Drinking Water Quality Regulator for Scotland

Incident Summary

Carron Valley B RSZ Boil Water Notice Not Issued 21st September 2021

DWQR Inspector:
Colette Robertson-Kellie

Event No. 12093

Event Category: Significant

On Friday 24th September 2021, samples were taken by a Scottish Water Network Service Operator (NSO) following the installation of a boundary box with a double check valve, as well as from a neighbouring property located at Carron Valley reservoir. A new development was being built in an area where there had been a fuel spill three years previously, so the installation was to protect the public supply from potential backfeed from the area (hydrocarbon samples taken in 2008 were all free from contamination). The sample results were made available by Scottish Water's laboratory on the 25th September – while the samples from the boundary box complied with regulatory standards, the sample from the neighbouring property was noted as being slightly discoloured, and failed a number of standards including Coliform bacteria, E. coli, Clostridium perfringens, aluminium, manganese, iron and lead. Bottled water was supplied for the consumer, and the property was resampled on the 25th September – this time the sample complied with standards.

A further sample was taken on the 28th September from the original index property as well as from a neighbouring property, and results were made available on the 29th September. Both samples failed microbiological standards, with the index property containing 8986 CFU/100ml E. coli along with 8 Clostridium perfringens CFU/100ml, 470 Enterococci CFU/100ml and colony counts at 22oC and 37oC each at >300 CFU/100ml. The free chlorine residual was < 0.04mg/l. The Neighbouring property also contained faecal ndicators,

though not at such high levels, and there was a chlorine residual of 0.63 mg/l. Scottish Water arranged for boil notices to be issued to thirteen properties, along with bottled water. A terminal hydrant was flushed, and chlorine levels were measured at individual properties and hydrants.

The area sampled was widened, and results showed that the affected area was very localised to the properties at Carron Valley Reservoir. However microbiology sample failures were detected in two of five samples taken from the original failing area, and all samples had high colony count readings. Four samples were taken on the 30th September, which showed one sample failing for Coliform bacteria, E. coli and Clostridium perfringens, and one sample contained Clostridium perfringens.

Sample data from the area showed that the supply was free from Coliform bacteria and faecal indicators for three days running, from the 1st to the 3rd October, and in consultation with the Health Board, the boil notice was lifted on the 5th October.

An external survey of the service reservoir supplying the properties was carried out on the 29th September, and no evidence of ingress into the tank was found. The tank had been cleaned and inspected in January 2018, and following repairs to the hatch it had passed its flood test. Residual chlorine tests at the service reservoir gave no cause for concern, and examination of previous sampling from the service reservoir showed that all samples had passed microbiological standards. Network flushing was carried out and it was found that when flushing stopped, chlorine levels dropped significantly. A CCTV inspection was carried out on the distribution main supplying the properties on the 4th November, and Scottish Water has reported that while there was some sediment in the pipe adjacent to the failing properties, there were no obvious points of ingress. The main from the service reservoir also showed no cause for concern. Between the 15th and 19th November, chlorine step testing was carried out, including at a newly installed sample point, and it was found that when flushing was halted, chlorine levels dropped significantly at the terminal hydrant, which is adjacent to the affected properties, but this was not the case at other sample points. This indicated that there were integrity issues either with the pipe or the terminal hydrant at the end of the main, so digs were carried out in two separate areas, valves were checked to ensure that they were in the correct position, and checks on other network assets were also carried out – all were ruled out as the source of the contamination. Visual inspections of

external plumbing and the area around the failing properties during Byelaws surveys found no obvious reason for the contamination.

Flushing of the system continued, and Scottish Water commenced rehabilitation of the system through the replacement of the water main and terminal hydrant on the 28th February 2022, with all consumers connected to the new main by the 26th April 2022. Sampling of the system continued, and all samples were compliant with regulatory standards.

It is likely that the source of the contamination was the integrity of the terminal hydrant on the network, and possibly also the condition of the water main supplying the affected properties.

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