

West Lorne Wastewater Treatment Plant & Collection System Operations Report First Quarter 2020

Submitted by:
Ontario Clean Water Agency
Date: May 5, 2020

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:

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Sr. Operations Manager:	Sam Smith	226-377-1540
Business Development Manager:	Susan Budden	519-318-3271

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.

SECTION 2: INSPECTIONS

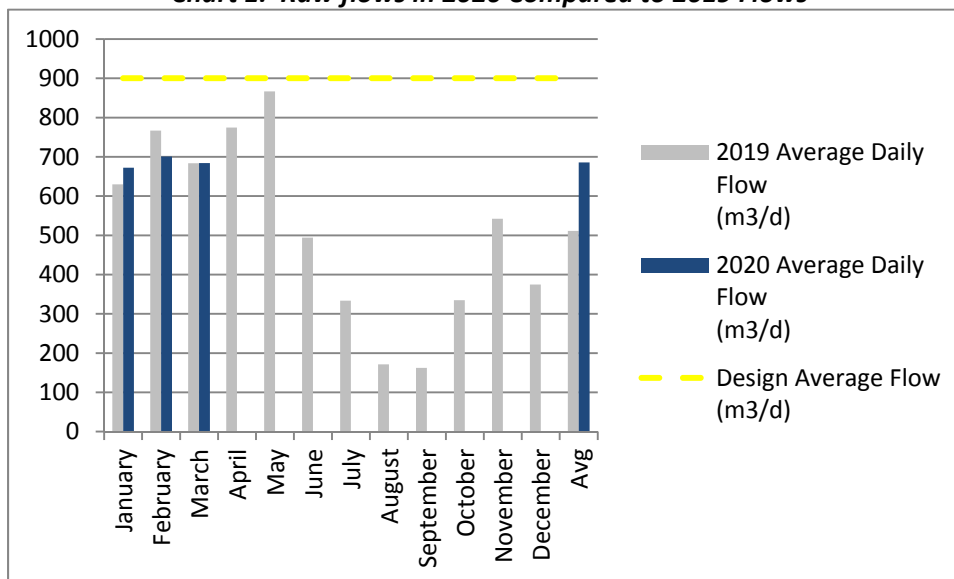
FIRST QUARTER:

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

SECTION 3: PERFORMANCE ASSESSMENT REPORT

The average daily raw flow for the wastewater treatment plant in 2020 is 685.76 m³/d. The average daily flow in 2019 was 511.26 m³/d, therefore the flow for 2020 is up 34% when compared to 2019. The plant is currently at 76 % 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.

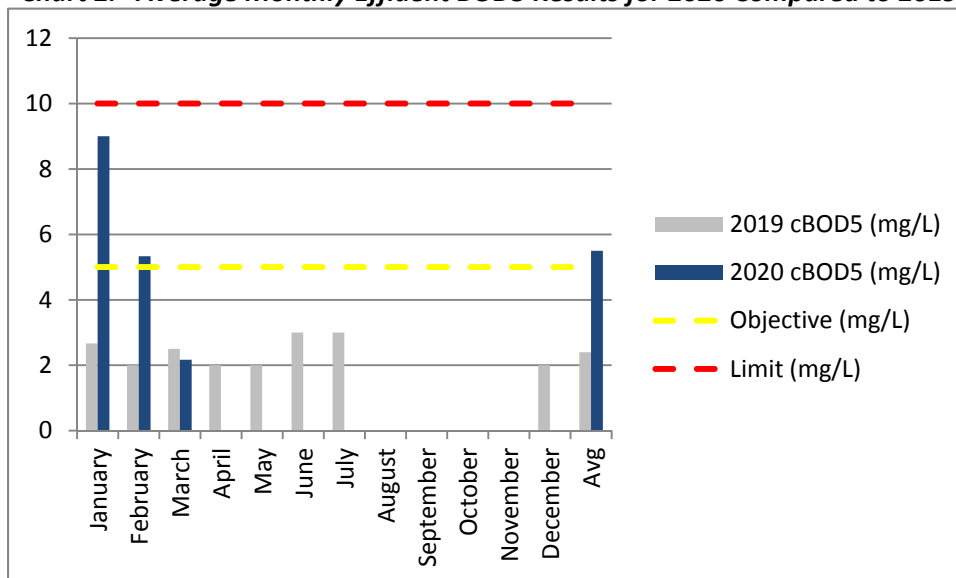
Table 1. Raw Water Sample Results for 2020.

