REVIEW OF RISK TO THE WATER SUPPLY TO FOUR PROPERTIES AT FARLEY, NORTH OF MATLOCK, DERBYSHIRE.

Water Supply Location: SK 43053620

Reported by Dr Harvey Wood FRSA, FGS.

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Clean
Rivers
Trust Registered Charity No: 1037414

Introduction.

Clean Rivers Trust was asked to visit the site of water supply to four habitations at Farley, north of Matlock in Derbyshire. The request was from Eur Ing. Victor Johnson of Farley Farm House, one of the four householders who receive water from this supply.

The Site Visit.

The visit to the site was on 7th March 2012, the weather conditions were damp underfoot after rain in the early morning which was turning to fair with intermittent sunshine.

On arrival at the group of habitations it was obvious that two were in the process of being connected to town water supply. The two further habitations it was said were the two that were the main consideration as they were too far distant from such a mains supply connection to be economic to consider.

I was informed that the two property owners were only using the supply in question for non potable purposes such as watering livestock and general household uses including washing and flushing of closets. Drinking water was, and had been for many years provided by bottled water purchased locally. The two households were happy with this arrangement and planned to continue in this manner into the future.

The water supply source location is some little way from either property set up above them on the 300metre contour above ordnance datum. The supply id delivered to the properties via a gathering/holding tank by gravity feed. No pumps being involved in any part of the distribution scheme.

The water is gathered and stored in a concrete chamber that is of some age; anecdotally at least 60 years old. Access to the chamber is possible via a locked manhole. The lining of the structure was obviously rendered at the time of its construction. The water inlet pipe is visible from the entrance hole when the cover was removed. The flow into the chamber was noted as being a steady trickle not an abundant flow which one might expect in this geographical location. (Litmus paper gave a pH reading of 7.00) The water flow was said to be 1 pint per 40 seconds where in the past it had been double that at 1 pint per 20 seconds.

The flow of water that enters the chamber emanates from a spring through the 'folly' or Hermits Cave situated about 2 metres from and above the tank. This structure is in part natural outcrop of sandstone which has been hollowed and provided with an unglazed double arched window carved from the leading edge of the rock. The only maintenance this gathering place has received is the removal of leaves to keep the channel open to the storage tank.

Gathering Ground.

The area above the storage tank and 'folly' are made up of sandstone outcrop on the sharply sloping hill rising up from the 275 metre contour up to a height of only another 30 metres with an estimated total water gathering area of 2 square kilometres; in reality the area that would be delivering the supply to the source of less than 1/3 of a kilometre square.

The land use of the whole area above the 275metre contour is mixed woodland and a very small area of unimproved enclosed moor. The actual feed area of the gathering ground is set in its entirety in the woodland; known as Hurker Wood or Farley Moor.

The geology would appear to be heavily fractured gritstone/sandstone outcrop with peat and woodland litter overlying the majority of the solid geology. The fracturing would allow for the water table to spill out as if perched; though in all probability there is a continuity of water feeds throughout the area of the tank. An old well and a recently created lake both bear witness to the availability of good water resource hydrologically below the feed in question.

Water Quality.

The water quality of this supply has been tested over several years, both privately and by the local authority's environmental health department; I was informed that no concerns as to its quality have been raised at any time.

Reason for the Low Flow.

The low flow that is entering the collection/distribution chamber at present is unlikely to be brought about by any change in the hydrological structure of the area; no quarrying or mining is taking place on the other side of the hill. There are no apparent new water abstractions that might be pumping water from this or any higher level.

The low rainfall of the last few years is what can be considered the reason for this situation. Since 2009 there has been a period of lessoned rainfall, British Geological Survey's monthly survey of weather and water levels, *Hydrological Summary of the*

United Kingdom for January 2012, outlines that the low rainfall and resultant poor ground and surface water conditions in this part of the country is significant.

Risk.

Like all water sources there are risks to its wholesomeness as well as that of natural scarcity. These concerns need to be placed in context to the particular location that is under consideration.

This particular supply is of good biological quality (information received) and is not impacted by animal husbandry or other farming activity in any way. The only forms of contamination being feasible would be by vandalism or other illegal action such as wanton pollution of the source or its small catchment area amongst the trees above the site.

The collection chamber was locked so no polluting material could accidently or purposely be added without damage to the chamber top.

It was noted that the connecting pipe work to the two properties from the collecting chamber have been renewed. The old pipe works had been exposed during that process and that there had been two sets of connections previously. These had been originally in steel and later copper. No apparent lead pipe work had been used at any time.

Comment.

The water supply from the identified source is at risk from low precipitation and the feed water should continue to be monitored.

The present security of the site would appear satisfactory as it is.

As potable supply is not an issue the water quality becomes more of academic rather than specific environmental health interest. Care needs to be taken of the resource as it is of fiscal value for all the uses to which it is put.

Harvey Wood.

10th March 2012.



Water Gathering Chamber.
Note padlock.