



Ontario Clean Water Agency
Agence Ontarienne Des Eaux

5526 West Lorne Wastewater Treatment Plant Operations Report Fourth Quarter 2022

Ontario Clean Water Agency, Southwest Region
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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 # 5873-B4RLEJ, 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

SECTION 1: COMPLIANCE SUMMARY

FIRST QUARTER:

There were no non-compliances reported this quarter.

SECOND QUARTER:

There were no non-compliances reported this quarter.

THIRD QUARTER:

There were no non-compliances reported this quarter.

FOURTH QUARTER:

There were no non-compliances reported this 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.

THIRD QUARTER:

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

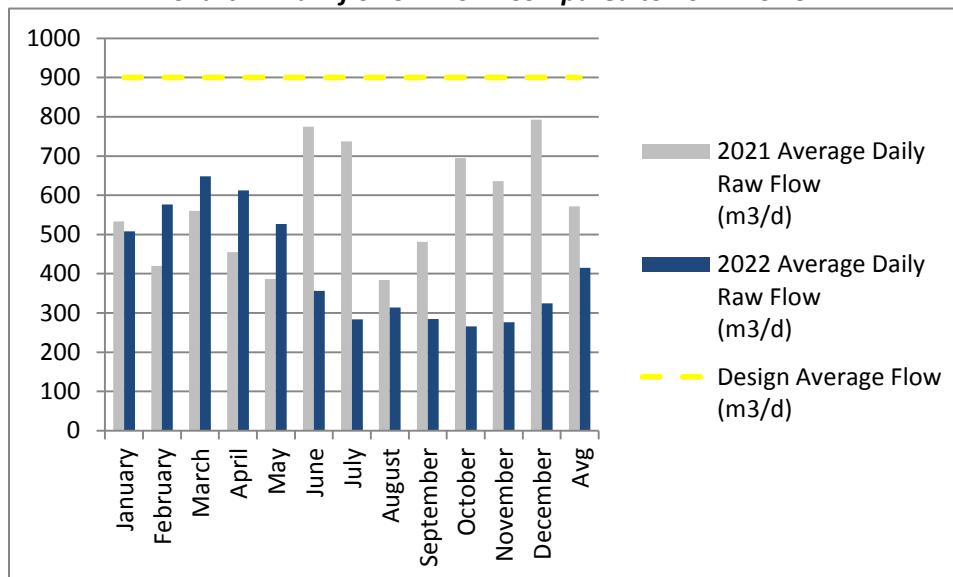
FOURTH QUARTER:

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

SECTION 3: PERFORMANCE ASSESSMENT REPORT

The average daily flow for the wastewater treatment plant in 2022 is 414.78m³/d. The average daily flow in 2021 was 571.26 m³/d, therefore the flow for 2022 is down 27% when compared to 2021. The plant is currently at 46 % of its rated capacity of 900m³/d.

Chart 1. Raw flows in 2022 Compared to 2021 Flows



Raw samples are taken on a biweekly basis following the ECA requirements. The table below shows the raw sample results for 2022.

