Annual Performance and Monitoring review
EPR Permit BR9685IX
Dow Silicones UK Ltd - 2021

+This report is to fulfil ERP permit BR9685IX condition 4.2.2

4.2.2 - A report or reports on the performance of the activities over the previous year shall be submitted to Natural Resources Wales by 31 January (or other date agreed in writing by Natural Resources Wales) each year. The report(s) shall include as a minimum:
(a) a review of the results of the monitoring and assessment carried out in accordance with the permit including an interpretive review of that data

Contents

Summary

The report includes details of our performance during 2021. SPC charts have been used for all analytical monitoring we carry out for releases to air and water.

Points of interest for 2021 :

- W714 and W718 processes did not operate during 2021 and are now physically disconnected.
- Non hazardous DPR was not produced during 2021 due to the reliability and operation of one of the waste processes.
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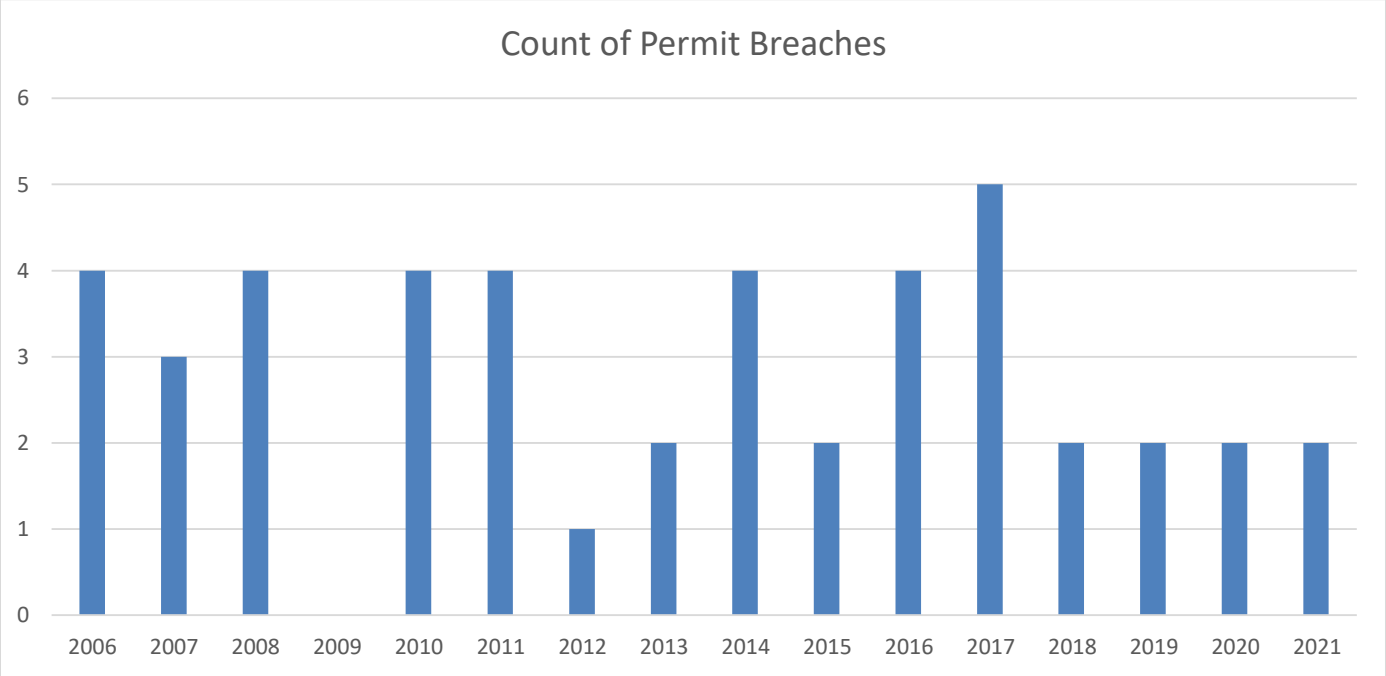
- There were operational improvements carried out in the waste water treatment processing area during 2021 which has led to a decrease in the copper and zinc in the final effluent to the river.
- All ERU sampling was carried out as normal. The monthly average NO2 value was slightly higher than previous years. These results are still within permitted limits and will continue to be monitored.

Incidents

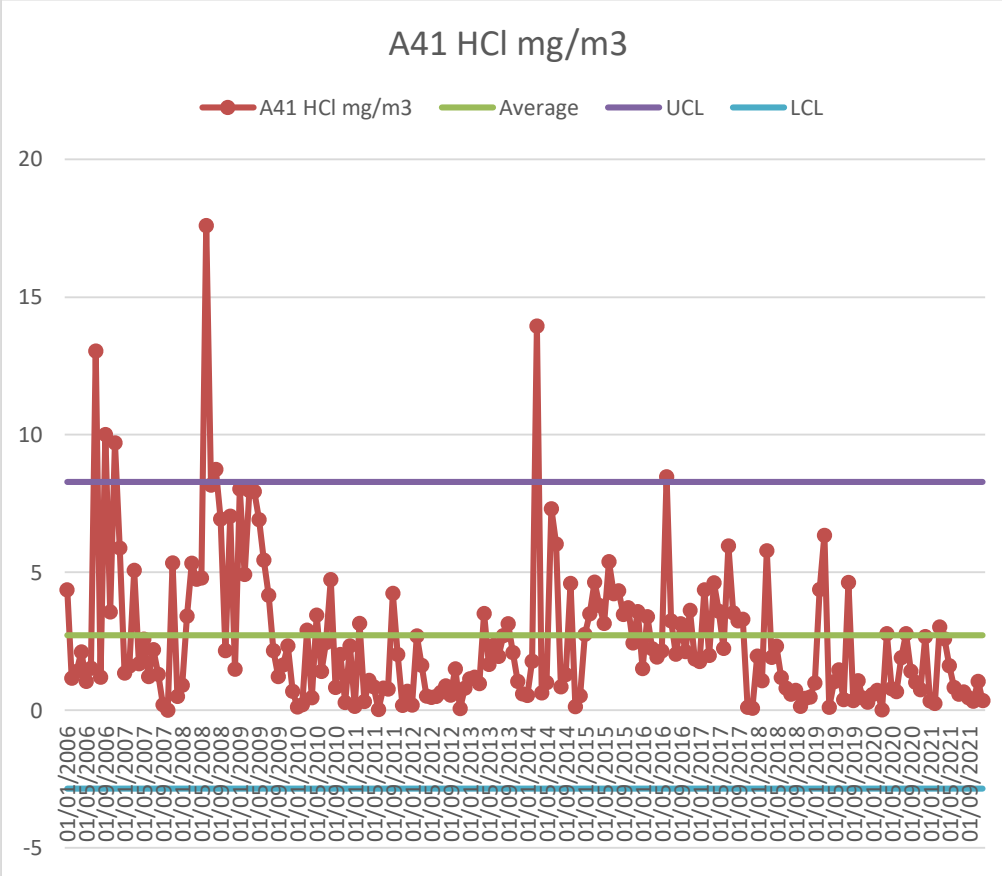


There were 2 permit breaches reported in 2021:

W2 – Final effluent pH and Zinc – Q1
Whilst waste-water treatment was shut-down, storm water from W413 was being discharged to river via W2 authorised discharge point.
Water was discharged for approximately 2 hours with low pH (3.16 - 3.33) and slightly elevated zinc. The flow was stopped as soon as this was realised.
The low pH water entered the storm sump via two sequential passing valves. The storm sump pH and TOD analysis was operating normally, but due to the analyser supply pump requiring maintenance, sampling was being carried out manually to ensure compliance with permit discharge parameters. This procedure is normal practice if the analysers are not fully operational.
Sample results from the previous evening were within permit limits so an instruction was left for the water to be discharged. During discharge the operator checked for the next result and noticed that the result had low pH. He stopped the transfer to river via W2.

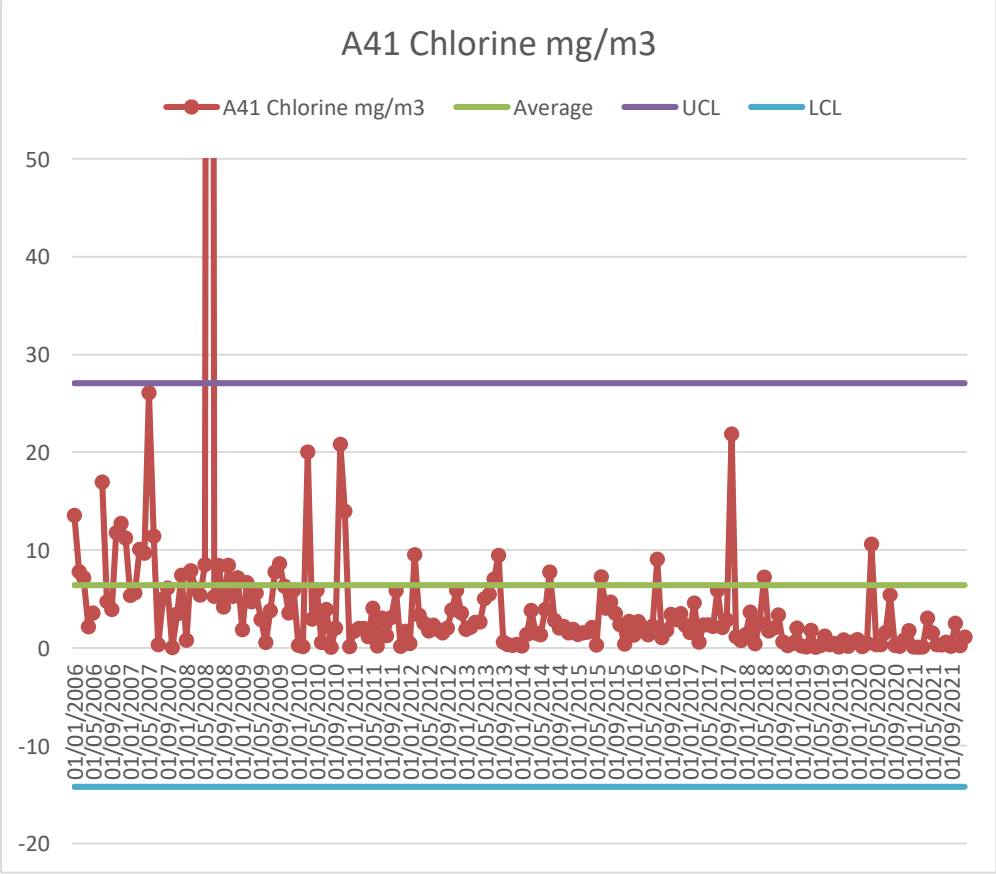
W1 – Final effluent Copper 95th percentile exceedance – Q1
During Q1 ten final effluent composite samples were over 0.1 mg/l of Copper.
The average for the quarter was 0.0534mg/l.
Two sequential results were attributed to the cleanliness of the composite sampler.
Two other sequential results were attributed to high solids in the final effluent due to a bioreactor mixer failure.
A further 6 results were sequential and resulted from a lower than usual pH in the bioreactor, due to issues with the Magnesium Hydroxide dosing system. Manual dosing of sodium hydroxide was carried out to fix the issue and allow the dosing system to be repaired.

Air monitoring
Trends for Monthly monitoring



Results in control and within permit limit (15mg/m3).

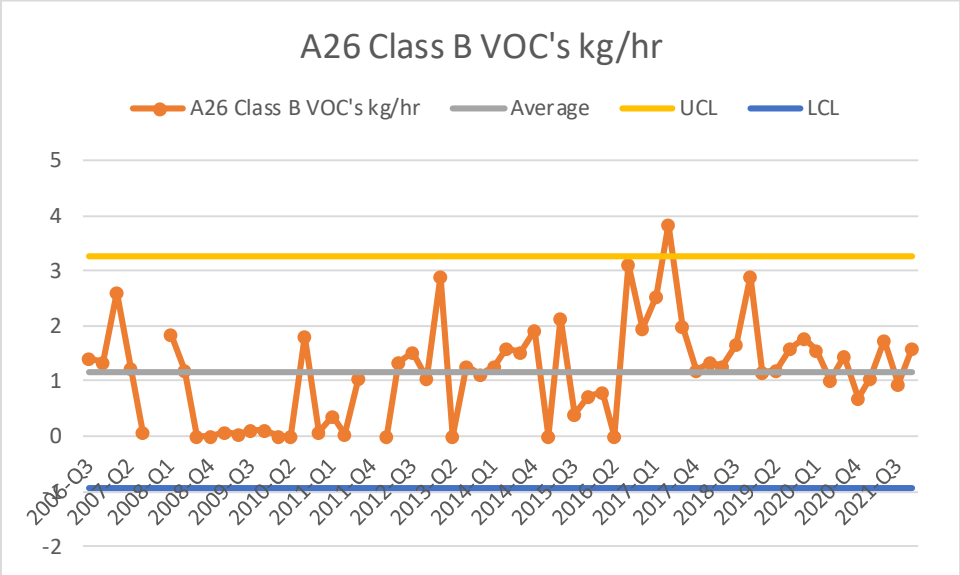
2021 Annual average = 1.003 mg/m3



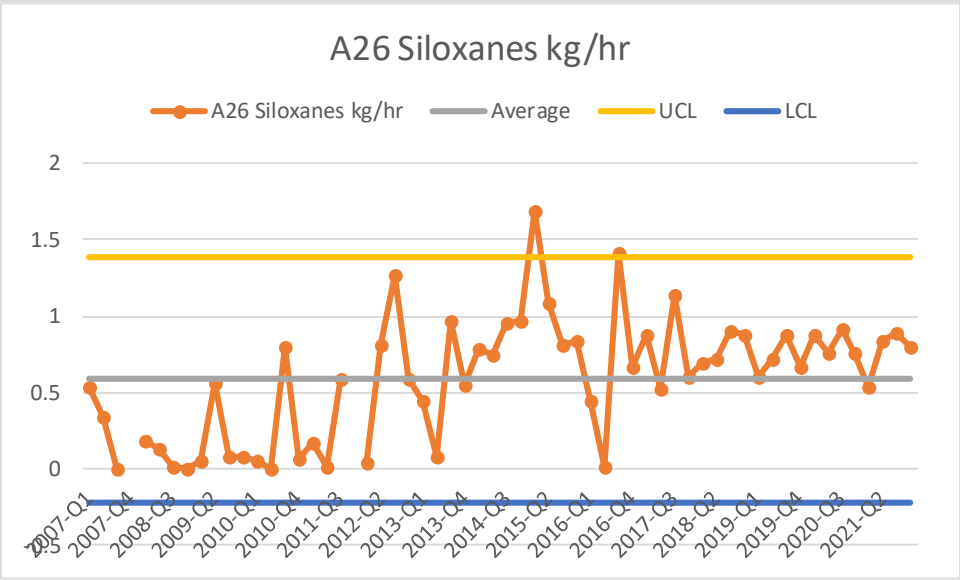
Results in control and within permit limit (15mg/m3).

