



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

# Tri County Drinking Water System Operations Report Second Quarter 2021

Ontario Clean Water Agency, Southwest Region  
Mark Harris, Sr. Operations Manager, Aylmer Cluster  
Date: August 17, 2021

## **Facility Description**

Facility Name:	Tri-County Drinking Water System
Regional Manager:	Dale LeBritton (519) 476-5898
Sr. Operations Manager:	Mark Harris (226) 545-0414
Business Development Manager:	Susan Budden (519) 318-3271
Facility Type:	Municipal
Classification:	Class 2 Water Distribution, Class 2 Water Treatment
Title Holder:	Municipality

## **Service Information**

Area(s) Serviced:	West Elgin, Dutton/Dunwich, Southwest Middlesex, Newbury and Bothwell
Population Serviced:	9,985
No. of Connections:	
Water Meters:	Commercial / Residential
In Service Date:	2009

## **Capacity Information**

Total Design Capacity:	12.160 (1000 m <sup>3</sup> /day)
Total Annual Flow:	1,381 (1000 m <sup>3</sup> /year)
Average Day Flow:	3.770 (1000 m <sup>3</sup> /day)
Maximum Day Flow:	5.380 (1000 m <sup>3</sup> /day)

## **Operational Description**

Water treatment with intake in Lake Erie, 4 low lift pumps, lifting up to the treatment plant. Membrane filtration followed by injection with Sodium Hypochlorite for primary disinfection and into the 2 Storage Tanks. Pumping to tower & distribution system with 4 high lift pumps.

## **SECTION 1: COMPLIANCE SUMMARY**

### **FIRST QUARTER:**

There were no compliance issues to report during the first quarter.

### **SECOND QUARTER:**

There were no compliance issues to report during the second quarter.

## **SECTION 2: INSPECTIONS**

### **FIRST QUARTER:**

The report for the MECP inspection that was conducted on December 15<sup>th</sup>, 2020 was received on February 12<sup>th</sup>, 2021. The inspection had questions covering the following topics: Source, Capacity Assessment, Treatment Processes, Operations Manuals, Logbooks, Certification and Training, Water Quality Monitoring, Reporting & Corrective Actions, and Treatment Process Monitoring. The inspection rating was 95.44%. There was one non-compliance with regulatory requirements that was identified during the inspection. There was no follow up action required.

### **SECOND QUARTER:**

There was no Ministry of Environment, Conservation and Parks (MECP) or MOL inspections conducted during the second quarter.

## **SECTION 3: QEMS UPDATE**

### **FIRST QUARTER:**

On January 14<sup>th</sup>, 2021 the thirty-six-month risk assessment was conducted to satisfy the requirements of Element 7 of the Operational Plan.

OCWA has been working on an initiative to modernize and enhance its current hard copy operational logbook practices to ensure compliance with regulatory requirements and to facilitate better record-keeping and communication regarding the operation of the drinking water and wastewater facilities that OCWA operates. This initiative has been accomplished by implementing electronic logbooks using the eRIS Logbook software at the facilities OCWA operates. These electronic logbooks meet the requirements of Ontario Regulations 128 and 129 as well as the Electronic Commerce Act. The MECP have been notified and have acknowledged OCWA's efforts in improving documentation with logbooks.

The implementation of electronic logbooks is expected to result in benefits for OCWA staff, the MECP and the clients in the following ways:

- Improved efficiency by being able to provide logbook records electronically.
- Facilitation of virtual inspections and logbook reviews, now and in the future. With the current ongoing challenges due to the COVID-19 pandemic, adherence to social distancing and other public health measures is critical. The accessibility of electronic logbooks makes it easier for OCWA and Ministry staff to adhere to such measures by reducing/eliminating the need for on-site visits.
- Better quality logbook entries, particularly those documenting unusual or abnormal operating conditions.
- Improved communication and operational oversight as the information is available immediately after entry through both desktop and mobile applications.