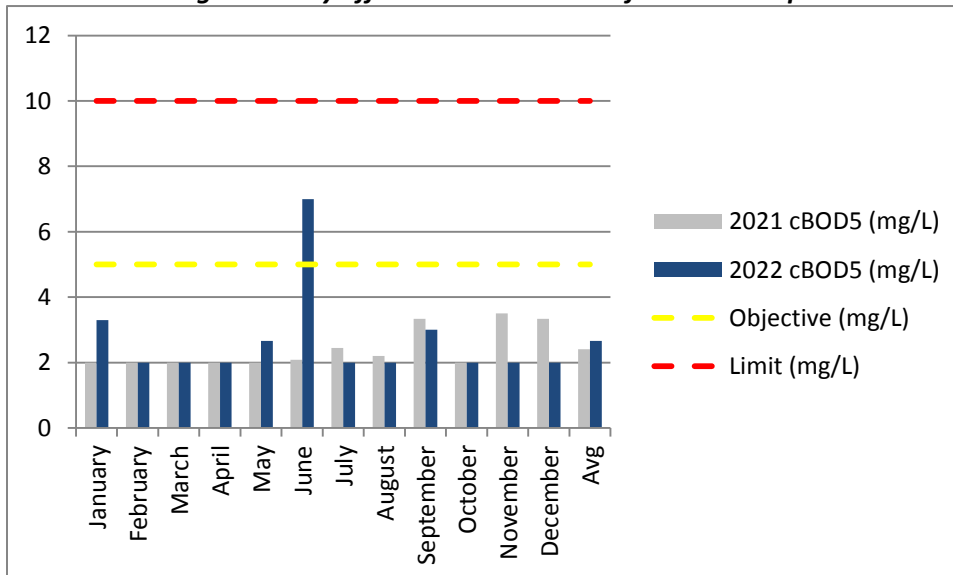
Table 1. Raw Water Sample Results for 2022.

	BOD5 (mg/L)	TKN (mg/L)	TP (mg/L)	TSS (mg/L)	Alkalinity (mg/L)
January Results	52.5	13.35	1.26	184	203
February Results	108.5	21	3.31	120	241
March Results	70.5	25.05	2.7	97	311.5
April Results	83.5	15.25	1.53	130	232.5
May Results	97	17.1	1.51	80.3	238
June Results	56	19.95	1.61	65	192.5
July Results	86	37.35	3.9	51.5	296.5
August Results	370.5	54.75	6.51	568	306.5
September Results	97.5	42.5	3.68	53	293
October Results	45	28.2	2.92	77	246
November Results	96.3	44	4.53	72	327.7
December Results	119.5	37.2	3.53	56	305
Annual Average	106.1	29.7	3.08	125.4	267.4

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

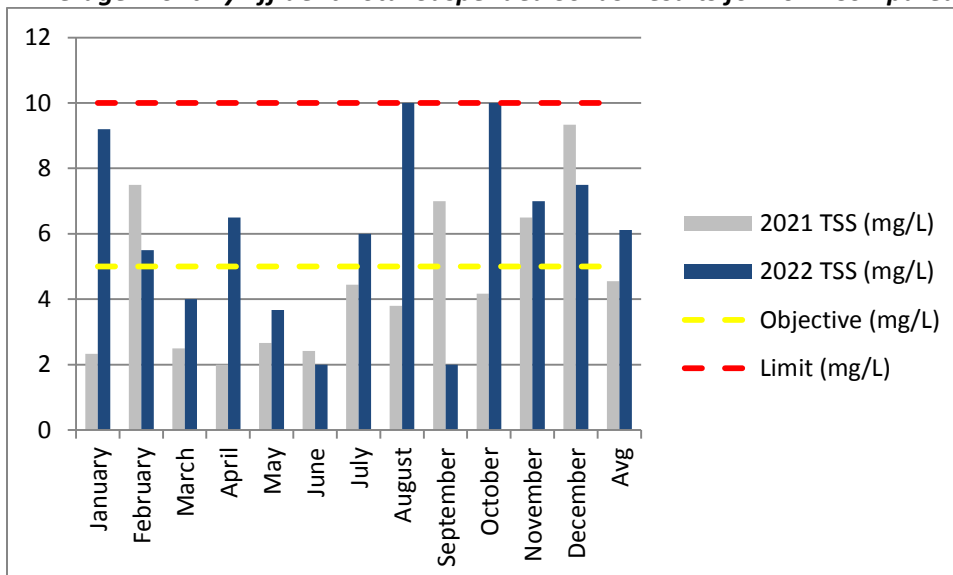
The average effluent cBOD5 for 2022 is 2.66mg/L, meeting the limits identified in the ECA. The objective was exceeded in June. The annual average result for cBOD5 in 2021 was 2.41mg/L, therefore the results for 2022 are up by 10.6% when compared to 2021 (refer to Chart 2).