	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					
May Results					
June Results					
July Results					
August Results					
September Results					
October Results					
November Results					
December Results					
Annual Average	60.667	17.867	1.66	67.667	242.083

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

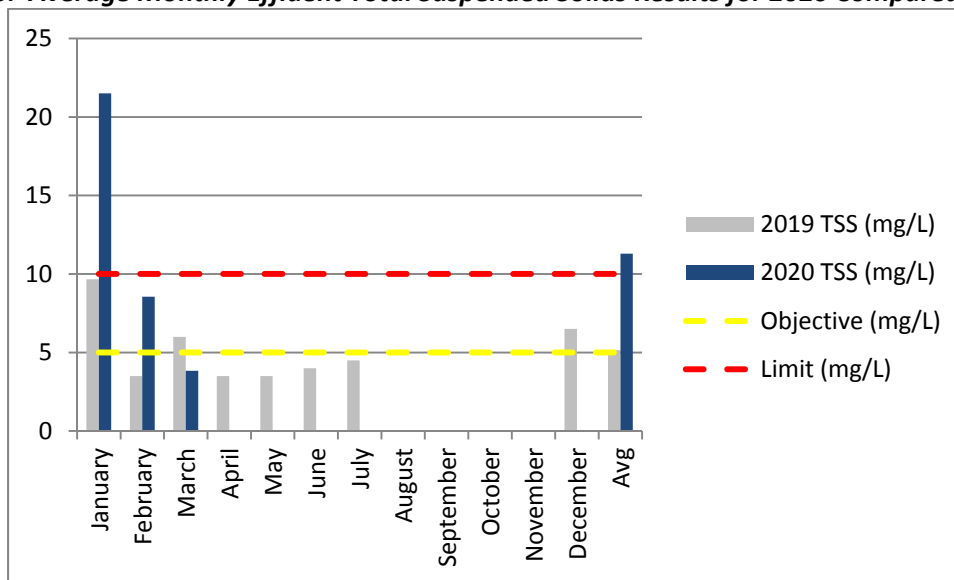
The average effluent cBOD5 for 2020 is 2.5 mg/L, meeting the limits identified in the ECA. The effluent objective was exceeded in January and February due to high flows and filter performance from the December commissioning. The annual average result for BOD5 in 2019 was 2.4mg/L, therefore the results for 2020 are up by 129.6% when compared to 2019 (refer to Chart 2).

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



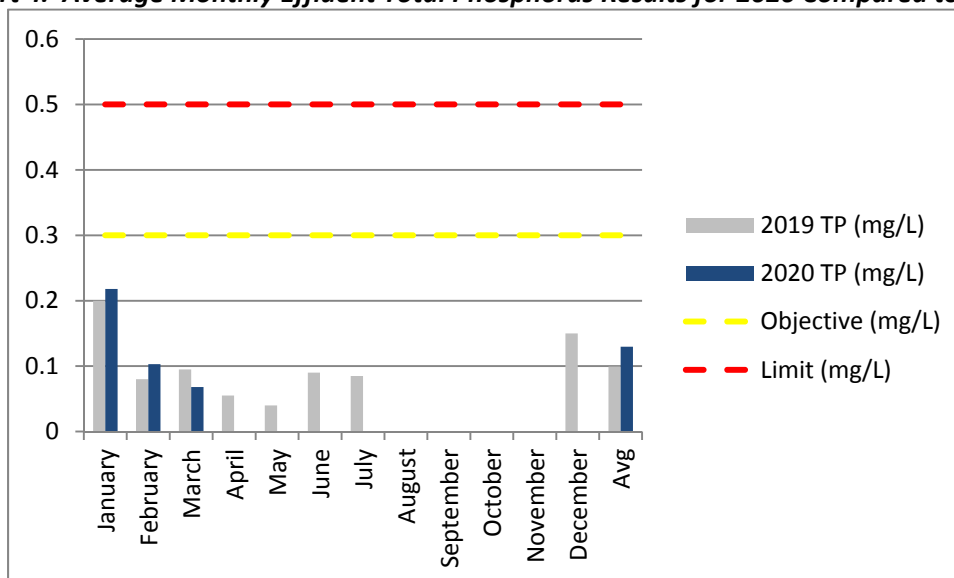
The average effluent TSS for 2020 is 11.3mg/L, exceeding effluent limits identified in the ECA in January as discussed in the compliance section, and exceeding the effluent objective in January and March due to high flows and filter performance. The annual average result for TSS in 2019 was 5.1mg/L; therefore the results for 2020 are up by 119.5% when compared to 2019 (refer to Chart 3).

