Cyfoeth Naturiol Cymru
Natural Resources Wales

C Grimshaw
Catchment Performance Manager

Ein cyf / Our ref:
Eich cyf / Your ref:

Sent via email

Dyddiad/Date: 29 June 2016

Dear Craig

SAMPLE FAILURE AT FIVE FORDS WwTW ON 1 APRIL 2017

Thank you for your email of 1 May 2017 containing information in relation to the sample failure at Five Fords WwTW on 1 April 2017.

On that day there was an OSM sample taken at 1445 hours. There was a gross failure for suspended solids with a sample result of 1428 mg/l and other failures for iron and aluminium. The reason you gave for these failures was mixed liquor carryover from the aeration lanes made worse by a sudden increase in flow through the works.

I cannot accept that this sample should be excluded for the purposes of compliance assessment. My reasoning for this decision is as follows:

1. You describe the flows through the aeration lane increasing above the penstock control limit of 554 litres per second at 1036 hours on 1 April, peaking at 587.6 litres per second at 1059 hours and reducing below the 554 litres per second at 1127 hours. Similarly in the afternoon, flows were above the 554 litres per second limit for 20 minutes peaking at 562 litres per second at 1459 hours. In total the flows through the aeration lanes were above the flow limit for 71 minutes.

2. But the morning increase in flows peaked at 33.6 l/s above the penstock flow limit of 554 l/s which equates to a 6% increase above the maximum flow whilst the afternoon increase in flows peaked at 8 l/s or 1.4% above the maximum flow through the penstock. Neither of these flow events seem excessive in relation to typical operation, either due to the time period or percentage flow in excess of the maximum that the penstock handles. Coincidentally the morning flow increase coincided with your operator being on site and he has noted ‘good quality final quality’.

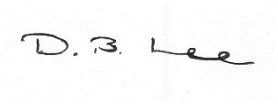
3. There are short periods where the MCERT meter shows flows leave the site above the FFT flow of 806 litres but these are minimal time periods of approximately an hour in the morning and 15 minutes in the afternoon. Again the morning increase coincided with your operator being on site but neither of these time periods when you are discharging above FFT flow appear excessive in relation to continuous 24 hours operation.

4. This second graph also shows that MCERT meter flows increased from around 300 litres per second to FFT flow of 806 l/s in about an hour. You contend that this is a sudden and unusual increase in flows for Five Fords WwTW and not typical of works performance but you have not provided any data on flow increases at the works to compare against and to show that this is an abnormal flow increase. I've checked rainfall data from the Five Fords rain gauge (SJ3614 4804) around the time of the failure and none of the daily totals are exceptional. 2.8mm of rain fell on 31 March and 4.6mm fell on 1 April. These daily totals and the sub totals are not exceptional.

5. We do not appear to have been notified that you were operating on 3 settlement tanks on 1 April. Although you say that the site is capable of running on 3 tanks you have chosen to operate the works on 1 April without 25% of the settlement capacity on the aeration lanes. This loss of settlement capacity seems to me to be a much greater factor in this failure than the small increase in flows above FFT and the aeration lane capacity you have described.

There is other information you have not provided such as when you had the power failure at the works, was this a total or partial power failure, when the penstock failed, why wasn't its failure detected and what checks on the works automatic systems did you make after the power failure. This is why I cannot accept your request to excluded these results from compliance assessment.

Yours sincerely



David Lee
NRM Team Leader

Ebost/Email