Chart 2. Average Monthly Effluent cBOD5 Results for 2022 Compared to 2021



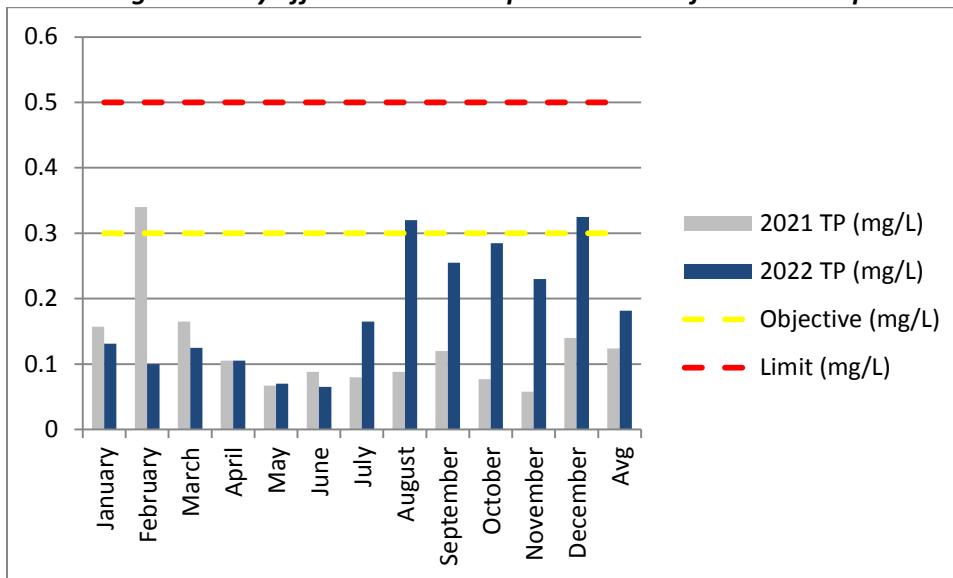
The average effluent TSS for 2022 is 6.1mg/L, meeting the effluent limits identified in the ECA, exceeding the effluent objective in January, February and April, July, August, October, November and December. The annual average result for TSS in 2021 was 4.6mg/L; therefore the results for 2022 are up by 34% when compared to 2021 (refer to Chart 3).

Chart 3. Average Monthly Effluent Total Suspended Solids Results for 2022 Compared to 2021



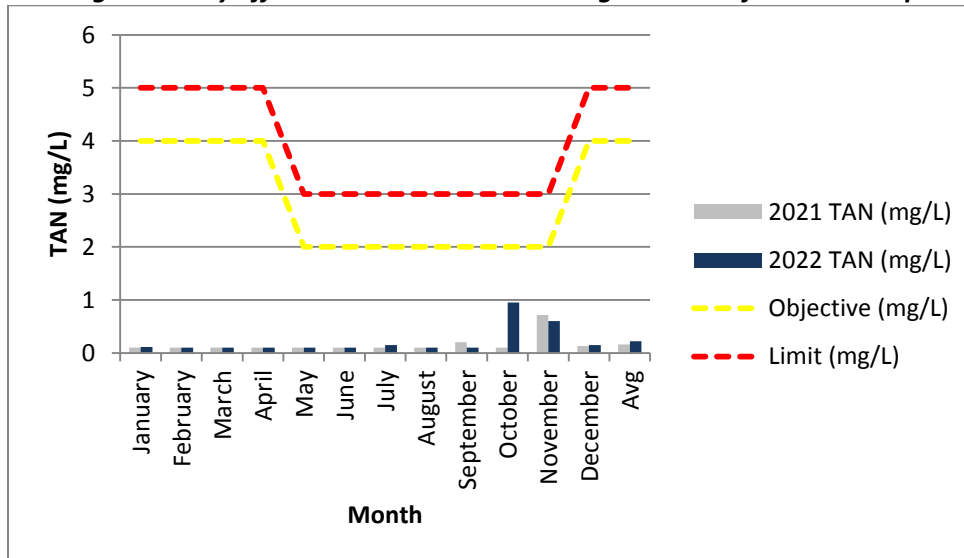
The average effluent TP for 2022 is 0.18 mg/L, meeting effluent limits identified in the ECA but exceeding the objective in August and December. The annual average result for TP in 2021 was 0.12mg/L, therefore the results for 2022 is up 46.5% when compared to 2021 (refer to Chart 4).

