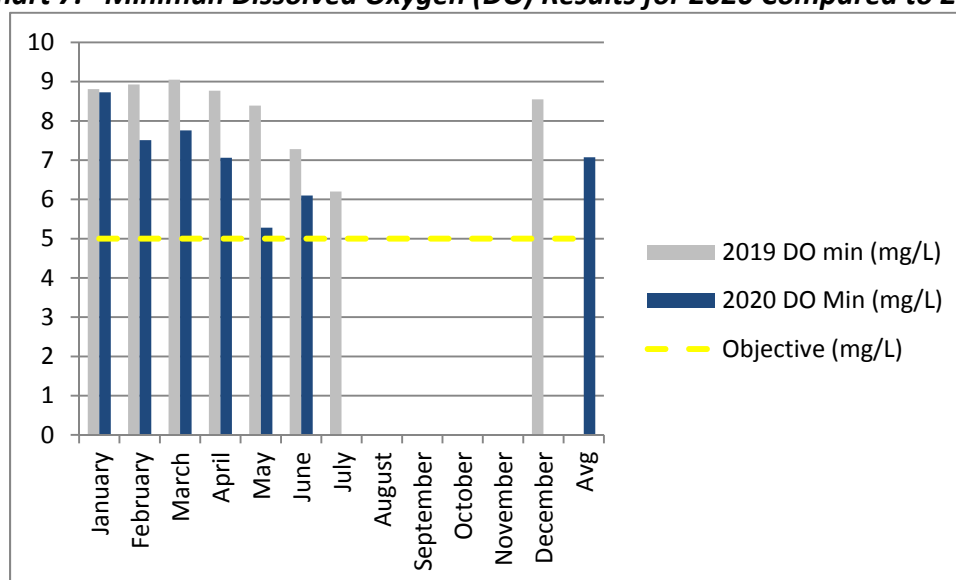
The average effluent TAN for 2020 is 0.10mg/L, meeting both effluent objectives and limits identified in the ECA. The annual average result for TAN in 2019 was 0.19mg/L, therefore the results for 2020 are down 45% compared to 2019 (refer to Chart 5).

Chart 5. Average Monthly Effluent Total Ammonia Nitrogen Results for 2020 Compared to 2019



Dissolved oxygen (DO) of the effluent is tested on site at the plant, the ECA identifies a minimum level required as an objective. This objective is 5mg/L. The chart below (chart 7) shows the minimum DO concentrations; there have been no objective exceedances.

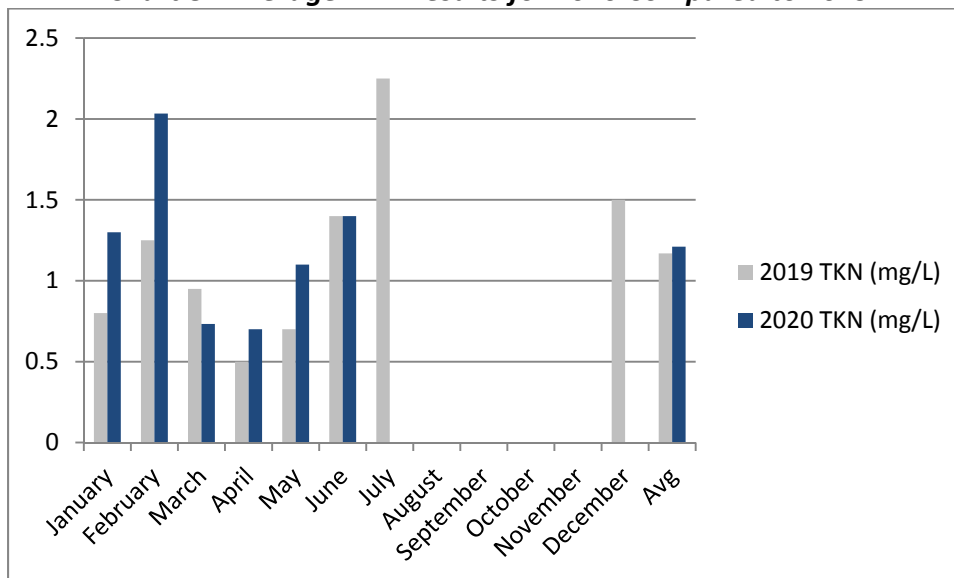
Chart 7. Minimum Dissolved Oxygen (DO) Results for 2020 Compared to 2019