- Improved ability to proactively identify and respond to potential process and compliance issues.
- More consistent record-keeping practices

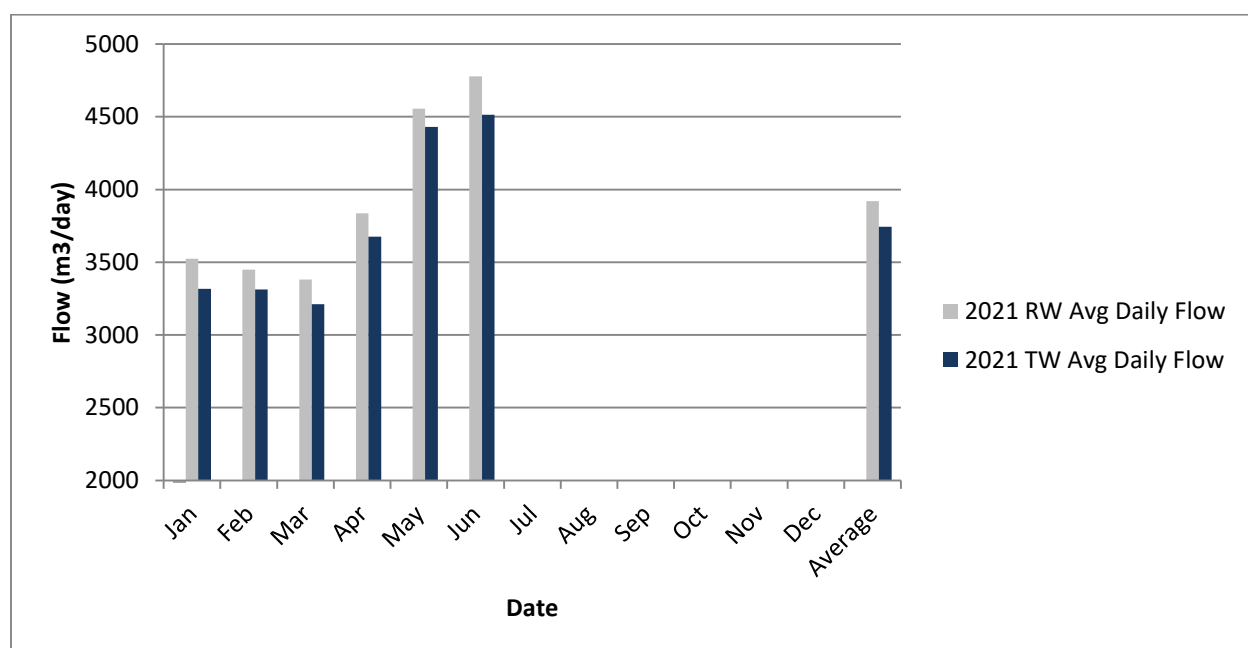
## **SECOND QUARTER:**

There were no QEMS updates this quarter.

## **SECTION 4: PERFORMANCE ASSESSMENT REPORT**

The plant is at 95.5% efficiency with the water taken from Lake Erie that is treated and sent to the distribution systems. Chart 1 below shows the raw water takings compared to the treated water distributed to the distribution system so far in 2021.

Chart 1: Average daily water takings compared to treated water distributed to the distribution system



Raw water is sampled on a weekly basis and tested for E. coli and Total coliforms as per regulatory requirements. There are no limits identified in the regulations for E. coli and total coliform found in the raw water source. Table 1 below identifies the sample results for the first quarter.