Chart 4. Average Monthly Effluent Total Phosphorus Results for 2022 Compared to 2021



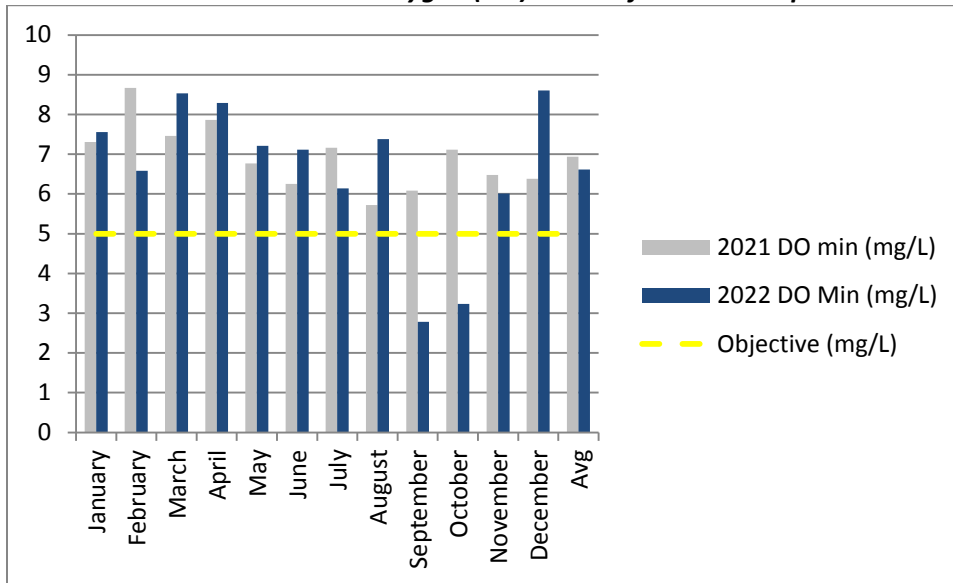
The average effluent TAN for 2022 is 0.22mg/L, meeting both effluent objectives and limits identified in the ECA. The annual average result for TAN in 2021 was 0.16mg/L, therefore the results for 2022 are up 36% compared to 2021 (refer to Chart 5).

Chart 5. Average Monthly Effluent Total Ammonia Nitrogen Results for 2022 Compared to 2021



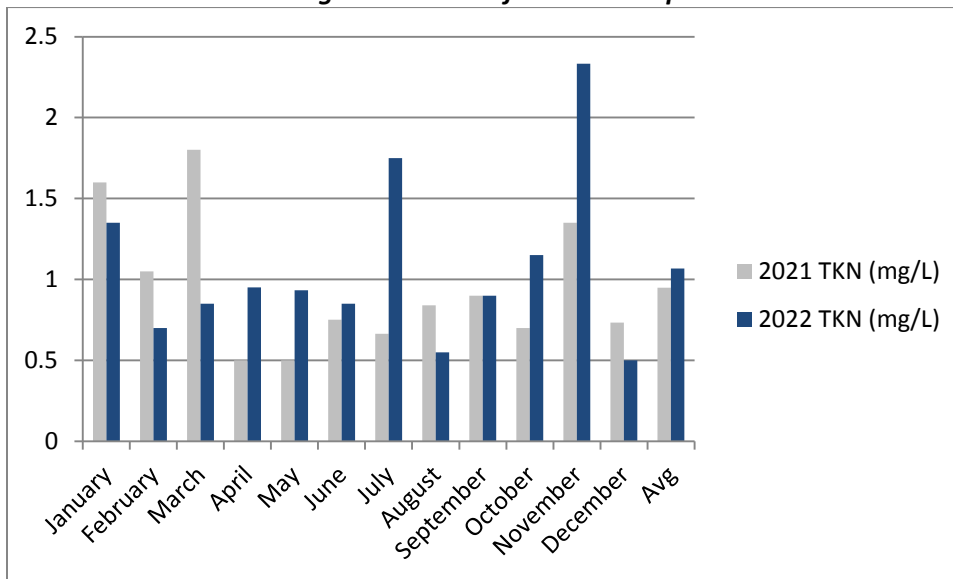
Dissolved oxygen (DO) of the effluent is tested on site at the plant, the ECA identifies a minimum level required as an objective. This objective is 5mg/L. The chart below (chart 7) shows the minimum DO concentrations; there was an objective exceedance in September and October.