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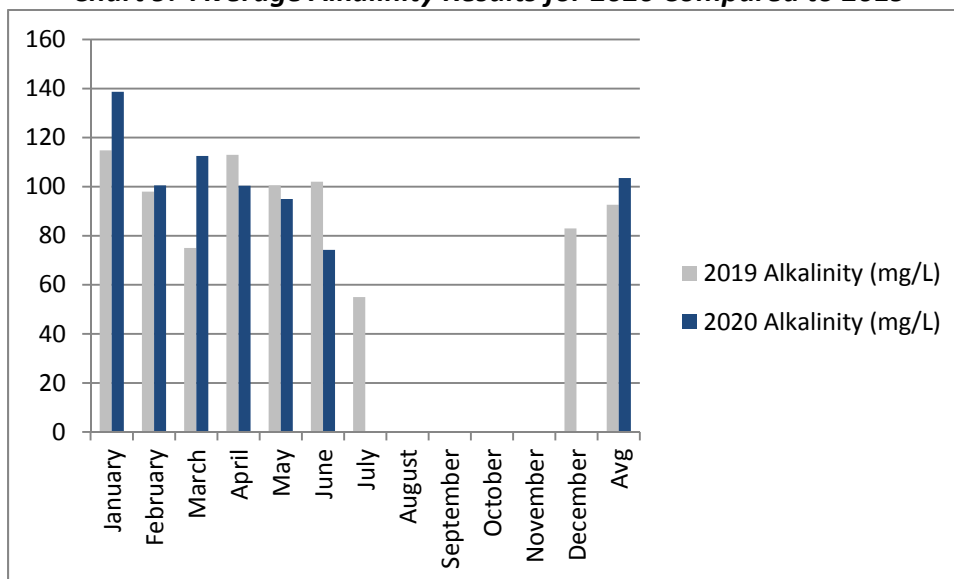
Total Kjeldahl Nitrogen (TKN) is sampled biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. The average effluent TKN for 2020 is 1.21mg/L. The annual average result for TKN in 2019 was 1.17mg/L, therefore the results for 2020 are up by 3.6% when compared to 2019 (refer to Chart 8).

Chart 8. Average TKN Results for 2020 Compared to 2019



Alkalinity is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that at least 50mg/L is present in the effluent. The average effluent alkalinity for 2020 is 104mg/L. The annual average result for alkalinity in 2019 was 93mg/L, therefore the results for 2020 are up by 12% when compared to 2019 (refer to Chart 9).

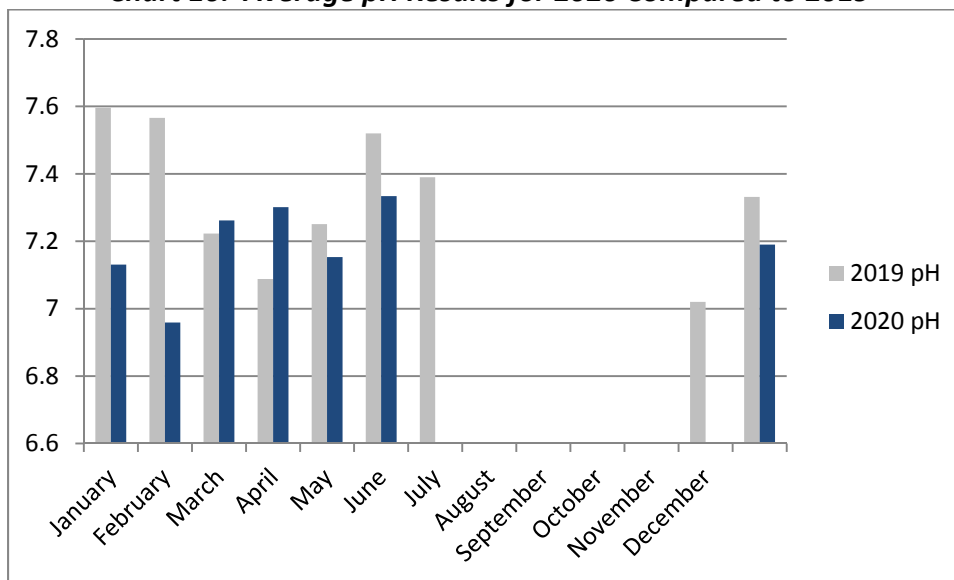
Chart 9. Average Alkalinity Results for 2020 Compared to 2019