2021 Annual average = 0.859mg/m3

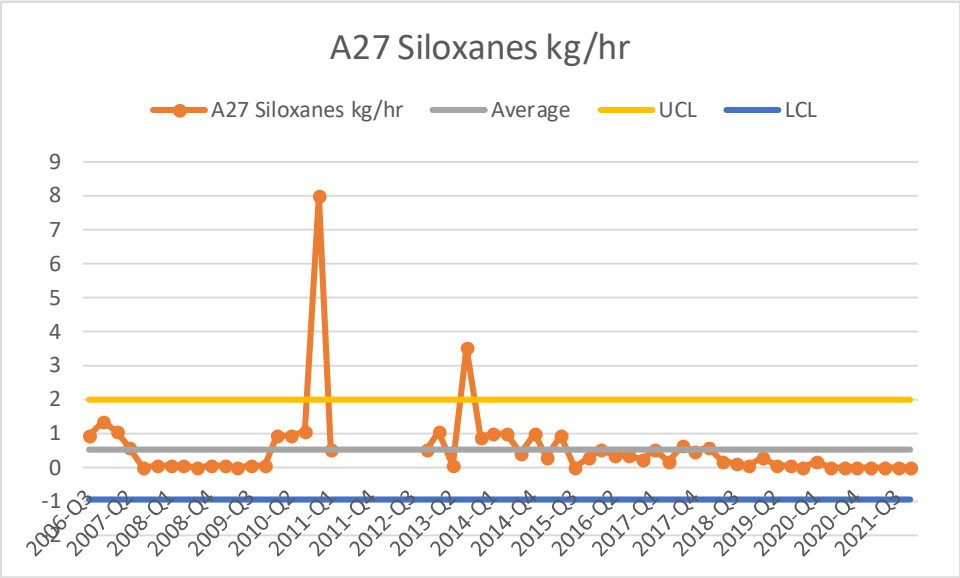
Trends for Quarterly monitoring:



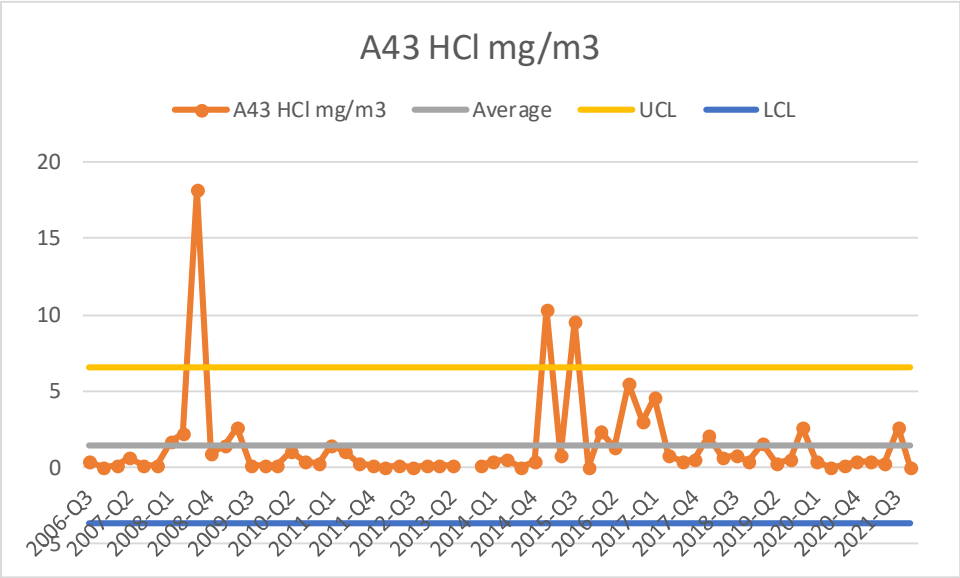
Results in control.



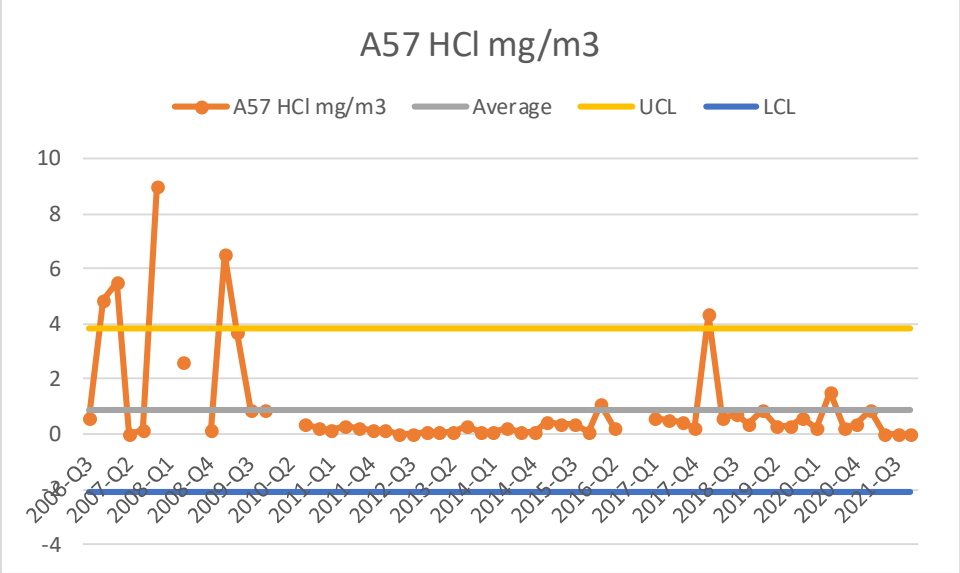
Results in control.



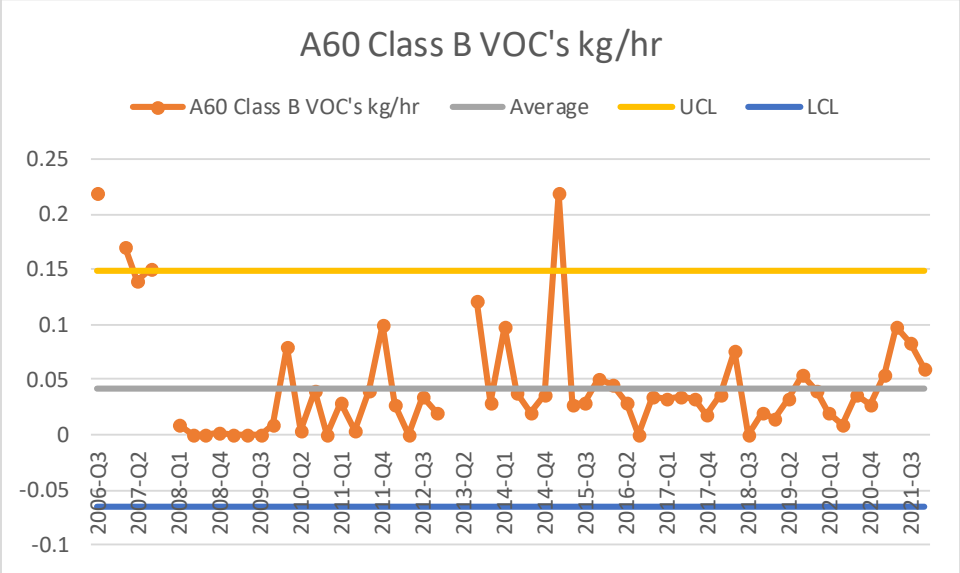
Results in control.



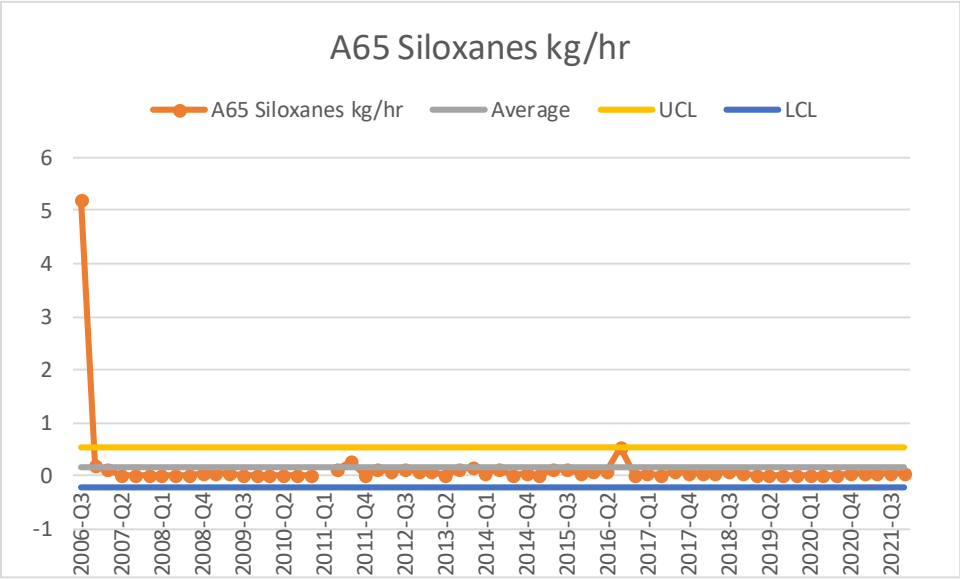
Results in control and within permit limit (10mg/m3).



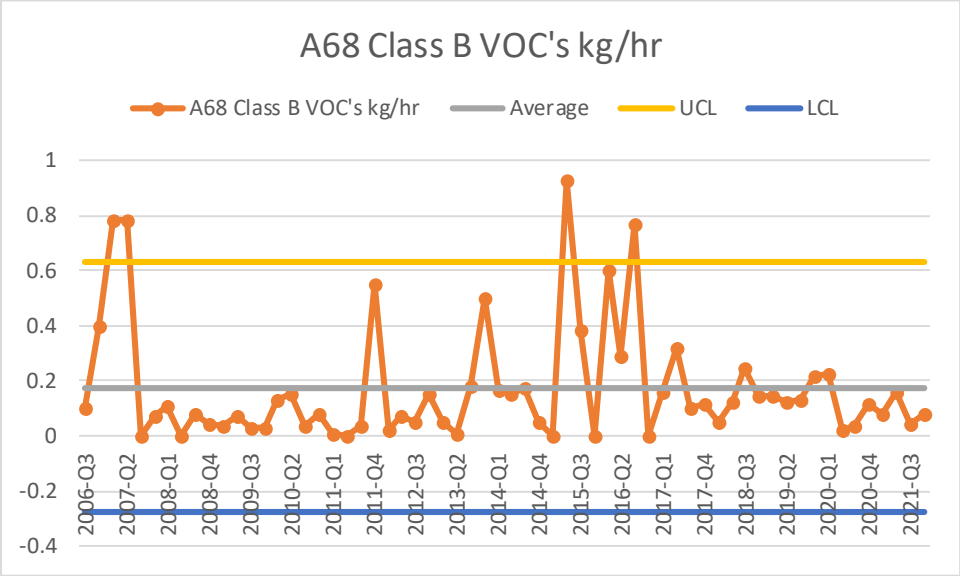
Results in control and within permit limit (10mg/m3).



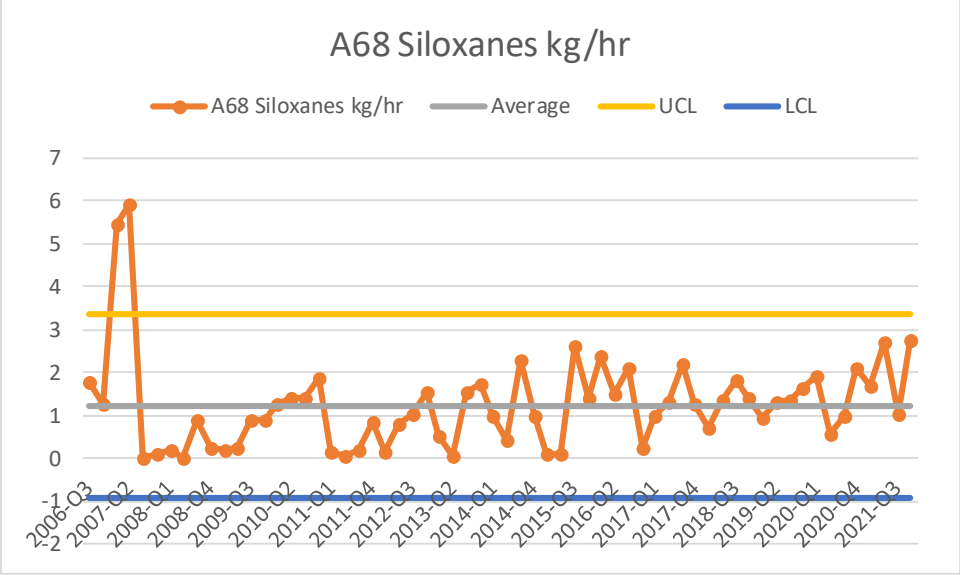
Results in control.