Chart 6. Minimum Dissolved Oxygen (DO) Results for 2022 Compared to 2021



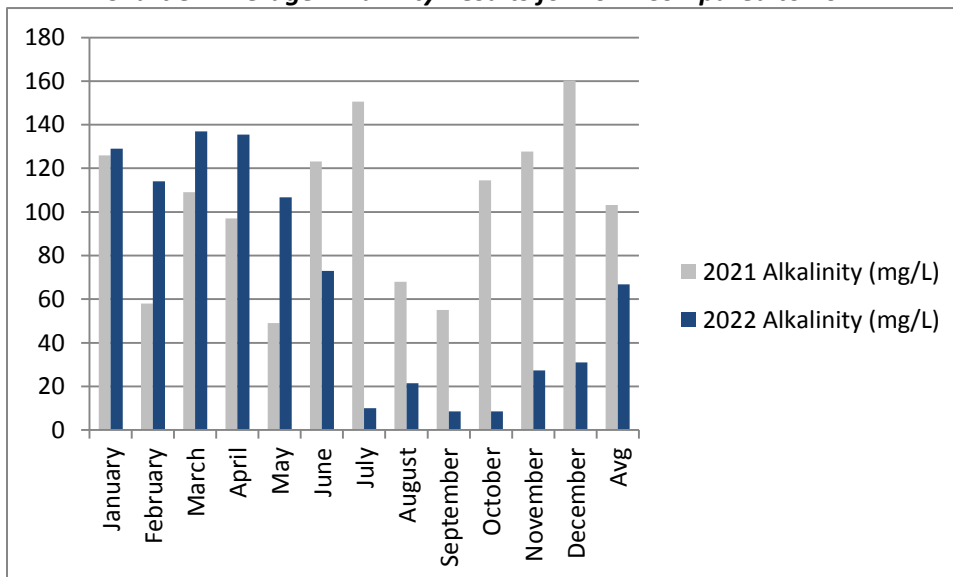
Total Kjeldahl Nitrogen (TKN) is sampled biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. The average effluent TKN for 2022 is 1.07mg/L. The annual average result for TKN in 2021 was 0.95mg/L, therefore the results for 2022 are up by 12.6% when compared to 2021 (refer to Chart 7).