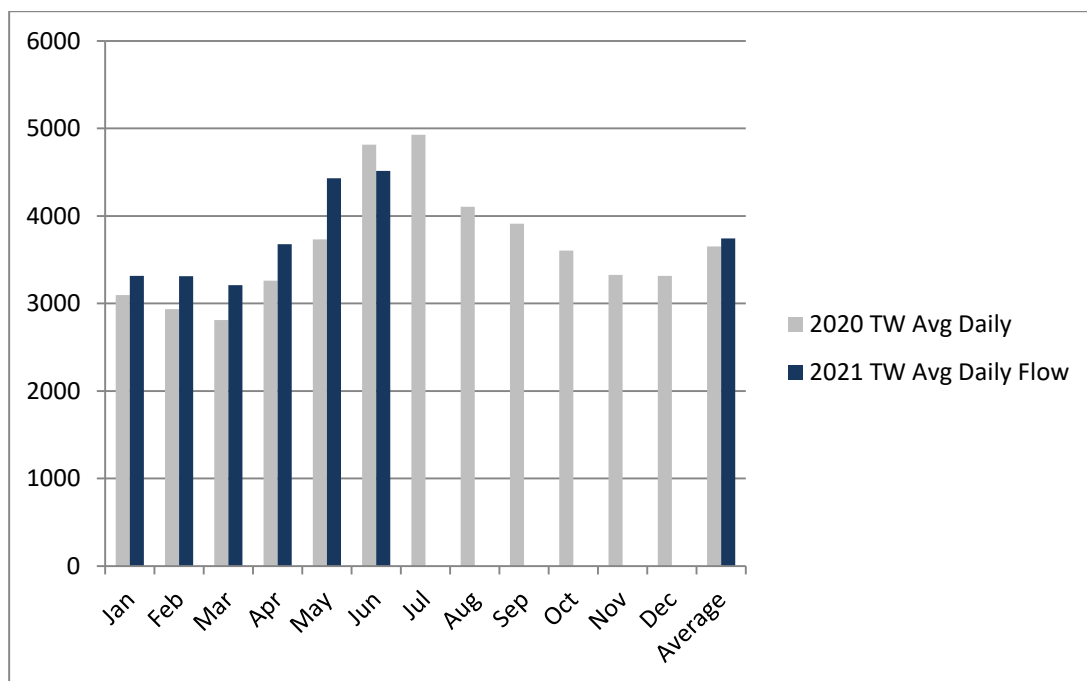
Table 1: Raw water sample results 2021

	# Samples	E. Coli Range (cfu/100mL)	Total Coliform Range (cfu/100mL)
January	4	2 – 10	100 – 3300
February	4	0 – 2	2 – 1100
March	5	2 – 10	8 – 330
April	4	2 – 10	1 – 30
May	5	0 – 100	1 – 200
June	4	2 – 10	1 – 360

The raw water is treated through membrane filtration and chlorine disinfection. The treated water is distributed to the systems it serves through the high lift pumps. The average daily treated water

distribution to the system so far in 2021 was 3,743.8m<sup>3</sup>/d. The average treated water flow so far in 2021 is up 2.4% when compared against the average daily flow in 2020. The Tri-County Drinking Water System is currently at 30.8% of its rated capacity. Chart 2 below depicts the treated water flow for 2021 compared to 2020 average daily flows.