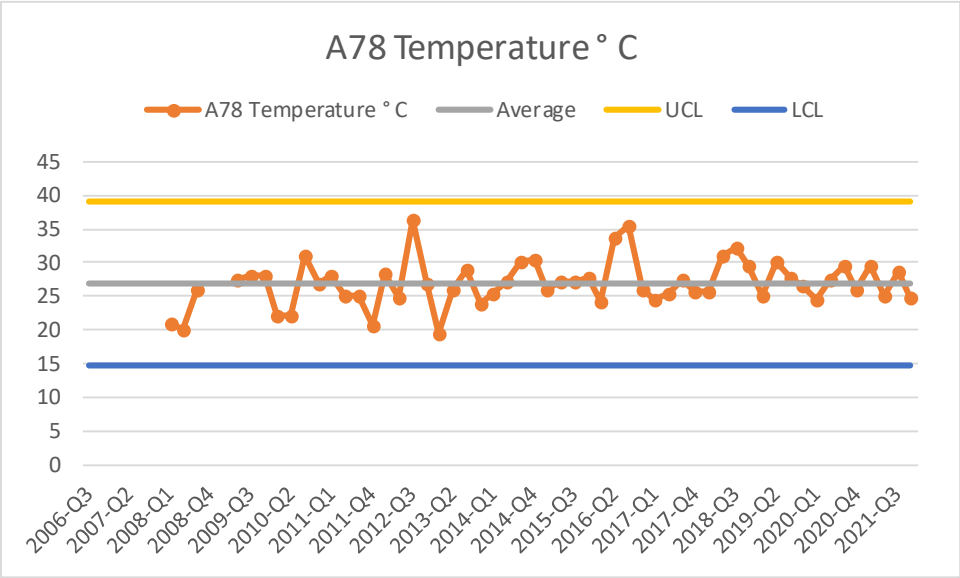
Results in control.



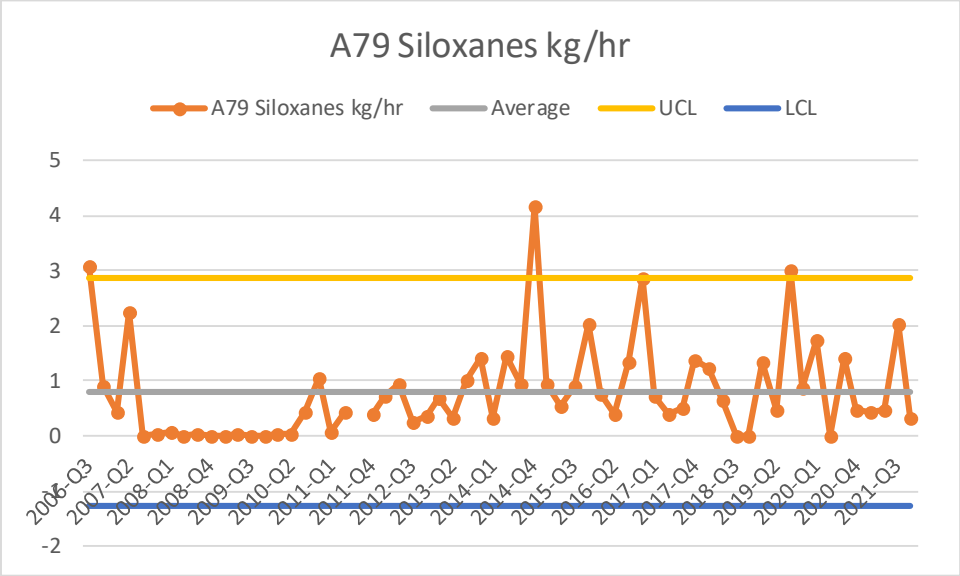
Results in control.



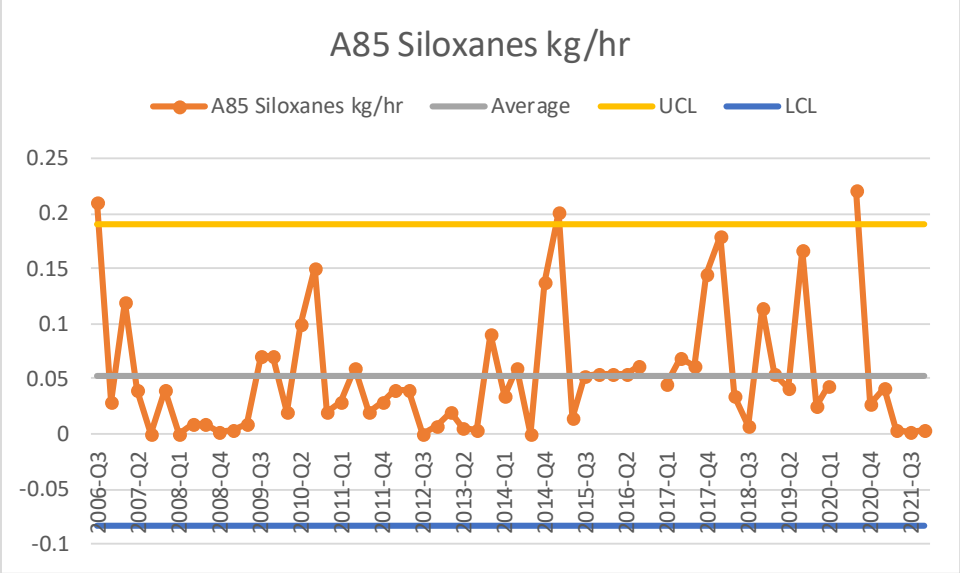
Results in control.



Results in control.

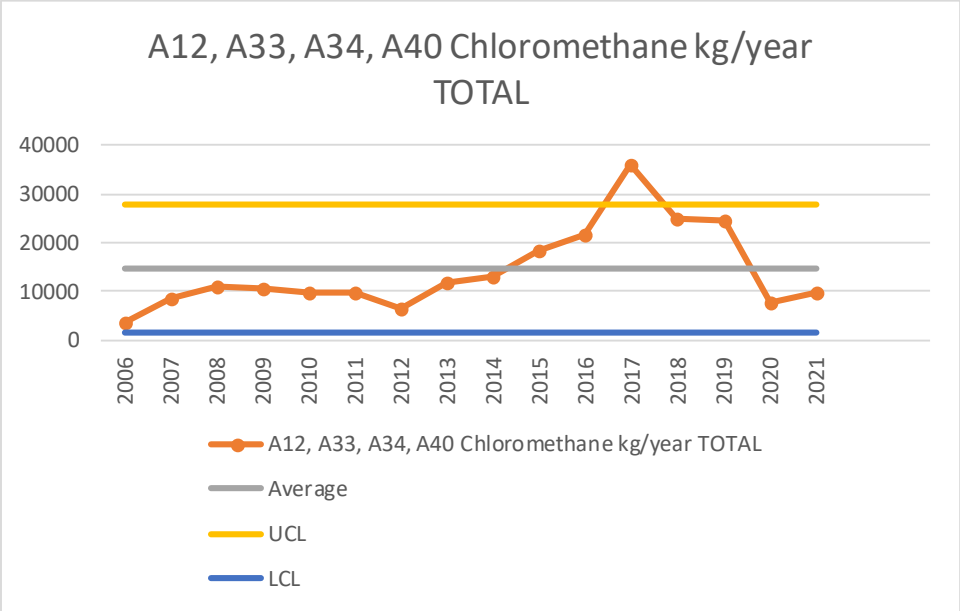


Results in control.

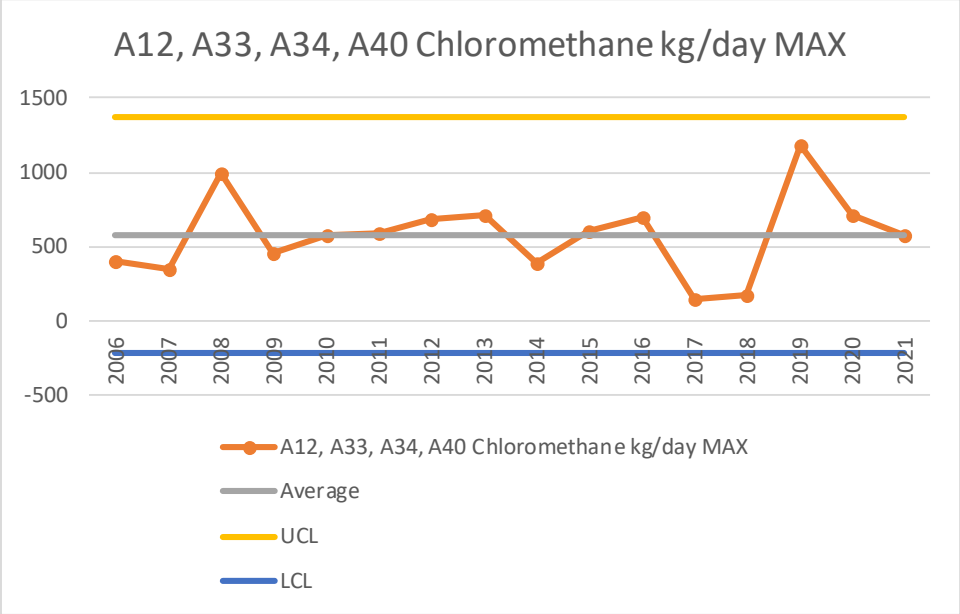


2021 results lower than previous years. This will continue to be monitored.

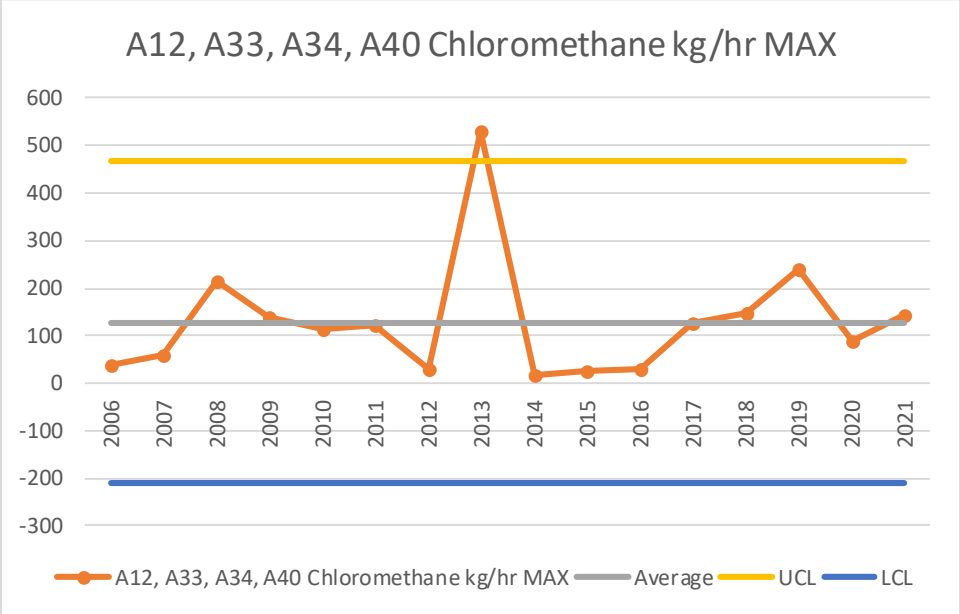
Trends for Annual monitoring:



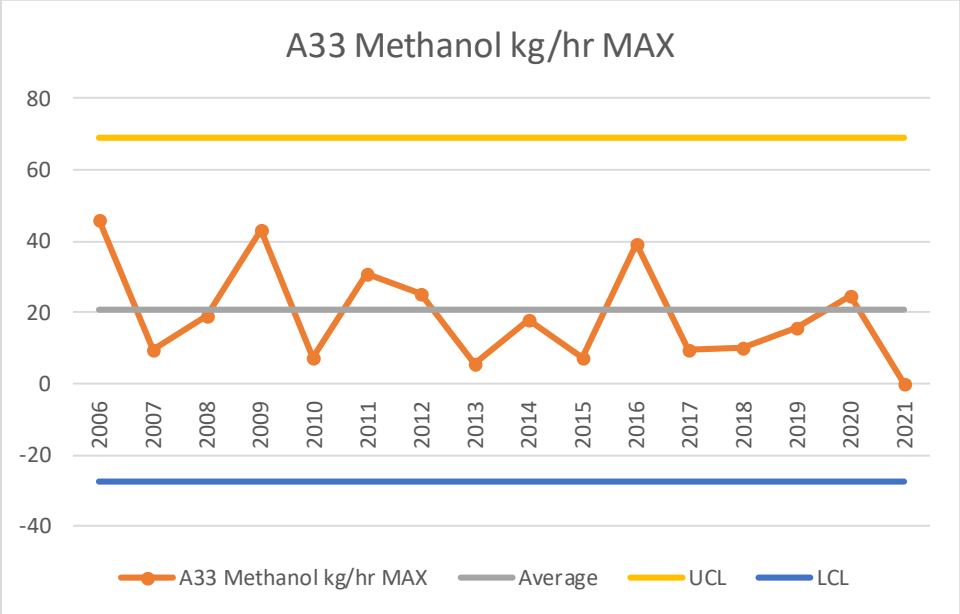
W714 (A12) and W718 (A33) did not run during 2021.



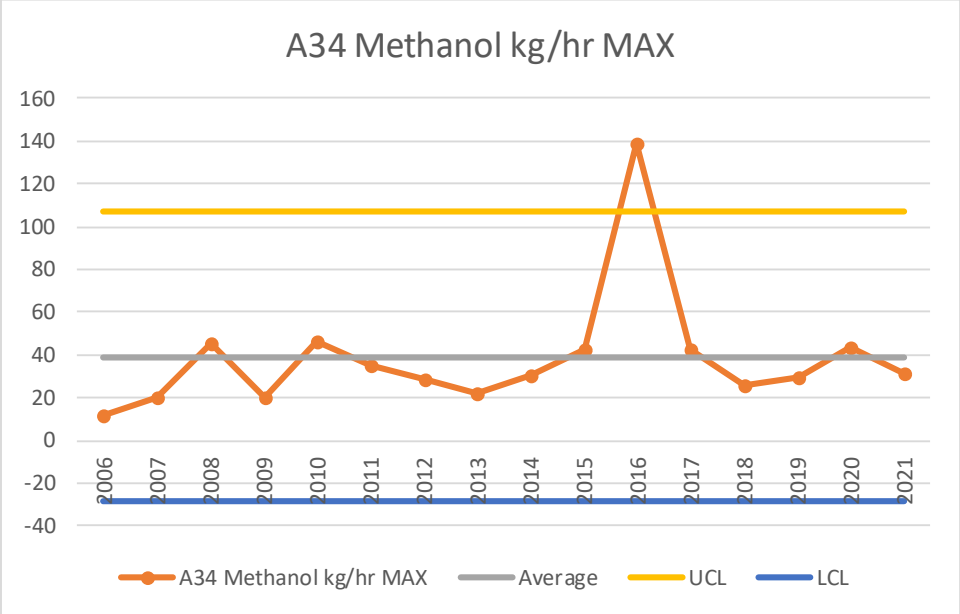
W714 (A12) and W718 (A33) did not run during 2021.
Results in control and within permit limit (1000 kg/day).