Chart 7. Average TKN Results for 2022 Compared to 2021



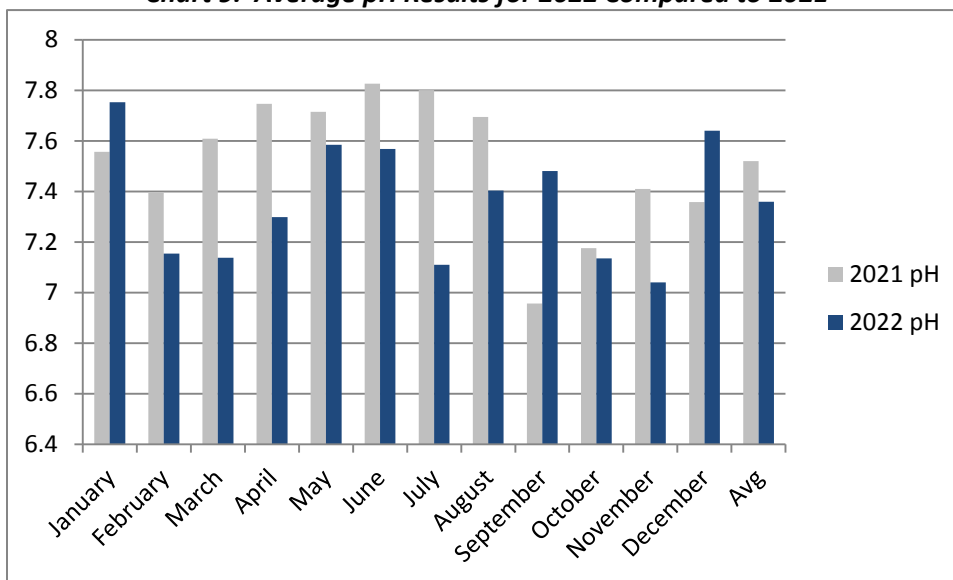
Alkalinity is sampled biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that at least 50mg/L is present in the effluent. The average effluent alkalinity for 2022 is 66.8mg/L. The annual average result for alkalinity in 2021 was 103mg/L, therefore the results for 2022 are down by 35% when compared to 2021(refer to Chart 8).

Chart 8. Average Alkalinity Results for 2022 Compared to 2021



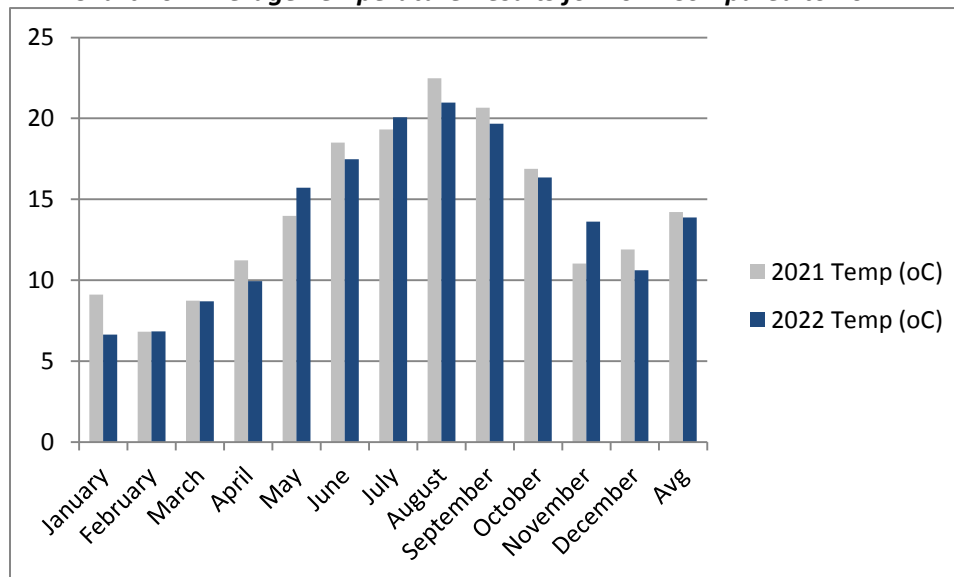
pH is sampled at least biweekly in accordance with ECA requirements; there are no objective or limits imposed on this parameter. It is recommended that the pH is in the range of 6.5-8.5. The average effluent pH for 2022 is 7.36. The annual average result for pH in 2021 was 7.52, therefore the results for 2022 are down by 2.1% when compared to 2021 (refer to Chart 9).