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



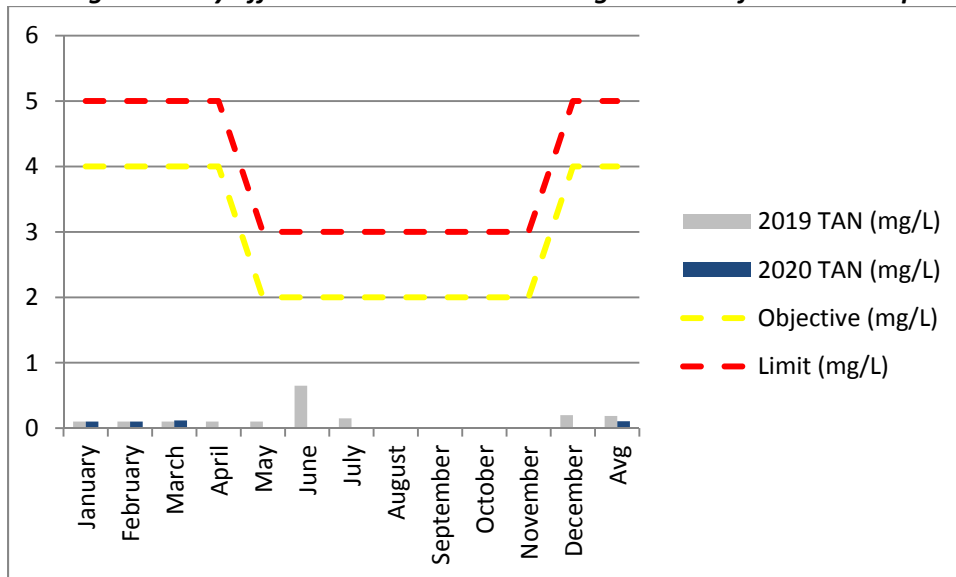
The average effluent TP for 2020 is 0.13 mg/L, meeting effluent limits and objectives identified in the ECA. The annual average result for TP in 2019 was 0.10mg/L, therefore the results for 2020 is up 30.5% when compared to 2019 (refer to Chart 4).

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



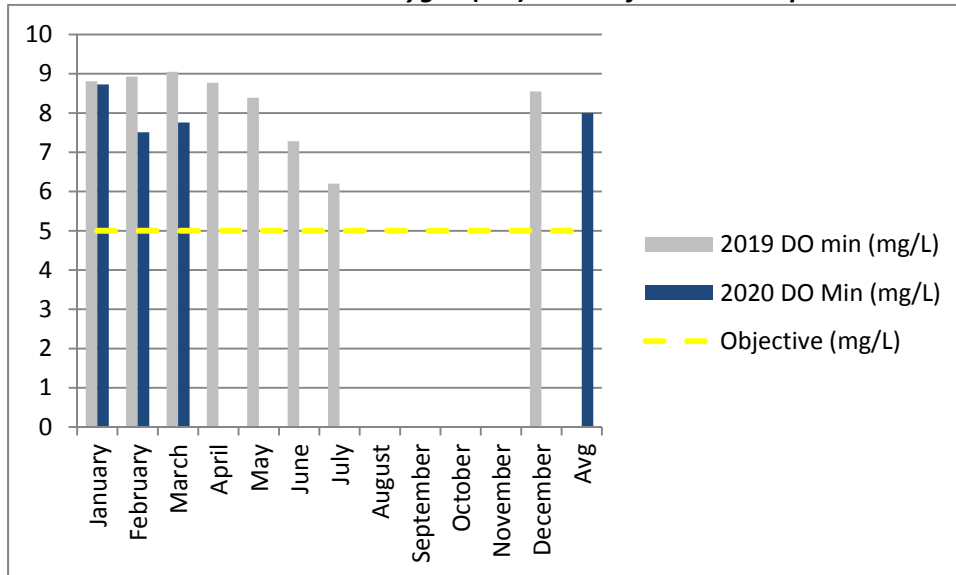
The average effluent TAN for 2020 is 0.11mg/L, meeting both effluent objectives and limits identified in the ECA. The annual average result for TAN in 2019 was 0.19mg/L, therefore the results for 2020 are down 44% compared to 2019 (refer to Chart 5).

