

Marchbank A RSZ Microbiological Contamination 30th May to 9th June 2024

Event No. 14833

Event Category: Significant

At 12:40 on the 19th August 2024, the high coagulation pH alarm was triggered at Marchbank WTW and this triggered a plant auto shut down at 13:00. Clarified water turbidity started to increase. The coagulant duty dosing system was flushed by Operators and the pH monitor calibrated, and at 13:45 the plant was restarted. However, when the Senior Operator was informed of the issue 15 minutes later, the DAF inlets were shut to send coagulated water to waste in order to clean inline filters on the coagulant dosing line.

At 14:30 the DAF inlets were re-opened and inlet flow increased. Clarified and filtered water turbidity started to reduce and inlet flow was again increased. However, clarified water turbidity began to rise again, and so the filters were taken off-line and the plant was run to waste. The team manager was informed, and the standby Operator was called to the site. Scottish Water's Public Health Team (PHT) was informed, and samples of final water were requested. A final water *Cryptosporidium* sample filter was already in place.

The standby operator arrived on site at 16:45, and coagulant inline filters and pipework were cleaned and flushed again. The duty coagulant pump was switched to the standby pump as the flow pattern from the pump was erratic. Plant performance was monitored and clarified water turbidity reduced steadily. Water from six of the eight rapid gravity filters was sent to the dirty wash water tank (there was insufficient space in the tank for all water to be diverted). Filtered water turbidity was below the emergency action level (EAL) and so the filters were returned to service on a slow start and the PHT informed. The coagulation pH monitor was still giving a high reading, and was still in alarm mode, but despite manual

bench samples also showing a high reading, it was assumed that the alarm was due to a fault with the monitor. Flow was increased. The Operators left the site at 21:00 having updated the standby Operations Team Leader and the Intelligent Control Centre (ICC).

At 06:30 on the 20th August, the standby Operator was called out to site by the ICC for high filtered water aluminium, and on arrival at site they noted that both aluminium and turbidity readings were increasing. This was thought to be caused by an increase in loading onto the filters as a filter was washing, so the interval between filter backwashes and the flow were both reduced. At 09:45, a burst was discovered in the coagulant dosing pipework at the injection point into the bulk flow of water. The burst was after the flow meter and in an underground chamber, so had not been noticed by the Operators or picked up by either the flow meter or the coagulant drop test carried out by the site operators. The coagulant dosing was restored at 09:55 and the coagulation pH returned to normal levels at 10:10. A zeta sizer was brought onto the site to confirm that the coagulant dose was optimised and the performance of the clarifiers and filters returned to normal over the next few hours.

At 19:26, the PHT was advised that twenty discoloured water contacts from consumers had been received by the call centre, with the first received at 15:56. Networks staff carried out investigations and reported that there were no issues in the network that could have caused the discoloured water contacts, and the cause of the discolouration was concluded as having been caused by uncoagulated (discoloured) water passing through the treatment works. Strategic flushing was discounted as the customer contacts were spreading across different parts of the network and it was not possible to target flushing. A total of 142 contacts were received between the 20th and 22nd August. No samples failed regulatory standards.

The root cause of the incident was a failure to respond appropriately to the alarm for high coagulated pH water for around seventeen hours.

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

