

From: Stout, Robert [mailto:robert.stout@dnr.mo.gov]
Sent: Thursday, September 25, 2014 8:56 AM
To: Alexander, George
Subject: Fwd: Sigma-Aldrich groundwater exclusion request

George,

In order for the bedrock groundwater zone to be considered suitable for use, it would need to be able to produce 0.25 gallons of water per minute from a 6-inch diameter well and have total dissolved solids of less than 10,000 mg/L. If an on-site well documents that the bedrock groundwater zone were unable to meet these criteria, then that groundwater zone would not be considered suitable for use. Based on the Missouri Well Construction Rules, this site is located in Area 1 and a new bedrock well would require a minimum of 80 feet of casing extending not less than 30 feet into bedrock. Since the total dissolved solids in the groundwater in this area will likely increase with depth, the on-site well must be designed to have a minimal total depth that will produce the minimum amount of water necessary to be considered suitable for use (in other words, the well cannot be drilled deeper in order to cause an increase in the total dissolved solids). Therefore, the well would have to be drilled to a minimal depth below the casing that would produce 0.25 gallons of water per minute. If the total dissolved solids at that point are above 10,000 mg/L, then that groundwater zone would not be considered suitable for use.

Thanks

Robert

From: Alexander, George [mailto:George.Alexander@nrc.gov]
Sent: Friday, September 19, 2014 10:44 AM
To: Stout, Robert
Subject: Sigma-Aldrich groundwater exclusion request

Mr. Stout,

I passed along the Missouri Department of Natural Resources information to Thomas Spencer from Sigma-Aldrich. Sigma-Aldrich is meeting later today to review the information and determine how they are going to proceed with the decommissioning of the site. In a discussion with the licensee earlier today, the licensee was still contemplating installing an onsite well to try to demonstrate that the groundwater is not suitable for domestic use, presumably on the basis of water quality.

Based on the information that you provided, it does not appear to NRC staff that the groundwater pathway can be excluded from consideration. The historical well information from the Fort Mims site provides strong evidence that the well yield is sufficient for domestic or industrial use. The information from GeoSTRAT indicates that in the vicinity of the site, the groundwater quality is consistent with domestic use as the total dissolved solids are less than 1,000 mg/L. However, the possibility seems to exist that site-specific information could indicate that the groundwater at the Fort Mims site is not suitable for domestic use (e.g., total dissolved solids greater than 10,000 mg/L).

In light of the information that you provided, what, if any, additional information would the Missouri Department of Natural Resources require from Sigma-Aldrich to accept the groundwater pathway being excluded from consideration? In other words, if the licensee provided data from an onsite well that: (i) was installed consistent with regional practices and (ii) indicated that well yield and/or water quality were inconsistent with domestic use, would this be sufficient information for the Missouri Department of Natural Resources to agree that the aquifer is not suitable for domestic use?

Thank you for your time,

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