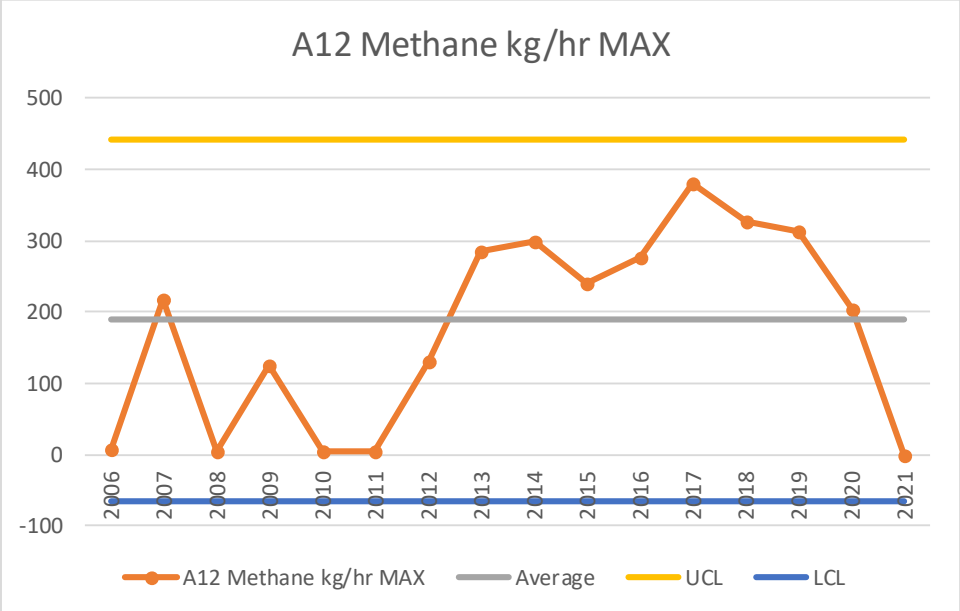
W714 (A12) and W718 (A33) did not run during 2021.
Results in control and within permit limit (250 kg/hr).



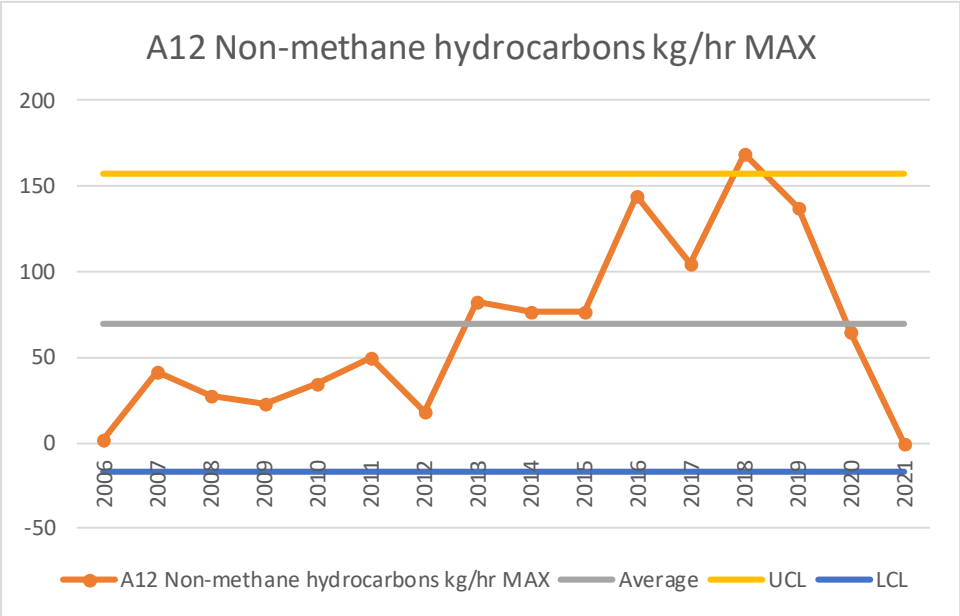
W718 (A33) did not run during 2021.



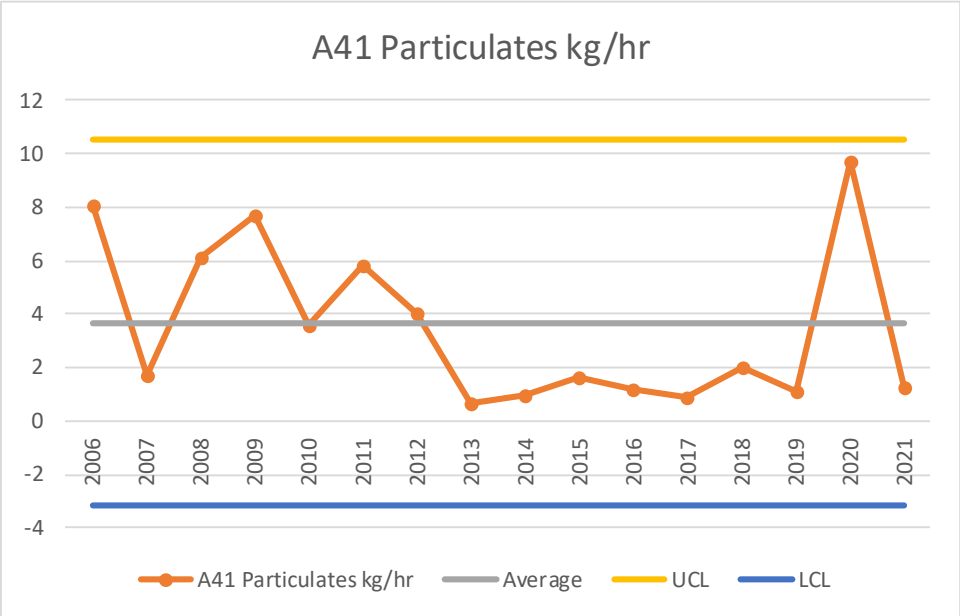
Results in control and within permit limit (max flow of 60kg/hr).



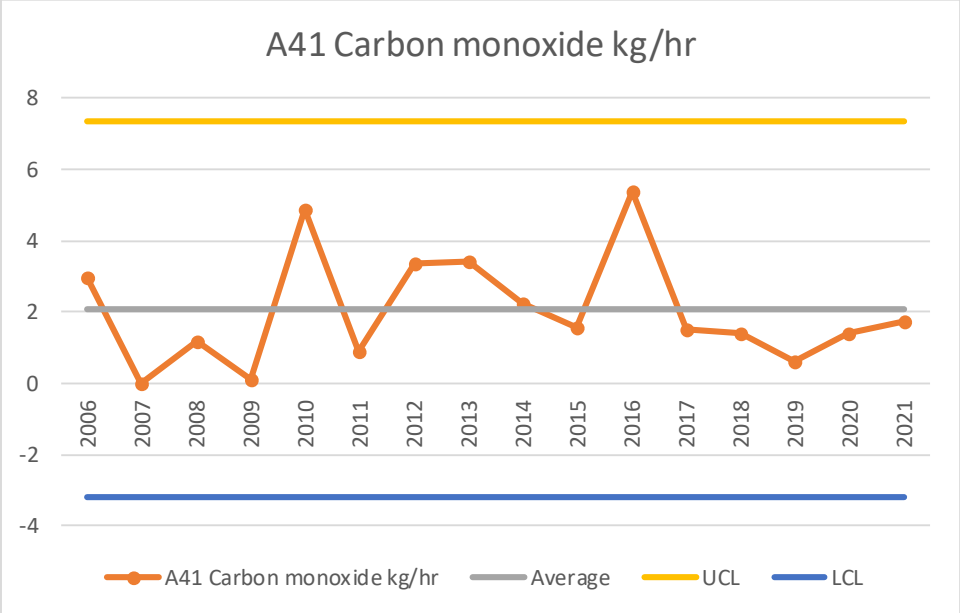
W714 (A12) did not run during 2021.



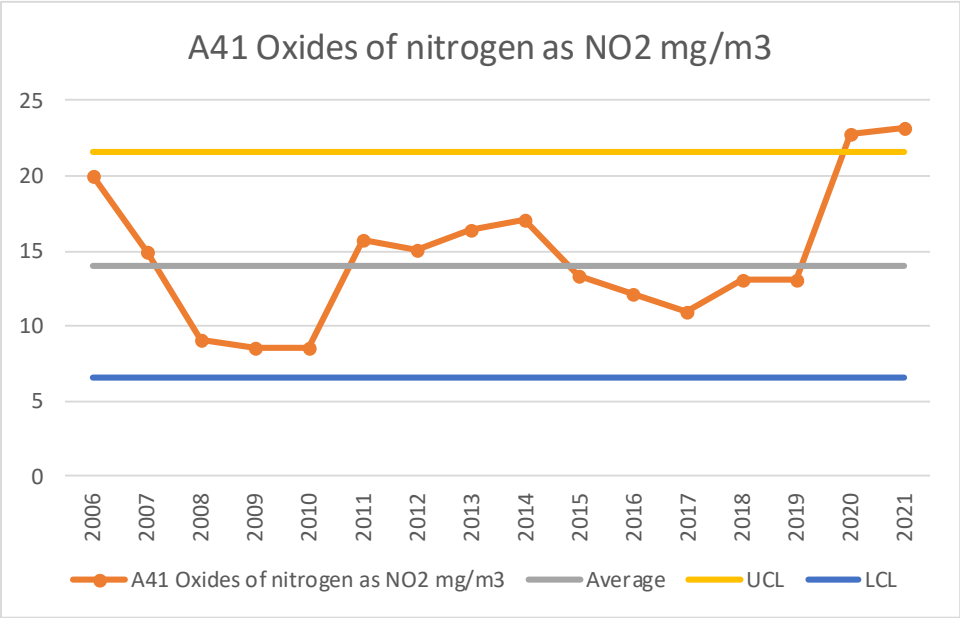
W714 (A12) did not run during 2021.



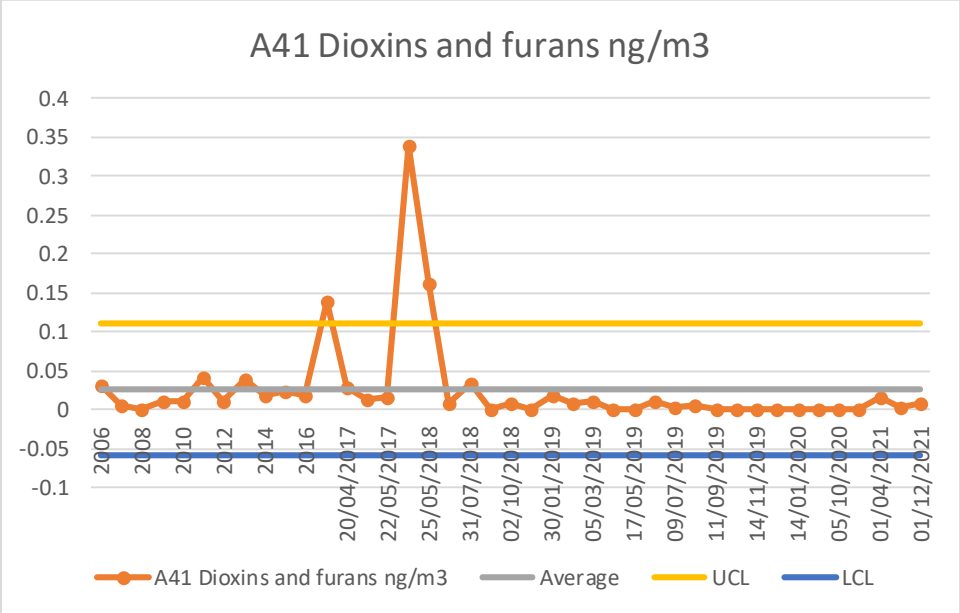
Results for 2021 back at normal levels and within permit limit (10 mg/m3).



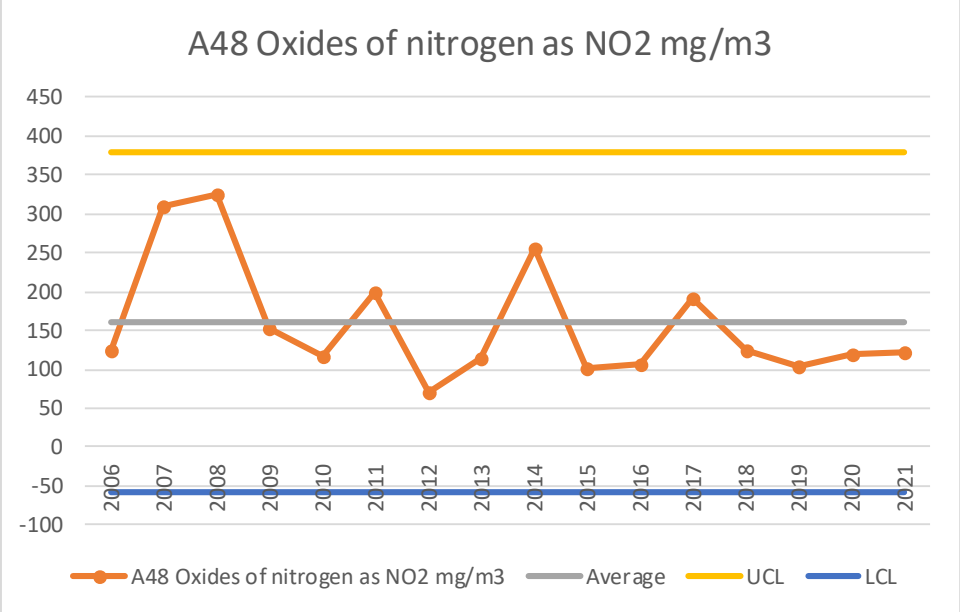
Results in control and within permit limit (50mg/m3).