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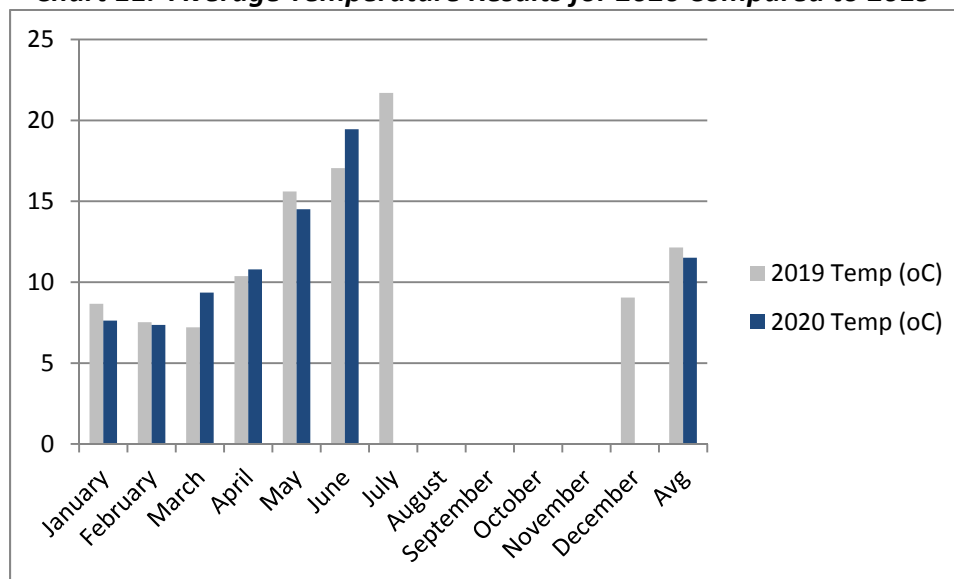
pH is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that the pH is in the range of 6.5-8.5. The average effluent pH for 2020 is 7.19. The annual average result for pH in 2019 was 7.33, therefore the results for 2020 are down by 2% when compared to 2019 (refer to Chart 10).

Chart 10. Average pH Results for 2020 Compared to 2019



Temperature is measured at least biweekly in accordance with ECA requirements; there are not any objectives or limits imposed on this parameter. The temperature of the effluent fluctuates based on outdoor temperatures. The average effluent temperature for 2020 is 11.5°C. The annual average temperature in 2019 was 12.2°C, therefore the results for 2020 are down by 5.2% when compared to 2019 (refer to Chart 11).

Chart 11. Average Temperature Results for 2020 Compared to 2019



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SECTION 4: OCCUPATIONAL HEALTH & SAFETY

FIRST QUARTER:

Due to the COVID-19 pandemic, which has been brought to the attention of all OCWA staff; precautionary protection measures have been implemented at all facilities. In addition to the mandatory PPE worn by all operational staff, the following additional steps were taken to assure safety:

- Additional PPE and supplies were sourced as applicable.
- The frequency of facility and vehicle cleaning and surface disinfection was increased and documented
- Staff re-organization was implemented to meet social distancing requirements where applicable.
- Facility accesses to essential contractors and/or delivery personal are closely monitored.

There were no additional Health & Safety issues identified during the first quarter.

SECOND QUARTER:

The Covid-19 precaution's still continue to ensure the protection of all staff and the public.

SECTION 5: GENERAL MAINTENANCE

FIRST QUARTER:

JANUARY:

* Facility upgrades still in progress.

08: Operators received training on new VFD drives from Rockwell.

08: Flow diverted to lagoon due to leak at plant. Operator initially thought it was raw sewage. MECF contacted for spill, but later discovered water pipe leak.

08: Gerber Electric on site at pump station testing amperage on P100; loose wiring tightened.

09: Pulled P100 at pump station; found it was clogged with rags. Pulled P102 at pump station; plugged with nylon rope.

10: Water leak at plant repaired; flow diverted from lagoon back to plant.

21: New sump pump installed in filter building.

27 to 31: High flow; additional sampling performed as per ECA.

FEBRUARY:

* Facility upgrades still in progress.

03: High flow. Additional sampling performed as per ECA.

06: Pre and post filter samples shipped to contract lab for TSS analysis.

07: Pre and post filter samples shipped to contract lab for TSS analysis.

10: Pre and post filter samples shipped to contract lab for TSS analysis.

13: Kone Cranes on site to inspect lifting devices for annual inspection

14: Service tech from NCA Air Compressors on site to inspect filter building air compressor.

19: New backwash pumps installed in the filter building.

21: New backwash pumps commissioned.

21: Grit chamber valve troubleshooting performed by contractor (Glover Hill).