Chart 2: Treated water average daily flow in 2021 compared to 2020



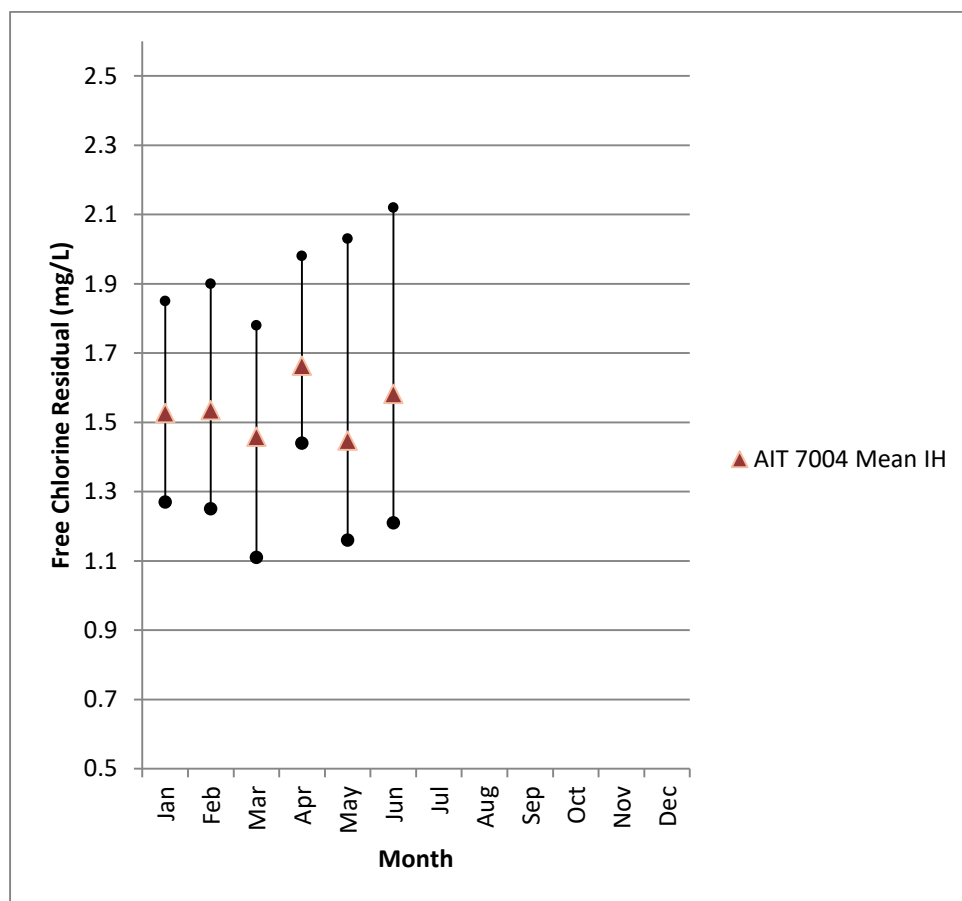
To ensure inactivation of viruses, bacteria and microorganisms the membrane filtration system is required to meet performance criteria for filtered water turbidity of less than or equal to 0.1 NTU in 99% of the measurements each month. The Tri-County Water Treatment Plant met all regulatory requirements for inactivation so far in 2021. Table 2 below shows the performance of each filter rack and the overall filter rack performance.

Table 2: Filter Rack Performance in 2020

	Rack 1 % Readings <0.1ntu	Rack 2 % Readings <0.1ntu	Rack 3 % Readings <0.1ntu	Rack 4 % Readings <0.1ntu	Overall Filter Performance (% readings <0.1ntu)
January	100.00	100.00	100.00	99.90	99.98
February	100.00	100.00	100.00	99.70	99.92
March	100.00	100.00	100.00	99.90	99.98
April	100.00	100.00	100.00	99.7	99.92
May	100.00	100.00	100.00	100.00	100.00
June	100.00	100.00	100.00	99.90	99.98

Along with turbidity, chlorine residuals are monitored throughout the treatment process by continuous online free chlorine analyzers. Residuals are maintained in order to provide adequate primary disinfection to meet inactivation of viruses, bacteria and microorganisms. The chlorine also provides adequate residuals in the distribution systems the treatment plant serves (secondary disinfection). Chart 3 below provides the online minimum, maximum and average readings of free chlorine provided to the distribution systems. All results have met regulatory requirements.

Chart 3: Distribution System Free Chlorine Residuals



On a weekly basis the treated water is tested for E. coli, Total Coliforms and heterotrophic plate count (HPC). The limit for Total Coliform and E. coli is zero; heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 3 below shows the number of samples taken each month along with the range of results. All samples have met regulatory requirements.

Table 3: Treated water sample results for 2021.