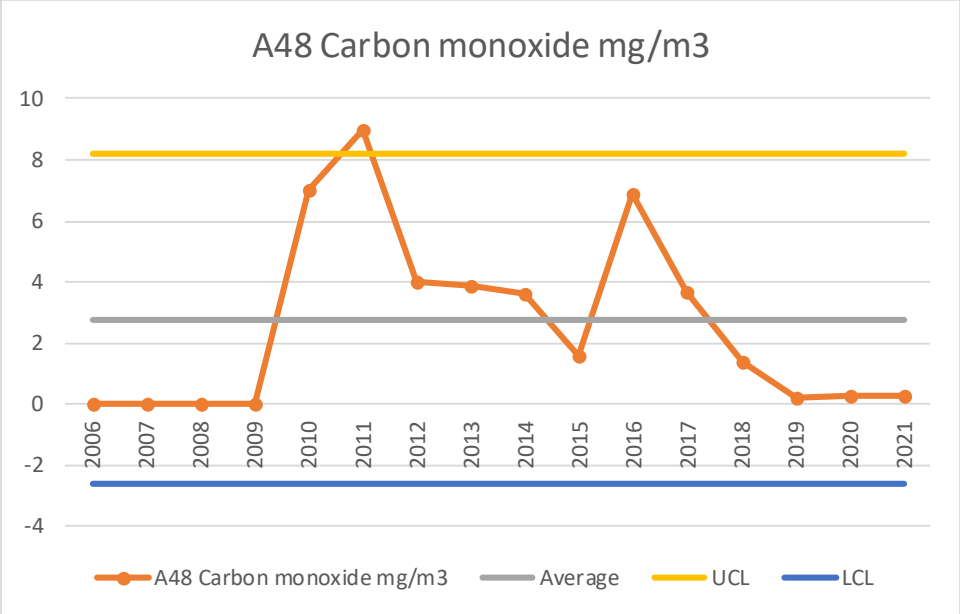
Results out of control high, but still well within permit limit (100mg/m3). This will continue to be monitored on a monthly basis.



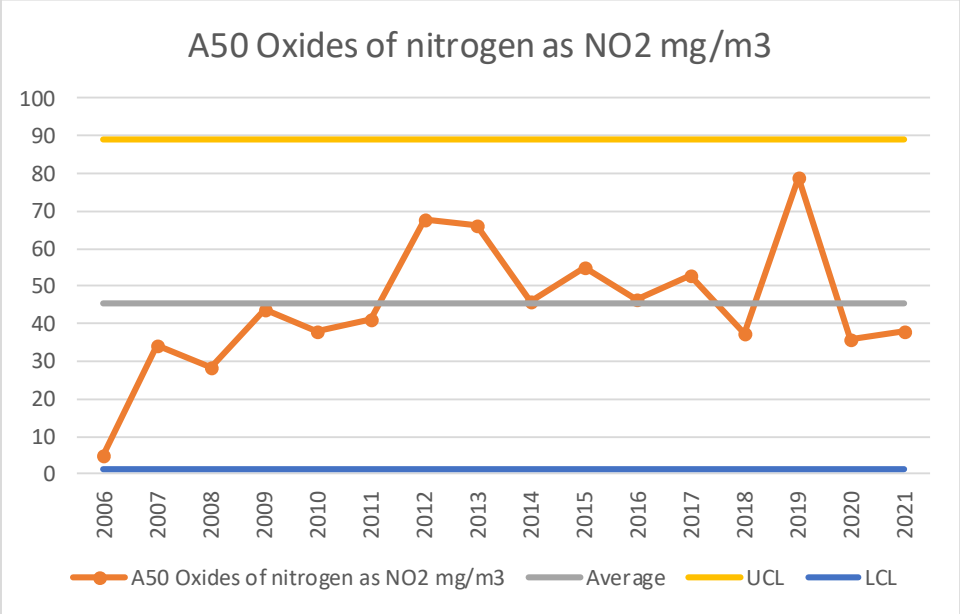
4 samples taken throughout 2021. Results in control and within permit limit (0.1ng/m3).



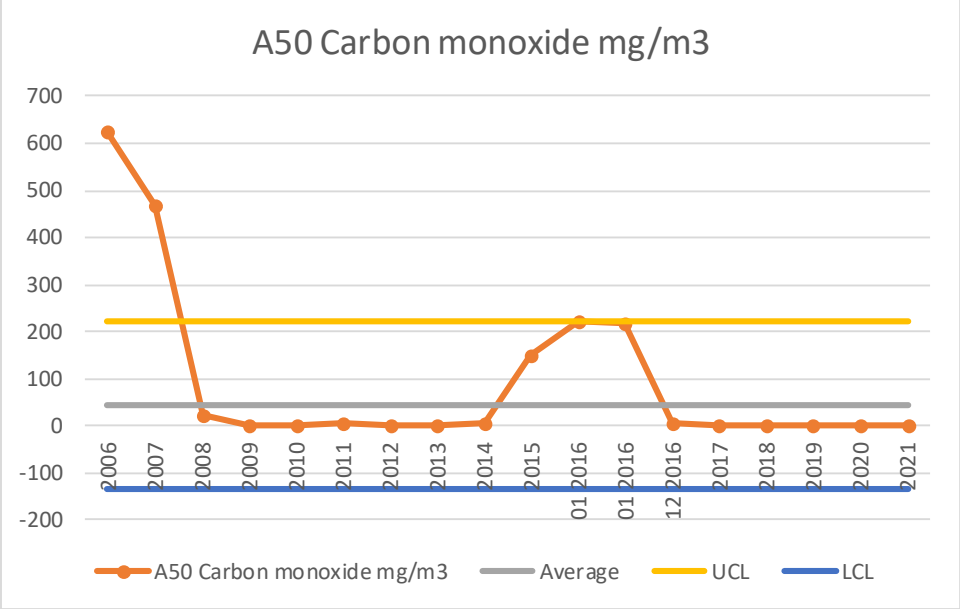
Results in control.



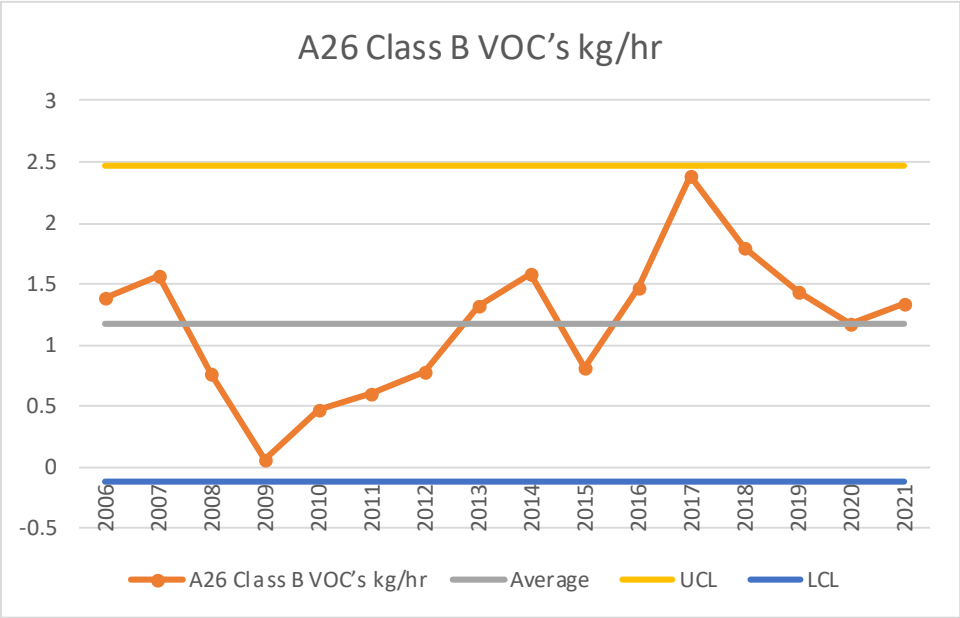
Results in control.



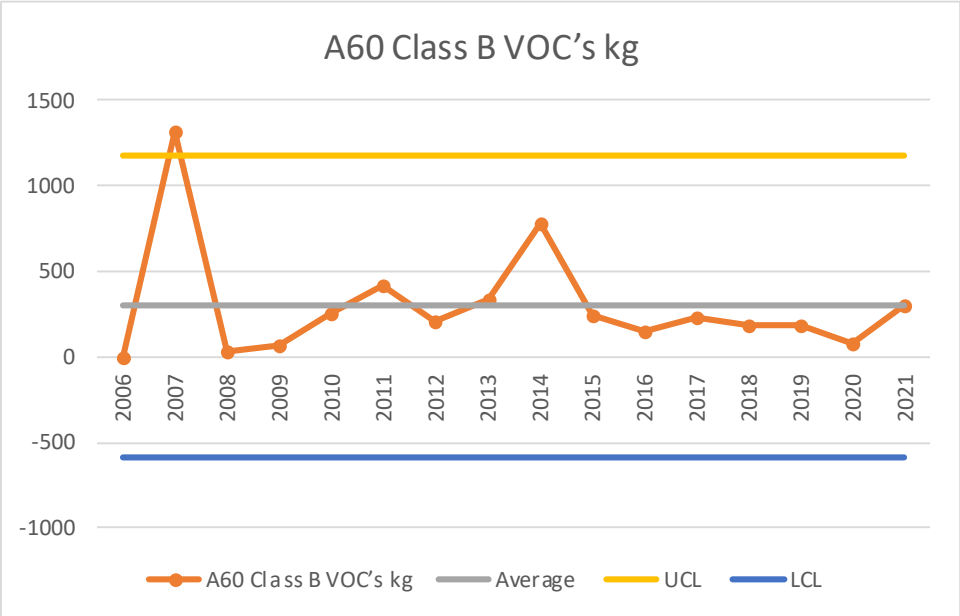
Results in control and within permit limit (200mg/m3).



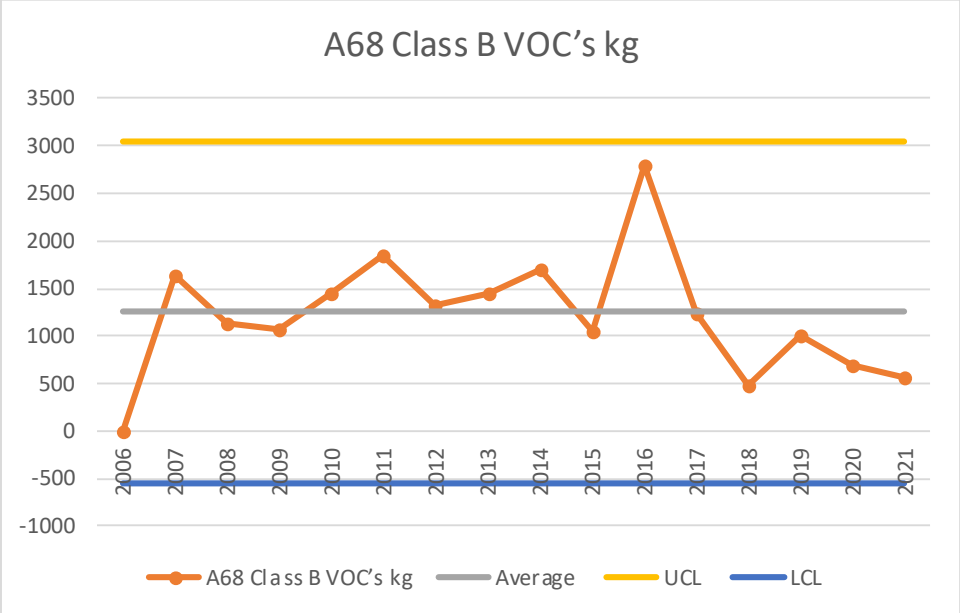
Results in control and within permit limit (200mg/m3).



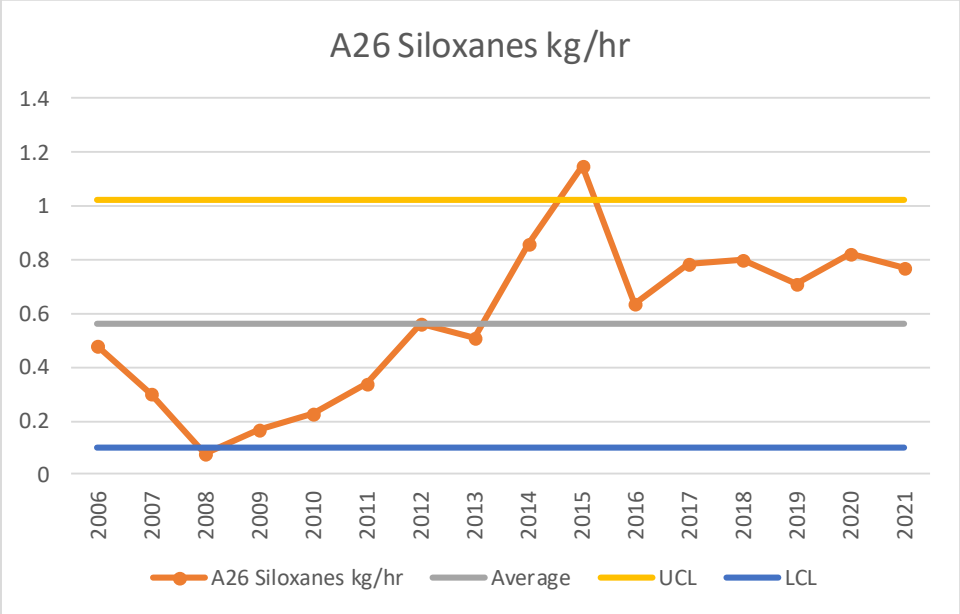
Results in control.