Chart 9. Average pH Results for 2022 Compared to 2021



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 2022 is 13.9°C. The annual average temperature in 2021 was 14.2°C, therefore the results for 2022 are down by 2.4% when compared to 2021 (refer to Chart 10).

Chart 10. Average Temperature Results for 2022 Compared to 2021



SECTION 4: OCCUPATIONAL HEALTH & SAFETY

FIRST QUARTER:

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

SECOND QUARTER:

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

THIRD QUARTER:

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

FOURTH QUARTER:

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

SECTION 5: GENERAL MAINTENANCE:

FIRST QUARTER:

JANUARY

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

- 04: NCA compressors on site to change oil on sand filter compressor as it wouldn't stay running due to internal sensor tripped.
- 05: Started to decant West lagoon and closed east to west interconnect. Lagoon level was at 32.5"
- 06: High flow sample taken and shipped to lab.
- 10: High flow sample taken due to high numbers over weekend and shipped to lab. Decant flow was lowered to prevent high flows.
- 13: Auma on site to replace parts on the pinch valve. Valve is used for RAS/WAS system.
- 18: High flow sample taken and shipped to lab.
- 21: Lagoon measured and at 44"
- 24: Heytech on site to calibrate gas detectors in head works room.
- 24: Received alum delivery of 9000L
- 25: Gerber Electric on site to test MCC panel for RAS pump P108 due to issues; pump was reset and all appears normal.
- 26: High flow samples taken and shipped to lab.
- 31: Lagoon measured and at 51" - a total drop of 18.5" for the month.

FEBRUARY

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

- 11: Reset SCADA computer due to communication error

MARCH

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

- 02: Updated RAS/ WAS pump duty table
- 30: Flowmetrix on site to calibrate flowmeters

SECOND QUARTER:

APRIL:

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

- 20: On site with Gerber Electric and T&T power to investigate PLC issues; found P100 faulted and it was determined that the pump needs to be pulled - P102 running but very low flow. Gerber Electric reversed direction and pump is now flowing at 17L/s.
- 25: On site with Kone Cranes for lifting devices inspections
- 27: Flowmetrix on site to complete effluent flow meter calibrations

MAY:

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

- 04: Turned off lagoon decant
- 16: Cleaned D.O probes in aeration tanks

- 16: Turned off decant due to high flows from rain.
- 18: Received call from Mike Kalita in regards to a sewer back up reported on McGregor Street. Operator arrived on site and found that manhole located at dead end appeared to have slight back up. Manhole located at McGregor and Wood Street appeared to be okay and flowing slightly still. Operator suspected there to be an issue between the two manholes. Hurricane Hydrovac in to flush from manhole to manhole. Completed flushing of line and all systems appeared to be ok.
- 25: On site with Chemtrade for alum delivery
- 25: On site with Nevro to drop off pump from Rodney scum pit.

JUNE:

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

09: Cleaned clarifiers and effluent chambers

13: Cleaned entire process and effluent chamber

17: Cleaned clarifiers and effluent channel

THIRD QUARTER:

JULY

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

05: Alberts Generators completed annual generator inspections at West Lorne WWTP and Pump Station

21: On site with Keith Douglas for annual backflow preventer inspections

29: Completed monthly alarm checks

AUGUST

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

04: Keith Douglas on site for back flow preventer repair at West Lorne Pump Station

10: Gerber Electric on site for work on generator transfer switch

30: Completed dialer checks for main pump station and West Lorne WWTP

SEPTEMBER

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

12: Found RAS/WAS pump 3 had tripped; reset pump and it is now operating as intended

14: Pulled pump 3 from wet well to remove rags

19: Found SCADA not operating properly. Operator contacted T&T power to investigate

21: T&T Power Group fixed SCADA issues

FOURTH QUARTER:

OCTOBER

Sampled As Per Sampling Calendar

General maintenance as schedule by WMS

14: Cleaned UV channel and aeration outlet as it was clogged with debris.

24: Manually wasted for approximately 15 minutes. Pumped out scum pit as much as possible to inspect pump.

