

Drinking Water Quality Regulator for Scotland

Incident Assessment

Invercannie Supply Zone Taste/odour complaints 4 August 2014

DWQR Inspector: William Byers

Event No. 6255

Event Category: Serious

Summary of Incident

Over the course of August and early September 2014, Scottish Water received a number of contacts from consumers complaining of a taste and odour in the water in the areas supplied by Invercannie treatment works. The descriptions varied with Earthy/Musty, chemical, metallic and chlorine being recorded. In all, there were 81 contacts from consumers between 1 August and 6 September across the spread of the supply area. Some of these were repeat contacts from the same consumers indicating a persistence of the issue.

Over this same period, the raw water supplied to the treatment works was highly coloured due to heavy rain in the catchment, which presented a significant challenge to production. The raw water is extracted from the River Dee and delivered to storage tanks at the works. These tanks provide up to 5 days storage for the works and abstraction is stopped when the river is in spate to avoid transporting silts and extremely highly coloured water to the plant. Whilst pumping is stopped, there comes a point where the production rate through the treatment works is affected by the low level of the tanks. There were three occasions in August when the low level of the raw water tanks necessitated the reintroduction of pumping although the quality of the raw water remained less than desired. The membrane treatment plant however remained able to produce water throughout this period, which met the health standards.

DWQR Assessment of Cause of Incident

DWQR considers Scottish Water's assessment, that the taste complaints arose from the washout of silts and humic materials from the catchment due to heavy rain, to be reasonable. Investigations identified *Actinomycetes* bacteria to be present in samples and these can produce taste causing compounds, geosmin and 2-Methylisoborneol (MIB). Whilst the membrane treatment plant is able to remove very small particles in the treatment process and ensure the final water meets the quality standards and the health requirements, the taste these compounds impart to the supply cannot be removed in the processes at the works.

DWQR Assessment of Actions Taken by Scottish Water

DWQR is satisfied that the investigations carried out by Scottish Water established there were no deficiencies in the operation of the treatment works.

Investigations were made into the possibility of there being algal activity in the raw water supply, since this can also produce an earthy/musty taste in the water. Activity was deemed to be low and in consideration of the river source being in spate, *Actinomycetes* bacteria, which are naturally present in soils and silts, were thought to be the likely cause of the complaints.



Actinomycetes bacteria present no implications for public health and the analysis is not carried out by Scottish Water's own laboratory. A contracted service is required when the need arises and in this case, it was the first time the Laboratory team leader had been presented with the situation and there was a delay in establishing where the necessary analysis could be carried out. Once a laboratory had been sourced, further time was required for them to set up and analyse the samples, all of which led to a delay in establishing the root cause. Whilst DWQR recognises that this did not affect Scottish Water's ability to mitigate the impact on the taste, it is important that laboratory service arrangements are formalised and procedures for staff made clear for circumstances where the need may arise in future.

The "Chemical" and "Chlorine" type tastes reported are considered to be caused by the higher level of humic acids in the final supply combining with the chlorine used in the disinfection process. Slight fluctuations in chlorine dosing occurred as the works adjusted to the demands presented by the changing water quality but there were no issues with chlorine residuals within the distribution system, which were normal over the period. Slightly elevated levels of Trihalomethanes (THMs) were noted in the analysis and whilst there were no failures of the standards, it supports the conclusion that these too are related to the washout in the catchment.

It is not unusual for the River Dee to be in spate at times through the seasons and the need to continue to abstract water to the treatment works during these situations is likely to recur. DWQR considers that if the particular operational circumstances experienced in this incident are likely to be repeated, that consideration be given to provision of treatment measures to deal with taste and odour forming compounds and that this risk is specifically recognised in Scottish Water's action to review the Drinking Water Safety Plan.

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