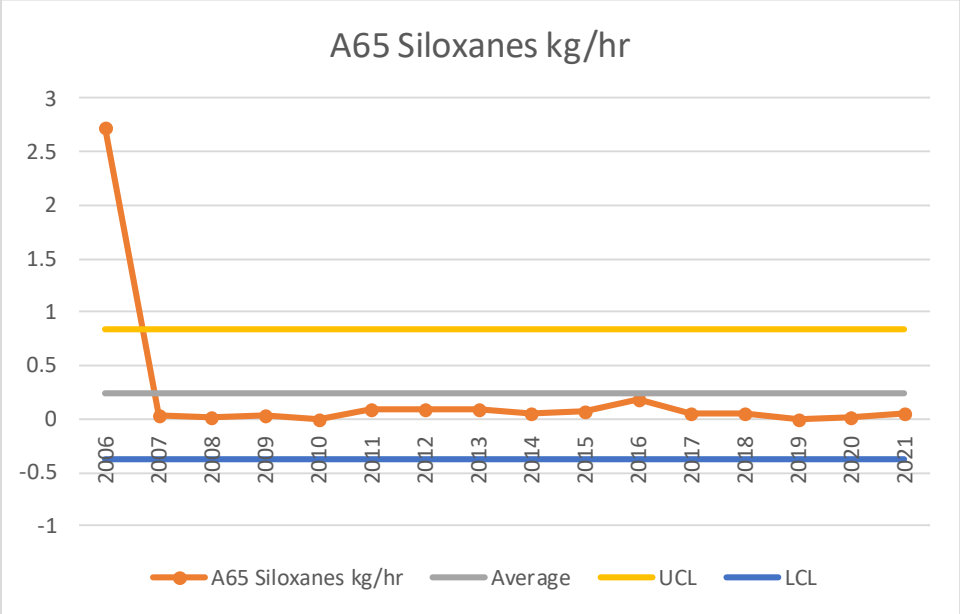
Results in control



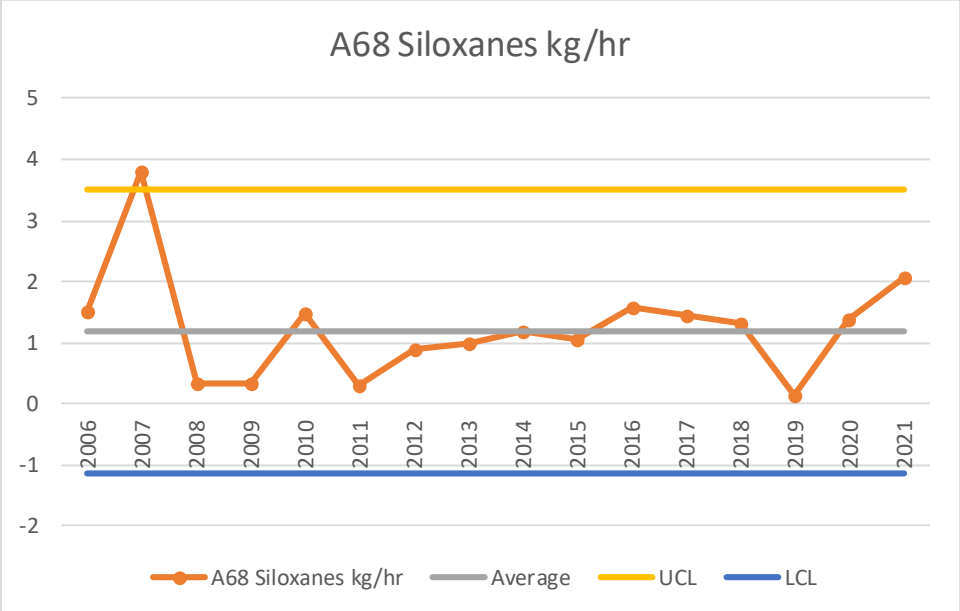
Results in control



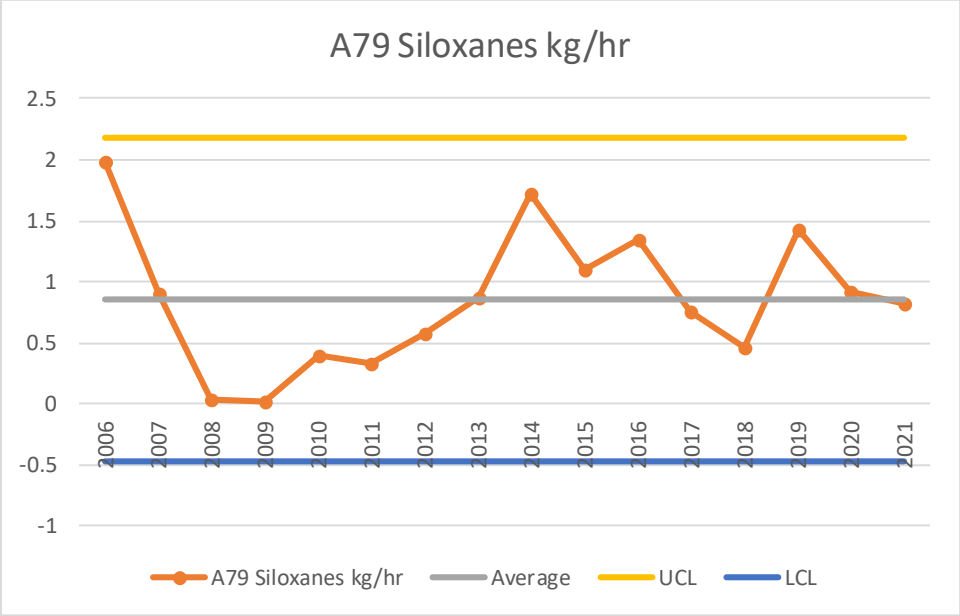
Results in control



Results in control

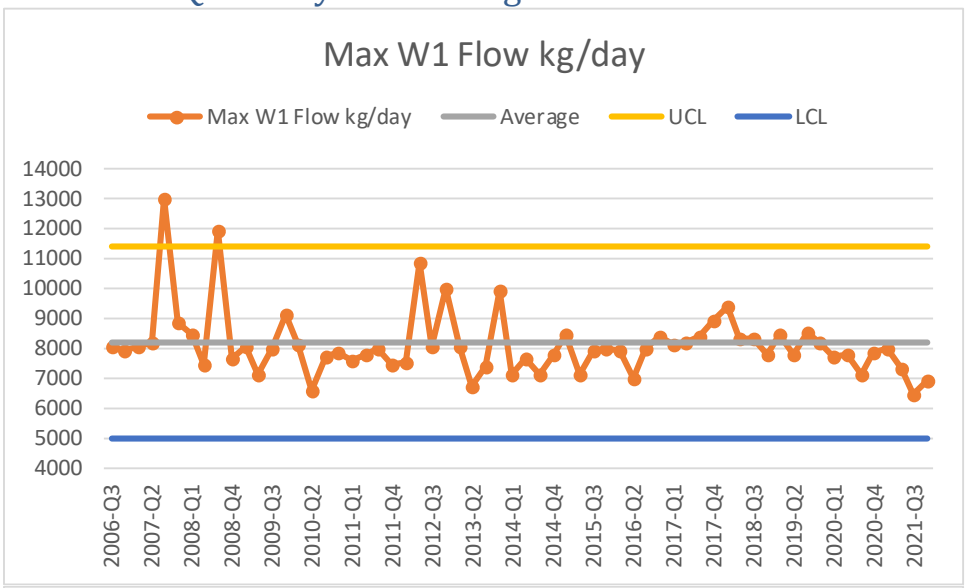


Results in control

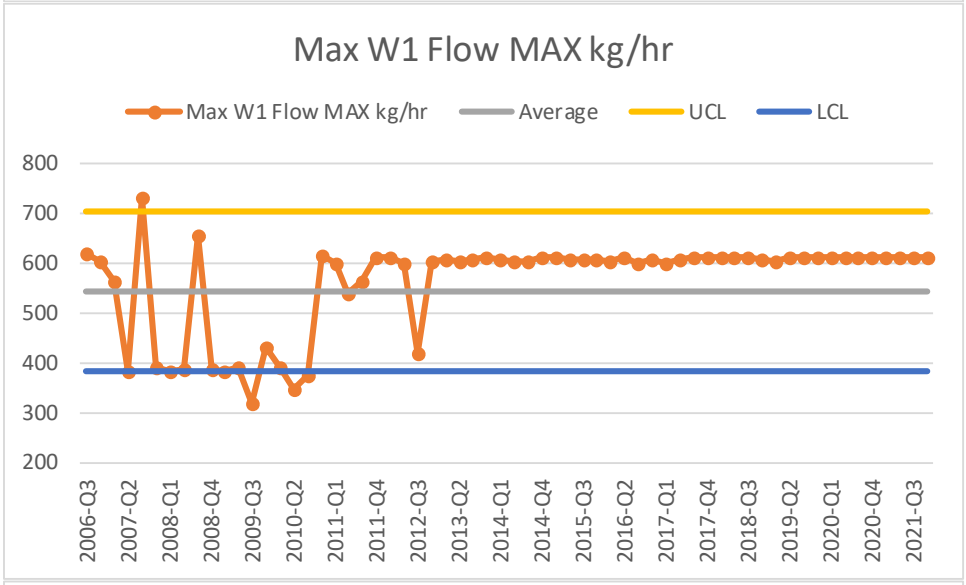


Results in control

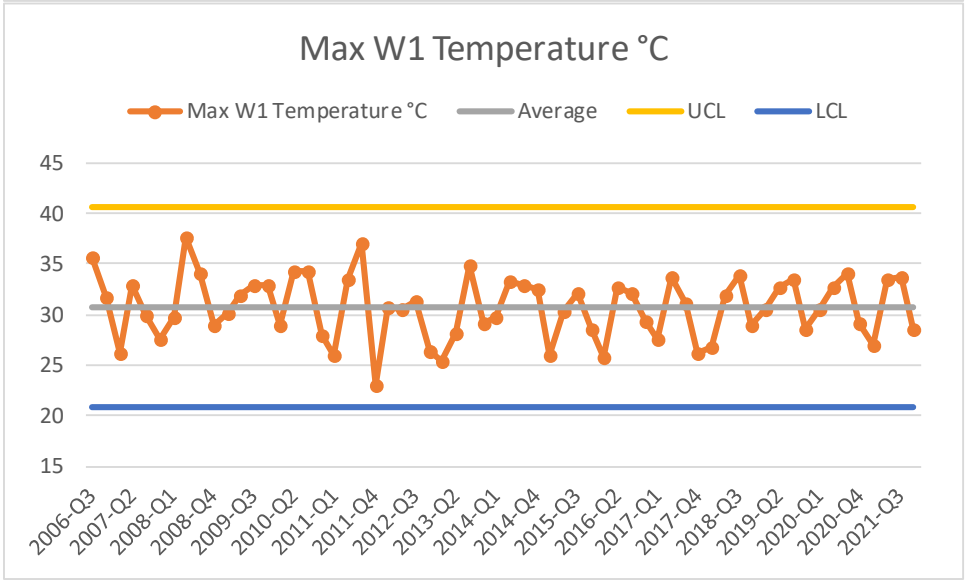
Water monitoring
Trends for Quarterly monitoring:



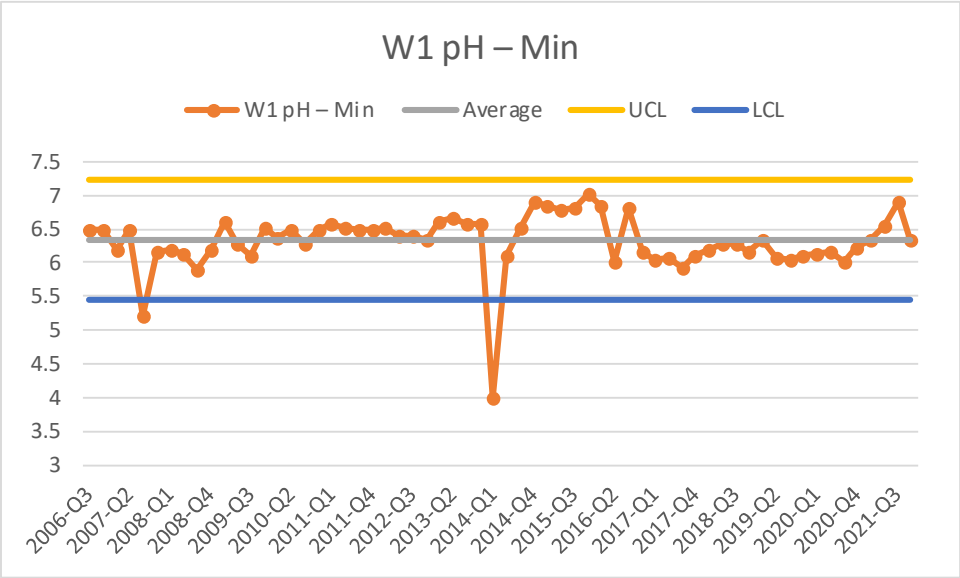
Results in control and within permit limit (11,000 m3/day)



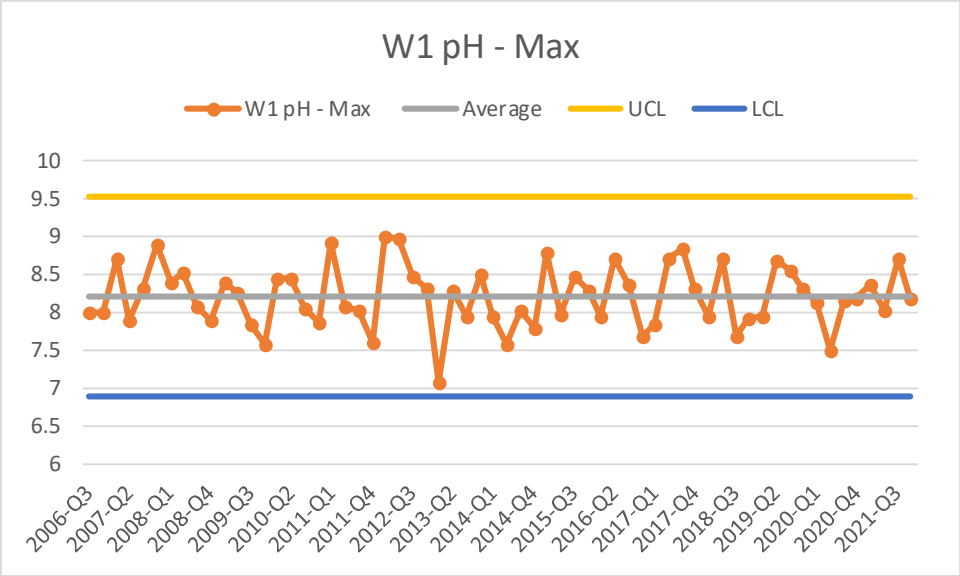
Results in control and within permit limit (625 m3/hr)