27: Generator testing at the S.T.P. and P.S.

27: Cleaned UV channel and put away for the winter months as per SOM and ORO.

NOVEMBER

Sampled As Per Sampling Calendar

General maintenance as scheduled by WMS

07: Hurricane Hydrovac on site to clean out scum pit.

07: Clarifier cleaning from November 7-9.

DECEMBER

Sampled As Per Sampling Calendar

General maintenance as scheduled by WMS

No out of scope maintenance to report this month.

SECTION 6: ALARMS:

FIRST QUARTER:

JANUARY

11: Operator received page for communication fail. Operator reset computer and all was normal.

27: SCADA computer communication fail. Operator reset computer all was normal.

FEBRUARY

03: Received page at 19:55 for gateway communication alarm. Arrived on site at 20:58, and restarted SCADA computer. All systems now appear okay.

18: Received channel 2 network gateway alarm at 21:34. Arrived on site and reset SCADA computer, all systems are now operating normally at time.

23: Received alarm page out at 18:04 to West Lorne WWTP for channel 1 communication loss. Arrived on site and reset SCADA computer and regained communication. Completed facility walk-through to make sure all systems are operating as designed.

MARCH

03: Received page for channel 2 communication alarm. Operator restarted SCADA computer and reset sand filter air compressor. All systems running normal.

12: Received call from spectrum at 17:01 for "West Lorne SCADA communication alarm gateway 2." Operator reset SCADA computer and completed plant walk through.

20: Received call for communication alarm at 22:26. Arrived on site at 00:30, reset SCADA computer and completed plant walk through. All systems appeared okay at the time.

27: Received call for communication alarms at 11:06. Arrived at 11:55, restarted computer and completed plant walk through. All systems appeared okay at the time.

SECOND QUARTER:

APRIL:

No alarms this month

MAY:

03: On site after receiving call out for pump station high level; operator found wet well level at 3.60m and still in alarm. Pump was operating normal and plant was receiving flow at 14 l/s. Notified S.O.M Sam Smith

JUNE:

No Alarms this month

THIRD QUARTER:

JULY

No alarms this month.

AUGUST

- 08: Received call for wet well high level at 18:00 for West Lorne Pump Station, monitored wet well until well level was out of alarm
- 21: Received call for wet well high level at West Lorne Pump Station, wet well level was normal upon arrival and out of alarm
- 22: Received page for communication alarm at West Lorne WWTP, reset RAS/WAS pumps and sludge scraper

SEPTEMBER

- 05: Received page for channel 1 alarm, reset computer and completed plant walkthrough all systems are now okay
- 10: Onsite for power flicker, found blower and scrapers had faulted. Reset breakers and all systems are operating properly
- 14: Received call for channel 1 alarm, found exhaust fan had tripped, reset fan and alarm is now cleared
- 24: Received channel 1 alarm, reset computer, blowers and MCC panel all systems are now normal
- 25: Received channel 1 alarm, alarm due to power flicker. Reset SCADA computer, and blower

FOURTH QUARTER:

OCTOBER

No Alarms to report this month

NOVEMBER

No alarms to report this month.

DECEMBER

- 19: On call operator received call for channel one communication alarm. Arrived onsite, reset battery back up and SCADA computer, completed plant walk through and operator left site after ensuring all was operating as intended.
- 23: On call operator called for power failure; no Hydro One outages reported in the area. Operator arrived on site and confirmed utility power was on to the plant and everything was operating as intended. Operator spoke with SOM, Sam Smith and confirmed that the issue was related to the auto dialer and nothing could be done at this current time.

SECTION 7: COMPLAINTS & CONCERNS:

FIRST QUARTER:

There were no complaints or concerns this quarter.

SECOND QUARTER:

There were no complaints or concerns this quarter.

THIRD QUARTER:

There were no complaints or concerns this quarter.

FOURTH QUARTER:

There were no complaints or concerns this quarter.