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	4	0 - 0	0 - 0	<10 – <10
February	4	0 - 0	0 - 0	<10 – <10
March	5	0 - 0	0 - 0	<10 – 40
April	4	0 - 0	0 - 0	<10 – <10
May	5	0 - 0	0 - 0	<10 – <10
June	4	0 - 0	0 - 0	<10 – <20

The transmission main (distribution system) is sampled on a weekly basis at two locations for E. coli, Total Coliforms and heterotrophic plate count (HPC) to meet regulatory requirements. As with the treated water the limit for Total Coliform and E. coli is zero, heterotrophic plate count (HPC) doesn't have a limit. This is an operational guide to initiate an action plan if HPC results are continuously high. Table 4 below shows the number of samples taken each month along with the range of results.

Table 4: Distribution system sample results for 2021.

	# Samples	Total Coliform Range (cfu/100mL)	E. coli Range (cfu/100mL)	HPC (cfu/100mL)
January	8	0 - 0	0 - 0	<10 - <10
February	8	0 - 0	0 - 0	<10 - <10
March	10	0 - 0	0 - 0	<10 - <10
April	8	0 - 0	0 - 0	<10 - <10
May	10	0 - 0	0 - 0	<10 - <10
June	8	0 - 0	0 - 0	<10 - <10

On a quarterly basis trihalomethanes are tested at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the THMs are forming in the system with retention time. There is an issue with elevated THMs in the distribution systems that the Tri-County Drinking Water System provides water to. Table 5 below provides the running average quarterly results; the running average limit for THMs is 100µg/L. All results are within regulatory requirements. However, THMs increase with increased retention time therefore THMs in the distribution system the WTP serves can be much higher, even reaching the regulatory limit.

Table 5: Trihalomethane sampling results.

	Limit (µg/L)	Treated Water THM Result (µg/L)	West Lorne Standpipe THM Result (µg/L)
July 2020	-	27	8.2
October 2020	-	29	52
January 2021	-	16	25
April 2021	-	21	31
Running Average	100	23.3	29.1

On a quarterly basis Haloacetic Acids (HAAs) are now required to be tested as per regulatory requirements. They are sampled at two locations in the system. The first location is at the treatment plant prior to the water leaving the facility. The second location is at the end of the system, at the West Lorne Standpipe. Sampling from both locations provides information on how the HAAs are forming in the system with retention time. Table 6 below provides the current running average quarterly results; the running average limit for HAAs is 80µg/L. All results are within regulatory requirements however; the limits are now enforced for 2020.

Table 6: Haloacetic Acid sampling results.

	Limit (µg/L)	Treated Water HAA Result (µg/L)	West Lorne Standpipe HAA Result (µg/L)
July 2020	-	12.00	21.3
October 2020	-	18.00	35.9
January 2021	-	<5.3	12.5
April 2021	-	<5.3	13.5
Running Average	80	11.7	20.8

## **SECTION 5: OCCUPATIONAL HEALTH & SAFETY**

### **FIRST QUARTER:**

Due to the on-going COVID-19 pandemic, precautionary protection measures remain in place at all facilities.

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

### **SECOND QUARTER:**

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

## **SECTION 6: GENERAL MAINTENANCE**

### **FIRST QUARTER:**

#### **JANUARY:**

04: Replaced CFP-8030 CI pump with spare.

06: Koolen Electric on site to finish installing new LED lights in the plant, received new CO2 tank from Air Liquide.

08: Replaced Pneumatics card on rack #4 as old one had failed.

11: Flow control valve on Rack #4 failed closed. Replaced with new valve and actuator.

12: Franklin Empire on site for storage tank milltronics annual calibration.

14: Lakeside on site to complete annual calibration on raw temp. meter TIT-1403.

15: Farmington on site to replace mechanical seal on RFR Pump 4370.

18: Farmington on site to finish replacing mechanical seal on RFRP-4370.

19: VFD Solutions on site to troubleshoot LLP1030 VFD.

21: Received chemical delivery from FloChem: Captor, Citric Acid, Sodium Hydroxide.

#### **FEBRUARY:**

01: Changed raw aquarium DO sensor cap.

03: Venture Automations on site to changed air cards and air lines on Rack #2.

05: Contractor on site for compressor servicing.