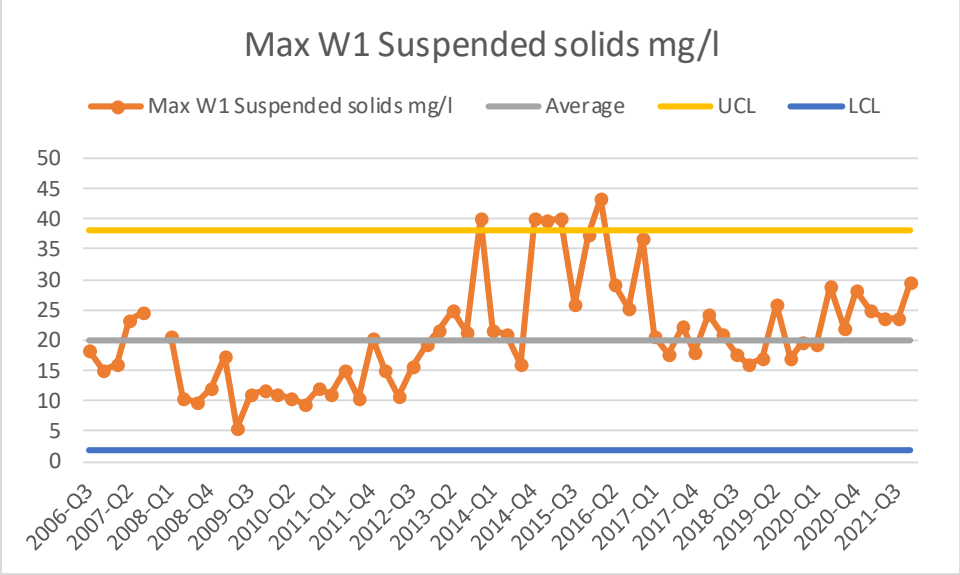
Results in control and within permit limit (40°C)



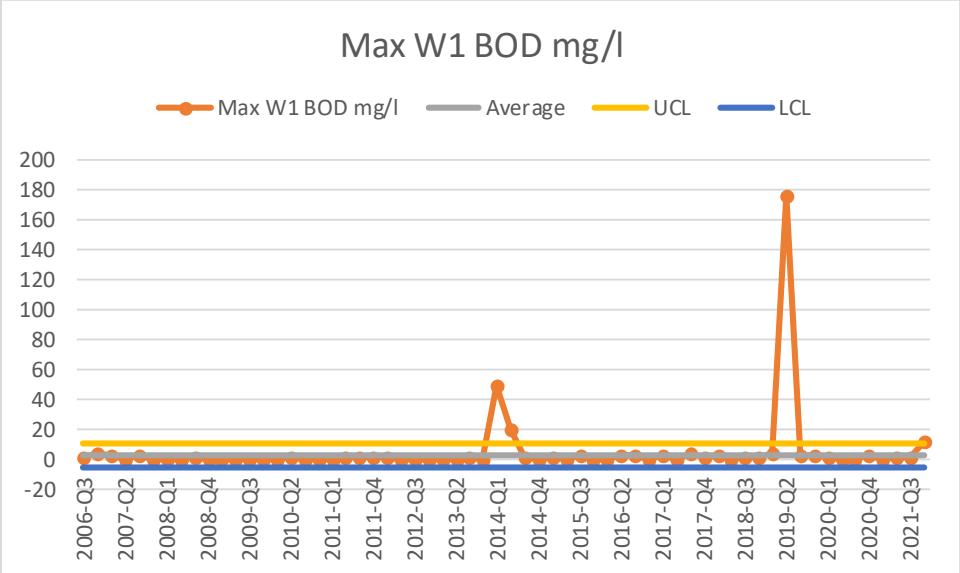
Results in control and within permit limit (>6)



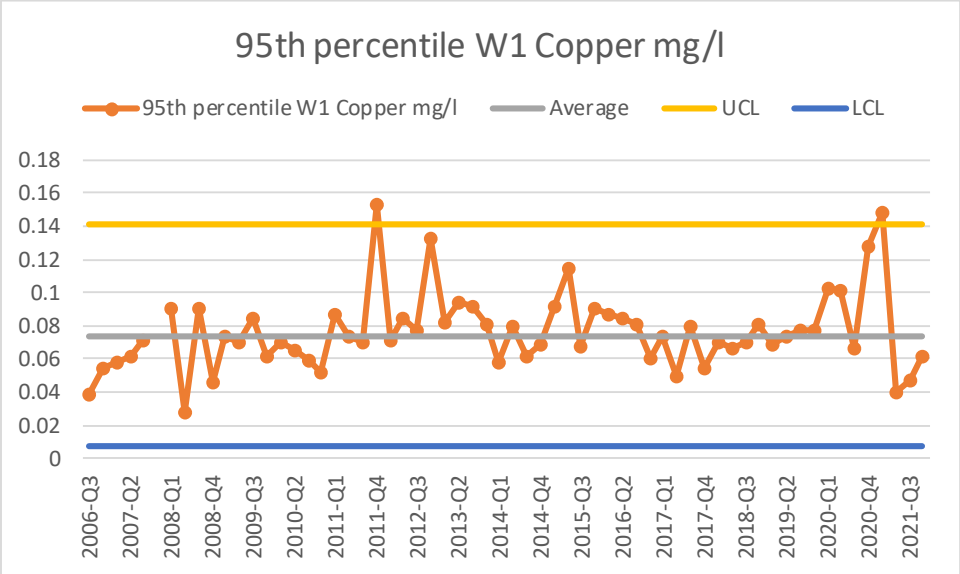
Results in control and within permit limit (<9)



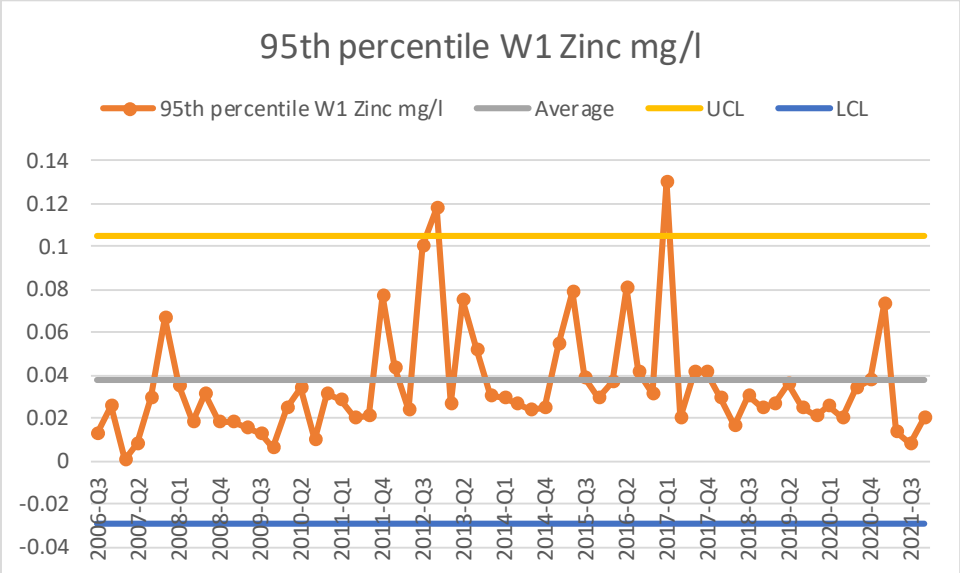
Results in control and within permit limit (30 mg/l)



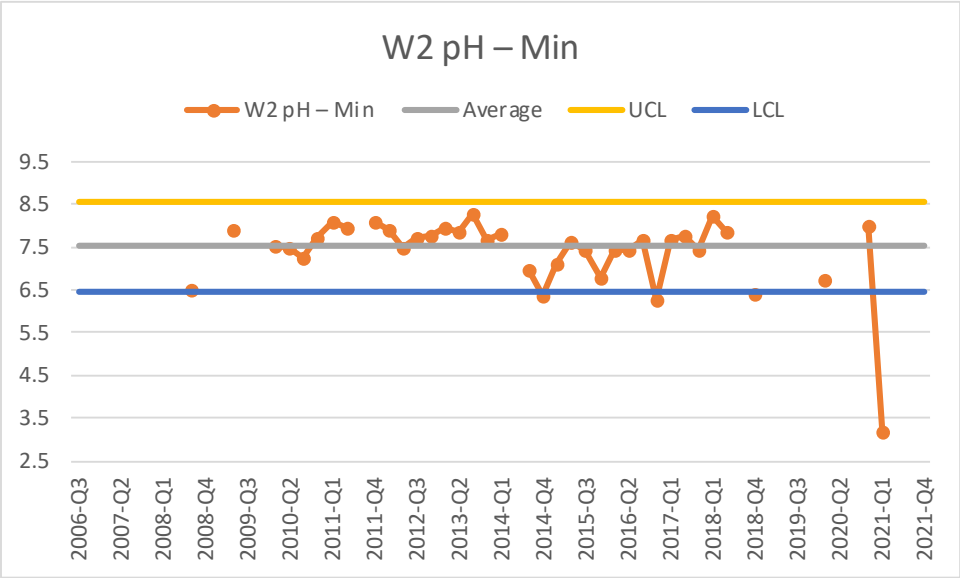
1 Result out of control during 202, but still within permit limit (20 mg/l)



Q1 2021 95th % result was above the permit limit, but work on the PWWT and SWWT processes throughout 2021 have had a good result with the Q2, Q3 and Q4 95th % results being lower than they have been for more than 10 years.

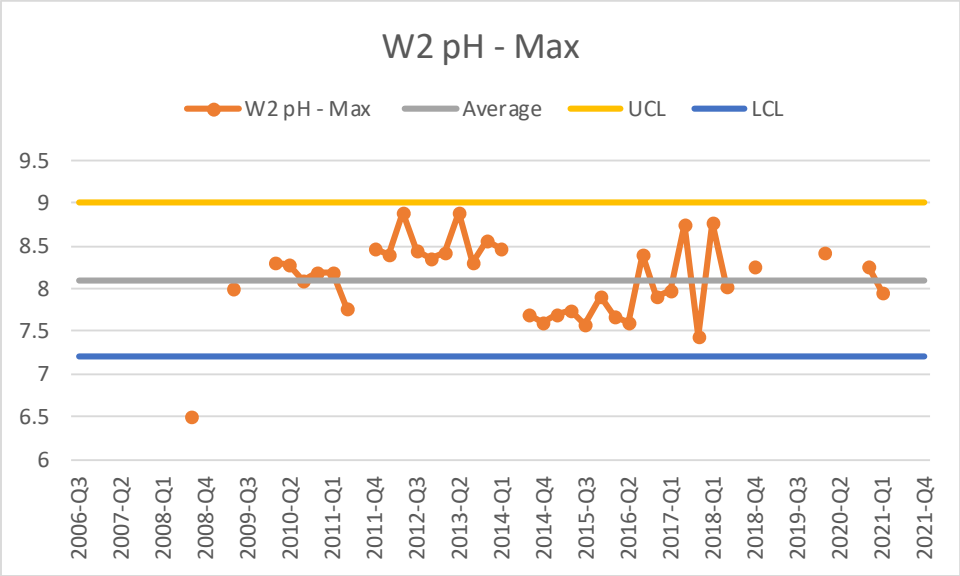


Results in control and within permit limit (0.5 mg/l)



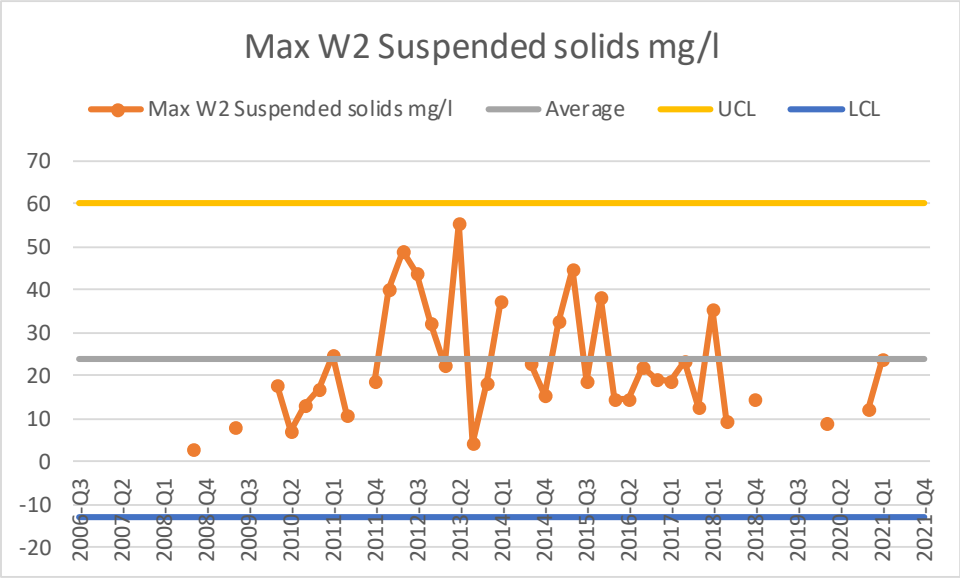
Storm water released to river in Q1 2021 only.

This resulted in a permit breach and a schedule 5 was submitted.



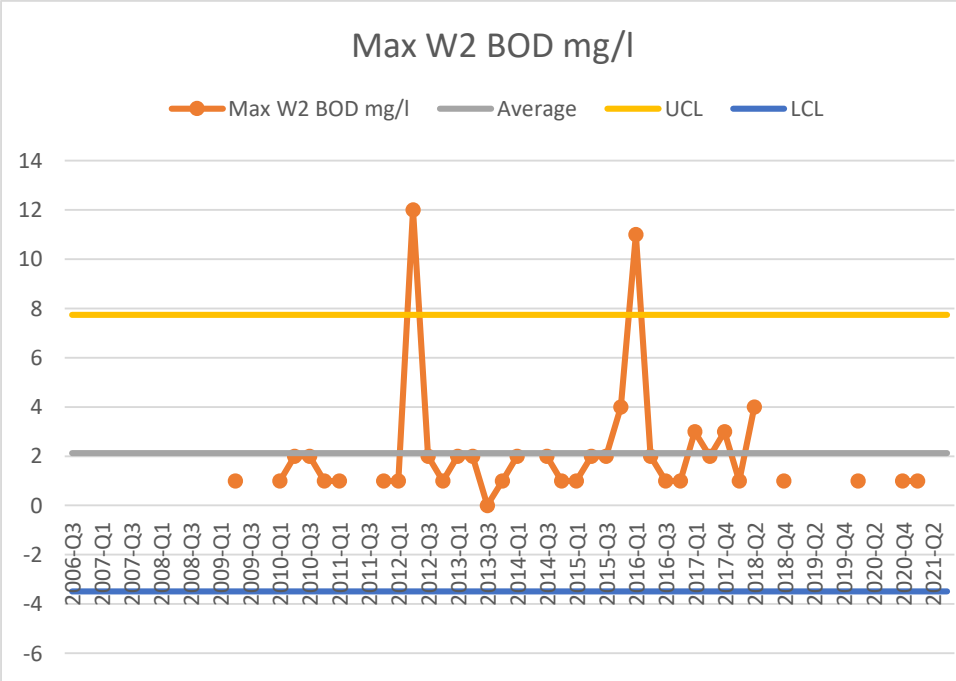
Storm water released to river in Q1 2021 only.