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



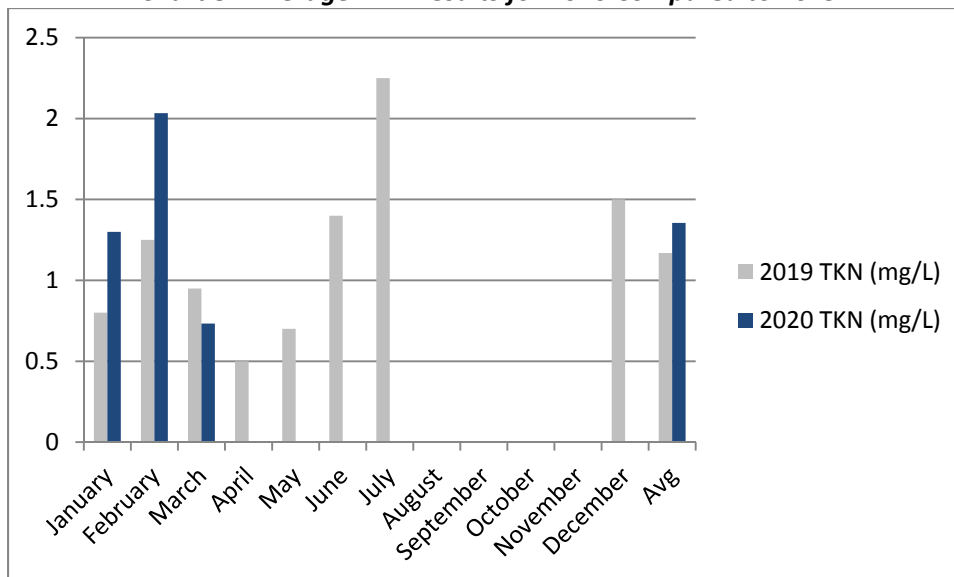
Dissolved oxygen (DO) of the effluent is tested on site at the plant, the ECA identifies a minimum level required as an objective. This objective is 5mg/L. The chart below (chart 7) shows the minimum DO concentrations; there have been no objective exceedances.

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



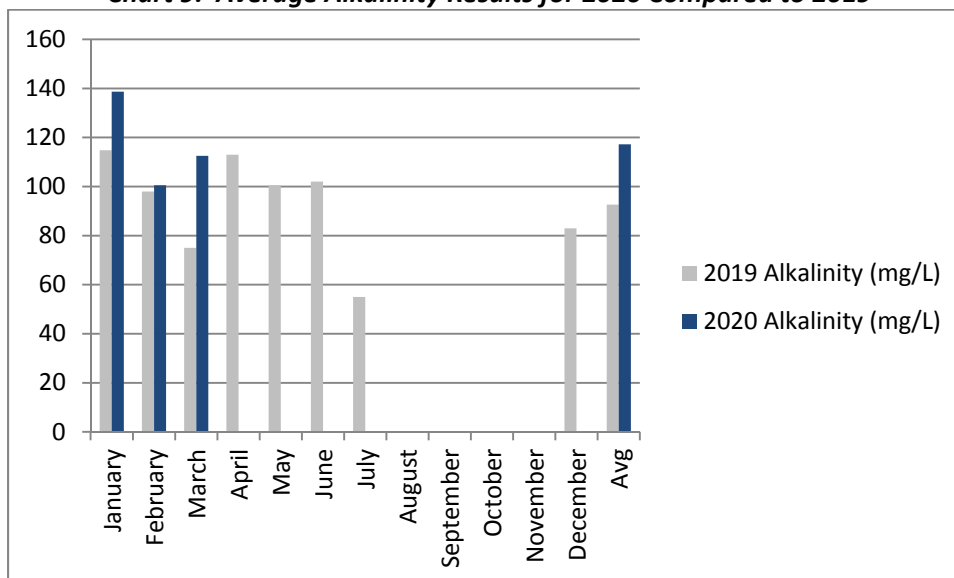
Total Kjeldahl Nitrogen (TKN) is sampled biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. The average effluent TKN for 2020 is 1.36mg/L. The annual average result for TKN in 2019 was 1.17mg/L, therefore the results for 2020 are up by 16% when compared to 2019 (refer to Chart 8).

