



Drinking Water Quality Regulator
for Scotland

Incident Summary

Lintrathen WTW Loss of coagulation process 6th September 2022

DWQR Inspector:
Andrew Kennedy

Event No. 12878

Event Category: Significant

Following heavy rainfall within the catchment for Backwater reservoir between 6 – 9 September 2022, raw water quality significantly deteriorated, with raw water colour more than doubling from an average of 20Hz to 46Hz and Dissolved Organic Carbon (DOC) increasing from 4.4mg/l to 8.5mg/l over a 4-hour period.

On 7 September at 19:12, the Intelligent Control Centre (ICC) received a high filtered turbidity alarm and called out the standby operator when the filtered turbidity remained high after a backwash (peaking at 0.75NTU following a second consecutive backwash). On attending site, the operator increased the aluminium sulphate dosing and the polymer dosing to restore optimal floc formation.

A second, but less significant filtered turbidity rise (individual filter turbidity peaked at 0.28NTU) occurred on 10 September 2022 following raw water colour increasing from 25Hz to 30Hz between 06:30am and 10:30am. The standby operator was called out by the ICC at 16:46 following an alarm for high filtered turbidity and again increased the aluminium sulphate dosing and the polymer dosing to restore optimal floc formation.

There was a positive detection from a final water Cryptosporidium filter which had been on from 8 September 08:30 to the 9 September 09:15 with a count of 0.02 oocysts/10L. A positive was detected in the resample (taken off on 11 September 2022) with a count of 0.037 oocysts/10L

The cause of this event was the failure of the treatment process to respond to changing raw water quality following an abnormally quick deterioration as a result of heavy rainfall in the catchment for Backwater reservoir. This deterioration of raw water quality was likely exacerbated by dry ground following the summer and also a significant amount of fallen trees with exposed roots that remain in the catchment following Storm Arwen.

Due to the aluminium sulphate and polyelectrolyte dosing being controlled manually, optimal floc formation was lost temporarily, resulting in increased filtered turbidity and likely breakthrough of Cryptosporidium spp. oocysts. The breakthrough of Cryptosporidium spp. oocysts from the filters is also likely to have been contributed to by deficiencies in the filter media and filter performance.

It is clear that the actions taken by the operators to adjust the coagulation processes and recover treatment performance ensured that water quality from Lintrathen WTW was restored promptly.



The event has been categorised as significant. Scottish Water has identified six actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made Zero additional recommendations.