09: Changed flow meter sensor FSL 4270 on EFM and CIP pump.

10: Air Liquide delivered new CO2 tank.

17: Air Liquide delivered new CO2 tank.

22: Changed pH probe and chlorine cap on AIT-5006.

25: Farmington on site to change PRV on air tank and fix pilot system on altitude valve at standpipe.

#### **MARCH:**

03: Air Liquide delivered a new tank of CO2.



09: Gerber Electric on site to install new controller SC 4200 on rack # 3 and 4, Hach also on site to install new turbidimeters (TU5300) on Racks 3 and 4.  
11: Dielco on site to discuss plans for Phase 1 of discharge header work.  
15: Flowmetrix on site for annual verification on flowmeters and pressure gauges.  
17: Flowmetrix returned to complete annual verification of equipment.  
17: ASL Roteq on site to remove HLP-7010 for servicing/repair.  
23: Fixed the 2" PVC drain line on Rack #3, pre V3331.  
23: Gerber Electric on site for HVAC maintenance/servicing.  
24: Air Liquide delivered new CO2 tank.

## **SECOND QUARTER:**

### **APRIL:**

01: Eramosa remotely made some programming changes, allowing the high lift pumps to commence normal shutdown after the distribution PRVs reach <2% (original was <1.5%).  
07: Air Liquide delivered new CO2 tank.  
08: Eramosa on site for communications systems mapping/inspection.  
14: Changed Low Lift PLC UPS with new unit.  
15: Anchem on site to delivery bulk sodium hypochlorite.  
21: Changed LL UPS for the aquarium controller (for pH and DO probes) as the current one has failed. (Used recently changed out low lift PLC UPS).  
21: Completed annual maintenance of Kubota lawn mower. Changed air filter, oil filter, and oil.  
22: Installed new second sample pump at the low lift.  
27: Air Liquide delivered new CO2 tank.  
28: Changed segment of 3/4" PVC hypo pipe from the hypo storage tank to the caustic tank due to a small leak.

### **MAY:**

05: Air Liquide delivered new CO2 tank.  
12: Repaired 3/4" PVC piping at union post-CFP-8030.  
13: Air Liquide delivered new CO2 tank.  
18: Chubb on site to work with Gerber on installation of new fire panel.  
18: Gerber Electric on site to work with Chubb on installation of new fire panel.  
18: Brenntag Canada delivered 8 chlorine gas cylinders to the low lift chemical building, and took back 7 empty cylinders.  
19: Chubb on site to finish work on new fire panel.  
19: Was performing maintenance on post-strainer turbidimeter AIT-2006. Changed bulb. Tried calibrating unit, but was unsuccessful after many attempts. Spoke with Hach tech. support who had us try making a dilution with our 4000NTU Formazin, which was unsuccessful. Hach tech. support thinks it may be an issue with the detector/sensor. Purchased new sensor and Formazin. Cleaned the lens, calibrated and now it is working properly.  
26: Changed leaking 1/4" air hose from V4213 to its pneumatics card in chemical room.  
26: Air Liquide delivered new CO2 tank.

## JUNE:

02: PALL on-site for annual inspection/servicing.

03: PALL on-site for annual inspection/servicing.

04: FloChem delivered 2 totes of Captor, and 1 tote of Citric Acid.

04: Ontario Compressor on site for compressor inspection/servicing.

04: Finished maintenance on LL raw turbidimeter, changed bulb.

08: Air Liquide delivered new CO2 tank.

08: Watech on site this morning at 8:30am to prepare and conduct intake inspection.

11: Farmington is on site to test backflow preventers.

16: Changed sump pump float in Eagle East Chamber.

21: Air Liquide delivered new CO2 tank.

22: Changed 3/4" Spears Y-strainer on Captor line in chemical room.

25: Albert's Generators at WTP and Low Lifts performing Annual generator inspections and servicing.

30: Changed LL sediment filter pre-AIT-1401.

30: Gerber Electric on site to troubleshoot HLP-7020, and look at Silver Clay chamber leaking copper pipe.