Results in control and within permit limit (<9)



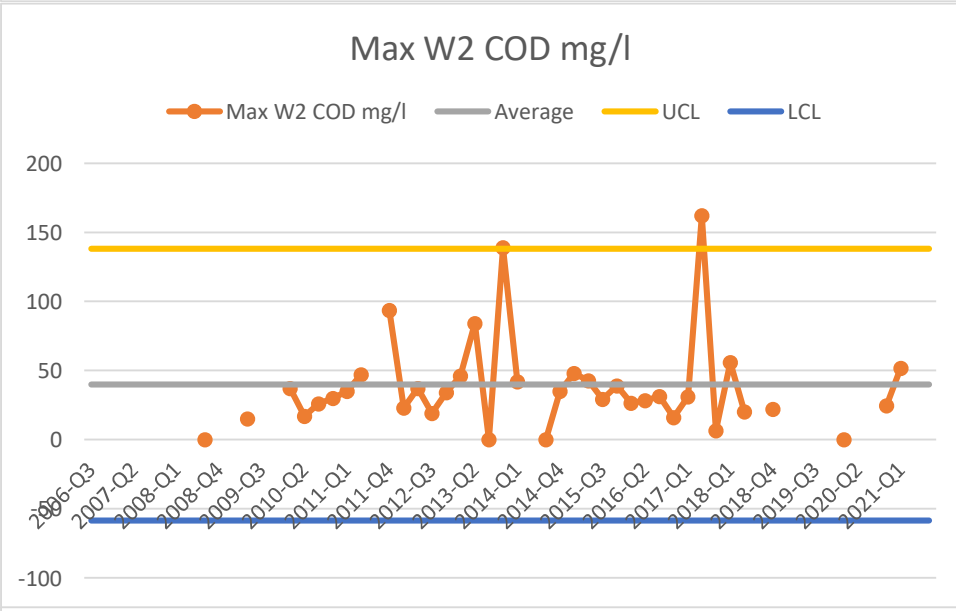
Storm water released to river in Q1 2021 only.

Results in control and within permit limit (30 mg/l)



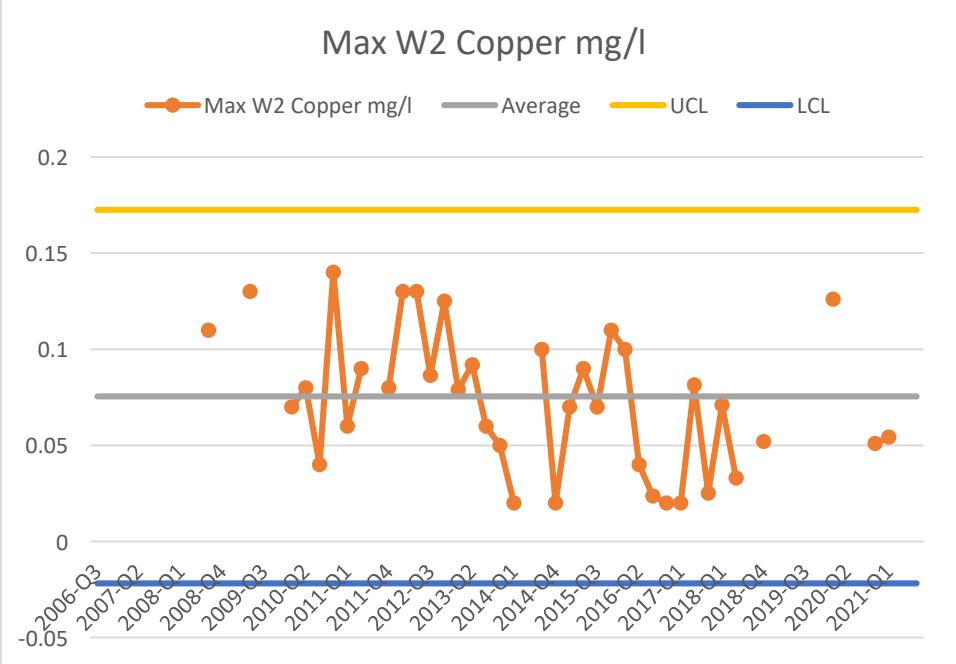
Storm water released to river in Q1 2021 only.

Results in control and within permit limit (20 mg/l)



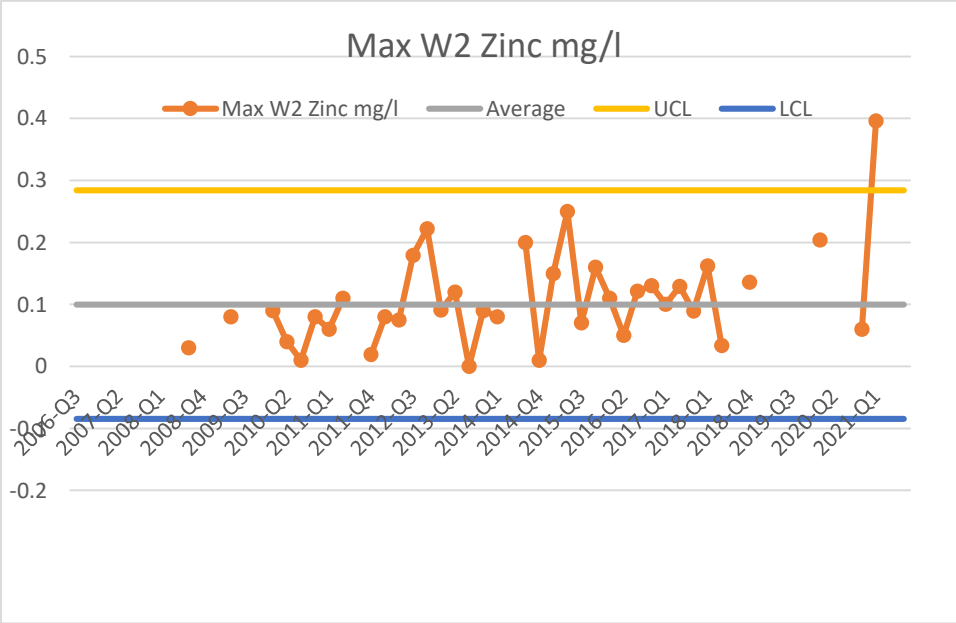
Storm water released to river in Q1 2021 only.

Results in control and within permit limit (125 mg/l)



Storm water released to river in Q1 2021 only.

Results in control and within permit limit (0.15 mg/l)

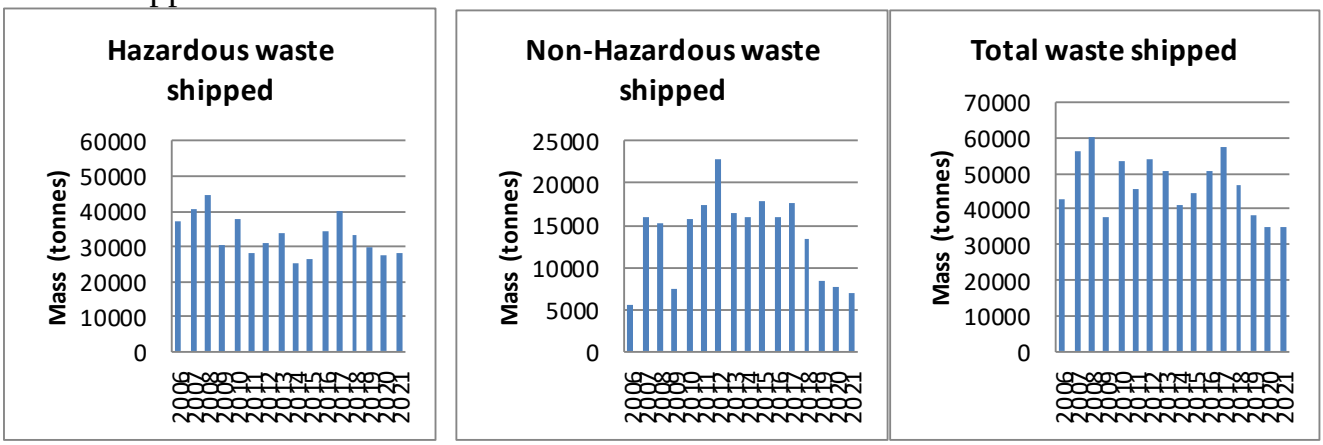


Storm water released to river in Q1 2021 only.

This resulted in a permit breach and a schedule 5 was submitted.

Waste

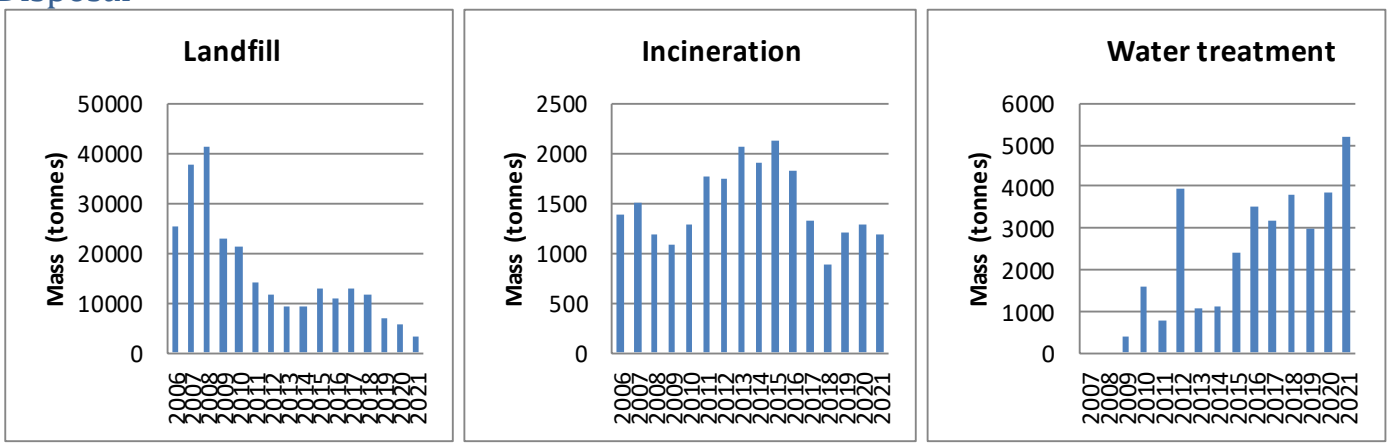
Waste shipped from the site was as follows:



Waste shipments were very similar for 2020 and 2021.

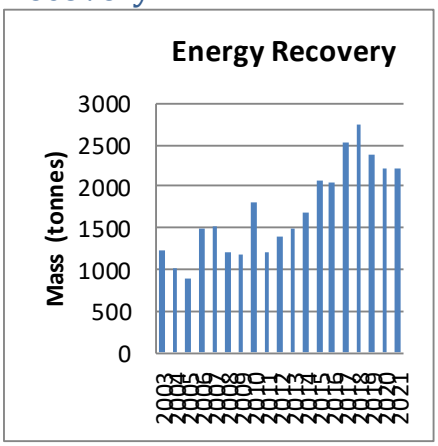
There was a small decrease in non hazardous waste and coninciding increase in hazardous waste is where we have processed more DPR as hazardous during 2021 due to the reliability and operation of one of the waste processes.

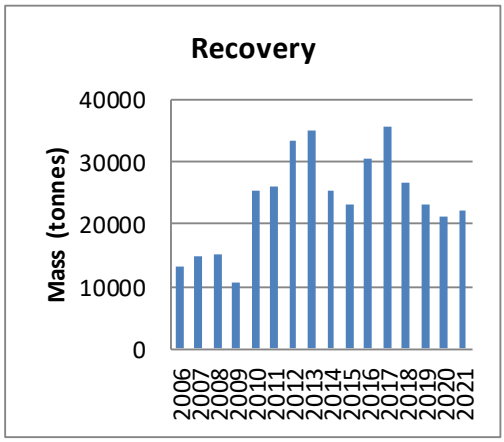
Disposal

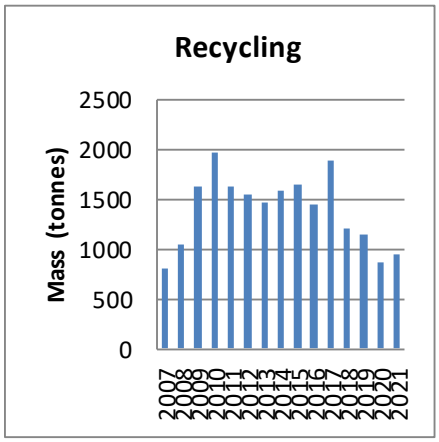


- There was an increase in water treatment due to more biosludge removal in the SWWT process to improve operation
- There was a decrease in landfill and a coinciding increase in recycling (see next section). This is where we have worked with our on site company and waste vendors to find recycling solutions for some of our waste streams during 2021.
- Incineration remained at a steady rate for the last 2 years.

Recovery







- Energy recovery remained at a very similar level as 2020.
- Recovery also remained at a very similar level as 2020.
- Recycling saw a small increase from last year, this coincided with a decrease in landfill as mentioned previously.

Complaints

There were 8 complaints to the Barry Industrial complex helpline in 2021

- 2 were for odour –
  - Neither of these were substantiated following investigation at all sites and the perimeter
- 4 were for noise:
  - 1 was for an alarm starting at 23:00, the source was not located, but believed to be a car alarm
  - 1 complaint, which was attributed to a leak at the CHP plant and a successful repair was undertaken
  - 1 was for noise or machinery, alarms and vehicles coming from the complex, after investigation the sites were unable to locate the source of the complaint.
  - 1 was for a low drone sound over Dinas Powys, the sites investigated but were unable to locate a source.
- 2 were for other reasons
  - 1 was for white spots on a patio attributed to lichen algae
  - 1 was for flooding in a rear garden adjacent to Dow boundary, NRW advised the flooding was probably due to natural causes.