Chart 8. Average TKN Results for 2020 Compared to 2019



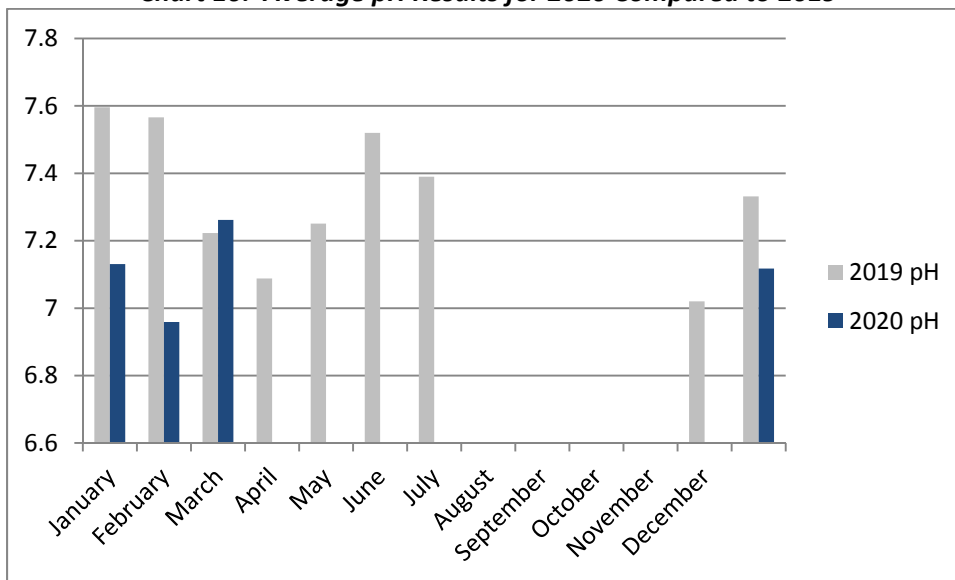
Alkalinity is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that at least 50mg/L is present in the effluent. The average effluent alkalinity for 2020 is 117mg/L. The annual average result for alkalinity in 2019 was 93mg/L, therefore the results for 2020 are up by 27% when compared to 2019(refer to Chart 9).

Chart 9. Average Alkalinity Results for 2020 Compared to 2019



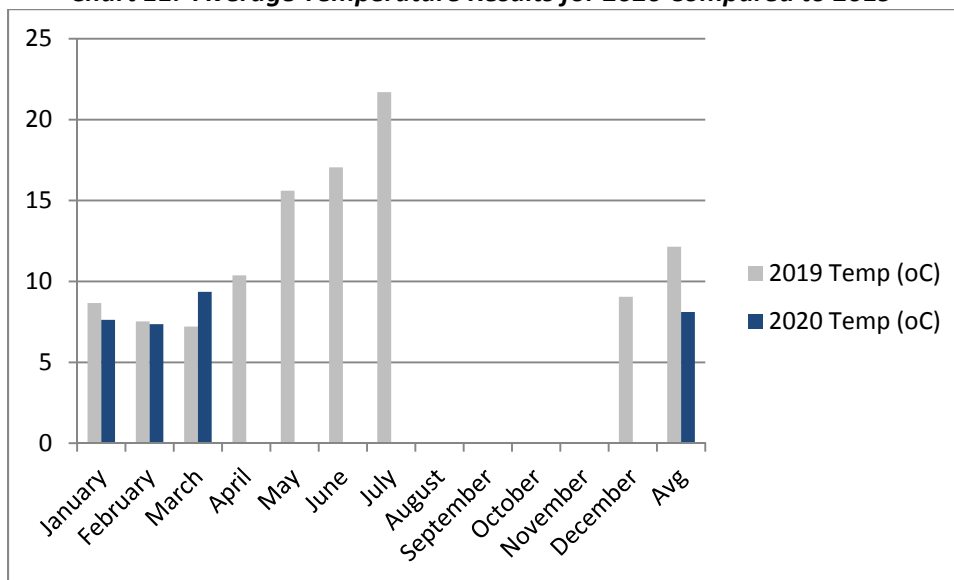
pH is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that the pH is in the range of 6.5-8.5. The average effluent pH for 2020 is 7.12. The annual average result for pH in 2019 was 7.33, therefore the results for 2020 are down by 2.9% 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 8.1°C. The annual average temperature in 2019 was 12.2°C, therefore the results for 2020 are down by 33% when compared to 2019 (refer to Chart 11).

Chart 11. Average Temperature Results for 2020 Compared to 2019



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 personnel are closely monitored.

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

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. MECP 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).

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.

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.

SECTION 7: COMMUNITY COMPLAINTS & CONCERNS

FIRST QUARTER:

There were no complaints or concerns this quarter.