## SECTION 7: ALARM SUMMARY

### FIRST QUARTER:

#### JANUARY:

No alarms received this month.

#### FEBRUARY:

07: Alarm received for Low Lift Pressure Fault. Operator attended site and changed the train at the low lift from East to West. Pressure returned to normal. Cause of the alarm due to cold weather.

20: Alarm received for Filtrate Tank Fault. Operator logged into SCADA and observed the duty storage tank level drop rapidly, caused by ice in the tank.

23: Alarm received for Low Lift Fault and High Lift Fault due to power flicker. Operator reset high lift and low lift pumps.

#### MARCH:

28: Alarm received for strainer inlet valve fault. Logged into SCADA. Valve MV-2002 was in fault in open position. Reset alarm. Put valve on manual and tried to open and close all was working as intended.

### SECOND QUARTER:

#### APRIL:

09: Received alarm for Wallacetown elevated tank alarm. Logged onto SCADA and observed Wallacetown tower to be at 11.64m, high lift pumps were not running. High lift pumps to Wallacetown had not been running since 01:10. Disabled Wallacetown elevated tank alarm until level in tank drops below hi level to avoid callouts.

13: Got channel 12 alarm, surge relief valve stuck open. Checked SCADA. Low lift was running; PALL system was off. Try to reset PALL system, did not help. Called Pall support to help resolve the problem. Found that issue was in programming. PALL reinstalled the program and after everything returned to normal operation.

16: Received alarm due to Rack #2 failing IT. Checked SCADA and the differential pressure was 5.85 kPa. Found leak at top of one of the membrane cells at the fittings above and below the glass sight.

Tightened fittings to resolve issue. Rack #2 underwent IT; passed, 1.26 kPa differential. Put rack back into Forward Flow.

#### MAY:

11: Received call from spectrum at 20:05 for UV discharge chlorine. Logged onto SCADA and observed chlorine at AIT5006 was 0.03ppm. Reset low lift pumps and system started. Storage tank was at 8.0m. Upon restart chlorine pumps started to inject chlorine and residual at AIT5006 increased. System now making water and dosing chlorine. Storage tank now at 8.4m. Will continue to monitor system remotely.

14: Got alarm for chlorine analyzer 5006 fault. Checked SCADA. pH and chlorine was high. System was off. Level in the tanks was 9.51 m. Reset the system and started to produce water. Everything returned to normal operation. Monitored the system to make sure all system is working normal. Chlorine and pH was high due to system stopped after rack # 2 finished EFM.

#### JUNE:

06: Received alarm at 14:29 for main generator running. Checked hydro one outage map but there were no recorded outages in the area. Logged onto SCADA and observed PALL system were disabled and from dialer menu, main generator was running. Placed compressor A online, once pressure had built up, PALL system was then placed into auto. High lift pump 3 appeared to be running at time of generator start, placed valve into manual, off and then back into auto. High lift pump 2 then started to send water to West Lorne tower. System currently producing water, high lift pumps currently sending water to both West Lorne and Wallacetown. Generator no longer running. Plant shut down due to power flicker and likely weather related. Will continue to monitor system remotely.

09: Received alarm for generator running and Pall system critical. Logged in on SCADA. Try to load Pall system; unsuccessful. Operator attended site and reset Pall system computer. Reset all systems and started to produce water. Monitored the system for 45 min to make sure everything working properly. Disruption to power due to power flicker.

12: Received alarm for Pall system critical. Logged into SCADA and all systems were off. Tried to reset remotely however could not reset VFD on RFR pumps. Operator attended site and reset VFD on electrical panel. Reset all systems and started to produce water. Monitored the system for 10 min. Thunderstorms in the area and a power flicker occurred.

### SECTION 8: COMMUNITY COMPLAINTS & CONCERNS

#### FIRST QUARTER:

No complaints or concerns this quarter.

#### SECOND QUARTER:

No complaints or concerns this quarter.