Drinking Water Quality Regulator for Scotland

Incident Assessment

Milngavie WTW Turbidity Failure 5 March 2014

DWQR Inspector:
William Byers

Event No. 5863

Event Category: Significant

Summary of Incident

A routine sample taken from the final water leaving the works failed the turbidity standard. Analysis had shown a level of 3.2 NTU turbidity. In addition to being an unusual occurrence at the works, the high value was of concern and further analysis of the sample was carried out. This showed high levels of aluminium, iron and manganese were also present in the sample. Checks to process information showed there to be no on-going issues of concern and instrumentation indicated processes were operating normally within expected controls. An investigation into the failing sample concluded there was indeterminate cause.

DWQR Assessment of Cause of Incident

Information provided to DWQR in support of the root cause investigation raised a number of concerns relating to a coagulation process failure two days earlier, on 3 March; apparent issues with filter performance, instrumentation and monitoring of processes. DWQR consequently declared this event an incident due to concerns over the control of treatment processes.

Scottish Water's subsequent investigation has determined that the failure of the sample taken on 5 March was due to the disturbance of deposits in the sample line. The final sample tap shares a supply line from the water main with the *Cryptosporidium* monitoring point. Flow to the *Cryptosporidium* sample point is boosted by a pump to ensure adequate flow and on this occasion, the booster pump had operated just prior to the final sample being taken. In subsequent tests, the increased flow in the common sample line has been shown to cause deposits to be disturbed. Other information provided to DWQR in relation to monitoring of the various process has given reassurance that the coagulation failure on 3 March was not a factor and SCADA information has shown processes to be in control.

In a visit to the site to assist DWQR's investigation of the event, it became apparent that a practice of removing turbidity controls on filters queued for washing, is implemented (maintenance mode or "off-scanning"). This enables filters to be brought back into service whilst in the queue and also removes visibility of on-going turbidity trends from SCADA. DWQR considers it entirely unacceptable for controls designed to protect against poor quality water being produced and safeguards against the passage of *Cryptosporidium* Oocysts to be subverted.

DWQR is satisfied that the cause of the sample failure was the disturbance of deposits in the sample line.

DWQR Assessment of Actions Taken by Scottish Water

DWQR considers Scottish Water to have demonstrated a lax approach to the investigation of this failure and to providing reassurance to DWQR and health stakeholders of the accuracy and veracity of supporting information. It is essential that DWQR can retain confidence in Scottish Water's root cause investigation of events and the quality of information provided in both event and incident reporting is a key aspect.

Information provided in relation to filter performance indicates there is a significant difference in turbidity measurements between filter washes across the ten filters in service. Although turbidity values are not considered high, there is a marked difference shown through the period of the coagulation process failure on 3 March. Scottish Water should investigate this to understand the reasons for the differences and the particular peaks shown over 3 March to ensure a continued effective *Cryptosporidium* barrier is maintained.

The event has been categorised as significant. Scottish Water has identified a number of actions and DWQR accepts that these are appropriate. Additionally, DWQR has made four recommendations and will be monitoring to ensure all are completed prior to signing off the incident.