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MARCH:

- 03: Completed generator run test
- 04: High flow samples taken for ECA
- 05: High flow samples taken for ECA
- 17: Flowmetrix on site for calibration
- 31: Replaced fuse on pump 3 that was burnt out, causing the issue from call out.

SECOND QUARTER:

APRIL

- 03: T&T power on site to rewire UV lights as the circuit was used temporarily for sump pump. UV system was started for the season
- 09: Filters and back wash pumps rotated.
- 20: Gerber Electric on site to replace GFCI plug for UV system.

MAY

- 07: Hetek on site to calibrate gas monitors in grit room.
- 12: T&T Power on site for warranty work related to call out on May 9th.
- 13: T&T power on site; SCADA programmer able to make blower operational again, operators filled out forms for all new assets and supplied to Sr. Ops Manager to submit and be entered into Maximo database.
- 15: New battery replaced in verbatim alarm dialer.
- 27: K&L on site to complete deficiency list. T&T power back on site to complete warranty work on blowers.
- 28: Bell Canada on site to fix phone line issue causing delayed alarm dialing. Phone lines were submerged in water. Bell to have third party contractor raise the PED box outside of the gates, as it is more than two feet too low to the ground.

JUNE

- 01: High temperature in lime room caused by sand filter air compressor.
- 05: Blower 100 and fan was shut down due to issues with the fan faulting.
- 08: Decant turned off until effluent flow meter is commissioned.
- 08: T&T Power assessed blower 100 issue. It was concluded that the overload was tripping. Repair requires electrician to further investigate.
- 10: T&T power on site to further investigate Blower 100 fan issue. Ambient temperature in the room was high. Exhaust fan was rewired to allow cooling of the room.
- 12: Gerber Electric on site to assess filter building's air compressor. They concluded that the contactor melted and therefore, swapped it out with spare compressors contactor.
- 15: Gerber Electric on site to assess back wash filter pump; ordered new contactor as it was burnt out.
- 18: Gerber Electric installed new contactor and test pump. It was found that the pump was water logged from a basement flood. Gerber to provide a quote for replacement.
- 19: Albert's Generator on site for annual service.
- 25: CSI and T&T Power on site to commission effluent flow meter.

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SECTION 6: ALARM SUMMARY

FIRST QUARTER:

JANUARY:

- 08: Pump fault at pump station; reset pump and monitored.
- 10: Alarm for Bar Screen high level. Operator cleaned temporary bar screen and ensured everything was operating normal.
- 11: Pump 2 fail; turned pump off until PLC upgrade.
- 13: Filter building high level, blower fault and bar screen fault; issues were resolved and monitored
- 18: Operator on site to check temporary operations at plant.
- 19: Operator on site to check temporary operations at plant.

FEBRUARY:

There were no alarms this month.

MARCH:

- 28: Pump station pump 3 failed to start. Operator switched pump off and left pump station running on 2 pumps.

SECOND QUARTER:

APRIL

There were no alarms this month.

MAY

- 09: Blower 101 fan fault; operator unable to reset. Blower fan turned off as other blowers were able to work. Issue believed to be caused by a power flicker.
- 24: Odour complaint received; community complaint form was filled out and filed. Operator on site to investigate, but no odours were found.
- 26: Blower issues; operator unable to fix problem and put blower 102 into hand to allow it to work all night till next day.
- 28: Operator called out for an alarm that was delayed by several hours. Operator got plant back up and running, but was unable to get alarms working.

JUNE

- 04: Channel 1 Alarm; operator reset SCADA computer and plant resumed normal operation.
- 10: Power outage; operator ran generator until power was restored. Operator reset all alarms.
- 11: Power outage; operator ran generator, but outage had caused filter basement to flood. Operator diverted flow to the lagoon; could not start filter building air compressor.
- 12: Operator back on site to turn off generator.
- 13: Back wash pump fault; operator unable to start pump so flow was partially diverted to the lagoon.
- 19: Channel 1 alarm; SCADA computer frozen. Operator restarted the system and all operations returned to normal.
- 27: Channel 1 alarm; operator reset SCADA computer and found second filter back wash pump had faulted. Operator diverted all flow to lagoon and turned off UV system.

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SECTION 7: COMMUNITY COMPLAINTS & CONCERNS

FIRST QUARTER:

There were no complaints or concerns this quarter.

SECOND QUARTER:

MAY:

24: Odour complaint received; community complaint form was filled out and filed. Operator on site to investigate, but no odours found. SAME AS ALARM ABOVE