

TAIL



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Sent: Sat 10/17/2009 10:20 AM

From: Dale, Michael, NMENV
To: Paul Huber
Cc: Cobrain, Dave, NMENV; katzman@lanl.gov; Mark Everett; David E. Broxton; Shen, Hai; Woodworth, Lance A.; Ted Ball; robin Reynolds; Kulis, Jerzy, NMENV; Matt Riggs
Subject: RE: Revised well design for R-47
Attachments:

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Paul,

This email serves as NMED approval for the revised R-47 well design as proposed in your email below which was received by NMED on October 16, 2009 at 1:22 pm. This approval is based on the information available to NMED at the time of the approval. NMED understands that LANL will provide the results of preliminary sampling, any proposed modifications to the well design proposed in the above-mentioned email, and any additional information related to the installation of well R-47 as soon as such information becomes available. Due to formation damage from bentonite and cement invasion, R-47 will need additional borehole clean-up, well development, and testing/analysis in order to address this issue. Further corrective action may be required if representative samples cannot be obtained from R-47. We request to meet with you to discuss R-47 Monday morning, preferably by 9 am. As a reminder, an additional well will be required to characterize and monitor the 845 ft perched intermediate aquifer encountered during the drilling of R-47. Please contact me at 661-2673 or 660-1679 if you have questions concerning this approval. Thank you.

Michael R. Dale, NMED HWB

-----Original Message-----

From: Dale, Michael, NMENV
Sent: Fri 10/16/2009 8:57 PM
To: Paul Huber; broxton@lanl.gov
Cc: Cobrain, Dave, NMENV; Kulis, Jerzy, NMENV
Subject: RE: Revised well design for R-47

Paul and Dave,

I was out most of the day so I'm just now getting a chance to look this over. I can first offer that the driller should air-lift as much water as possible in order to remove the bentonite and cement from the saturated zone. Invasion into the saturated zone may have been extreme in this case so the collection of as much data as possible to support the conclusion that most if not all foreign materials were removed will be critical. In terms of data, collect a series of samples during pumping in order to analyze the separated solids for carbonate and clay minerals and dissolved inorganic elements in the water fraction. Once completed, the screened interval will require additional development such as jetting with simultaneous pumping and swabbing with pumping. I'll try to get a response to your approval request by mid-morning. Call my cell at 660-1679 if you need to contact me.

Michael Dale, NMED HWB

-----Original Message-----

From: Paul Huber [<mailto:huberpr@lanl.gov>]

Sent: Fri 10/16/2009 1:22 PM

To: Cobrain, Dave, NMENV

Cc: katzman@lanl.gov; Mark Everett; David E. Broxton; Shen, Hai; Woodworth, Lance A.; Ted Ball; robin Reynolds; Michael Dale; Kulis, Jerzy, NMENV; Dale, Michael, NMENV; Matt Riggs

Subject: Revised well design for R-47

Dave,

As Danny discussed with you last night, we are requesting to change the currently approved well design for R-47 as is proposed in the attached file and are accordingly seeking NMED's approval .

As you know, we encountered an issue with this well during construction in that we determined that the annular fill, which was at a depth well above the screen, experience a collapse such that bentonite located above the filter pack and transition sand slipped down to a level that allowed it to invade the upper portion of the screen. We ceased filling work and began the process to extract the stainless steel well casing. The well casing was successfully recovered and then we began work to recover the original hole by the removing of bentonite and filter pack sand.

We have been doing the recovery work for the past week and are currently nearing its completion. Work to be done over this weekend include the further removal of bentonite seal to a depth of 1290' bgs. Following this, the tri-cone will be tripped out and a jetting tool will be tripped back in on the drill steel. The casing will then be extracted while we do continued jetting at the bore hole wall, periodically lifting the water out. We will work the bore hole wall up to a point above the intended screening interval to ensure we have removed any residual bentonite. If caving occurs, we will drill back to 1290' to ensure we have all the material removed and can successfully build the well.

Following the recovery work, we will run a gamma probe and obtain samples of the water to judge the overall success of the recovery work.

When ready, we would like to use the attached design to perform the

final construction of the well. You will find the well design substantially the same as the design previously approved with the following changes:

The well screen at 1261-1283 ft is 4 ft lower than the original screen interval (1257-1279 ft). The new screen position is located in the same aquifer materials as the previous design and should perform in a similar manner. The 10/20 sand of the primary filter pack extends 5 ft above the well screen (same as previous design) and extends 7 ft below the well screen (2 ft more than the previous design).

The sump is 5 ft long rather than 20 ft long. The shorter sump has the same functionality as the longer sump, but shortening it results in less disturbance of the bentonite in the bottom of the borehole.

The 20/40 transition sand seal is increased in length from 2 ft to 11 ft. The amount of transition sand is increased in the new design to provide additional stability to support the overlying bentonite seal. Because of its fine-grained nature, the transition sand is not as transmissive as the 10/20 sand of the primary filter pack and does not effectively lengthen the well's filter pack.

A cement grout plug (1216-1218 ft) above a sand footer (1218-1220 ft) is added to the well design to provide stable anchor point to support the weight of bentonite in close proximity to the well screen. The more substantial cement plug at 1050-1150 ft is retained from the original design to support the longer column of bentonite in the upper part of the well. Addition of these cement plugs are preventative steps to protect the well screen from bentonite invasion.

If there are any questions, please contact me at 412-7673 or Dave Broxton at 699-0958. If either of us cannot be reached directly, please contact Matt Riggs at 699-3992 as he will be on call over the weekend's work. Matt can help facilitate the communication with either Dave or myself.

Thanks,
Paul

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-----Original Message-----

From: Paul Huber [<mailto:huberpr@lanl.gov>]

Sent: Fri 10/16/2009 1:22 PM

To: Cobrain, Dave, NMENV

Cc: katzman@lanl.gov; Mark Everett; David E. Broxton; Shen, Hai; Woodworth, Lance A.; Ted Ball; robin Reynolds; Michael Dale; Kulis, Jerzy, NMENV; Dale, Michael, NMENV; Matt Riggs

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Paul

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