

Roberton WTW Trihalomethane (THM) failure November 2019

DWQR Inspector:
Moira Malcolm

Event No. 10683 and 10691

Event Category: Significant

On 11th November, following approval by Treatment Control, Clarifier No1 at Roberton WTW was taken out of service to modify the downpipes to allow for easier future maintenance. Modifications were made to the filter run times, poly dosing and desludging of the remaining in-service clarifier to account for the increased pressure on this during the operation. That afternoon, clarified turbidity started to rise sharply, followed by filtered turbidity. The operators manually desludged the clarifier to lower the sludge blanket. This controlled the turbidity (which had peaked at 3.63NTU from filter 6), and this quickly returned to 0.5NTU. The turbidity spike prompted escalation so final samples were taken and the crypto filter fitted. The following day at 01:15 the standby operator was called to site by ICC due to high filtered turbidity and high aluminium alarms. The operator found that the turbidity on filters 4, 5 & 6 had been above the STDV of 0.5 NTU but were now reducing. Desludging of Clarifier No2 was again increased and water quality returned to normal by 03:15. At 05:30 final aluminium peaked at 0.20mg/l then dropped. By the morning of 12th September the clarifier alterations were complete and Clarifier No1 inlet was opened to start refilling. Inlet flows were increased for several hours to facilitate this, and the operator left site at 16:30, with clarified turbidity and coag pH both within normal limits. At 18:45 the same day, the site Team Leader was logged into telemetry from home and noted that there was an Alba coagulant dosing low flow alarm which had not been passed out by ICC. The standby operator attended site and found the duty Alba dosing pump had a burst on the delivery hose. The pump was isolated and dosing switched to the standby pump, with dosing increased to help recover the process. 3-4MLD of forward flow water was diverted to wash water tanks and filter flow was reduced to limit the filters blinding further. The reduced flow (<1 MLD) tripped the ammonium dosing control (as per site philosophy) which was off for a total of 2 hours 15 minutes. There was no coagulant dosing for 5 hours and 2 minutes. Chlorination and chlorine contact time were maintained throughout the incident; however final aluminium was breached for 15 minutes and a *Cryptosporidium* oocyst was detected.

Event 10683 was caused by the sludge blanket from Clarifier No2 rising and carrying over to the filters during an operation to modify Clarifier No1 which had been removed for service. If Clarifier No2 had been desludged before the operation, this would have reduced the risk of the increased turbidities.

Event 10691 was caused by a burst delivery line pump on the coag dosing line. This was likely caused by dormant coagulant crystallising and blocking the line, causing the pump to burst following the increase in flow at the conclusion of the operation on Clarifier No1. This was exacerbated by the lack of alarm callout by ICC. The coagulant pumps alarm on telemetry but not on the obsolete site SCADA, so the on site operators had no visibility of the issue. As it cannot be determined which event caused the *Cryptosporidium* oocyst detection, both events have been included in this assessment.

These events have been categorised as Significant. Scottish Water has identified nine actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made two additional recommendations.

