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Date: February 25, 2009
Refer To: EP2009-0110

James P. Bearzi, Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303



Subject: Status of Regional Aquifer Well R-37 and Request for Deviation from Approved Work Plan

Dear Mr. Bearzi:

This letter provides the current status on drilling of regional aquifer well R-37 and is confirmation of the New Mexico Environment Department's (NMED) approval of Los Alamos National Laboratory's (the Laboratory's) request to deviate from the current work plan (LA-UR-07-7578).

To date, the Laboratory has lost two boreholes at the R-37 location. The two boreholes were unsuccessful at achieving a depth sufficient for installing the well due to problems encountered within a highly fractured and loose zone within the lower portion of the Cerros del Rio basalt. These problems could not be overcome by the drilling methods that were employed in accordance with the NMED-approved drilling work plan. The first borehole was advanced to 1080 feet below ground surface but could not be kept open to either run geophysical tools or complete a well because drill casing could not be advanced through the highly fractured basalt. Groundwater (possibly a perched zone) was first observed at approximately 920 feet at the base of the Cerros del Rio basalt. The top of the regional aquifer is projected to be at 997 feet at this location. The second borehole was advanced to 894 feet before the drill casing broke and stuck the bit within the same highly fractured horizon. The bit and drill string were removed; however, a 12-foot section of drill casing lodged in the hole, preventing further progress. Drilling attempts using both open hole and casing advance air rotary with minor fluid assistance encountered significant issues at the base of the Cerros del Rio basalts. The two boreholes have now been plugged and abandoned.

To optimize the potential for successful completion of R-37, the Laboratory has considered relocation of the well or use of drilling foam, specifically AQF-2, in a larger diameter open hole to facilitate drilling through this challenging section of the basalt. Because perched water was detected at this location and its extent elsewhere in the area is unknown, NMED staff expressed a preference to keep the well at this location. The Laboratory agrees with this position and therefore requested approval to use AQF-2 in an open hole through to the base of the basalt (~920 feet) and received NMED agreement in a telephone conversation between Mark Everett and Jerzy Kulis on

January 29, 2009. Drilling would transition to casing advance with potable water and air from 920 feet to the target depth of 1080 feet.

The Laboratory is working with its drilling subcontractor to examine other drilling equipment options that could further increase the likelihood of a successful well installation. These options include a substantially larger rig than the one that has been used or bringing in a dual-rotary rig. The subcontractor's proposal is expected the week of February 23, 2009, and a decision will be made so that drilling can be resumed as quickly as possible. Laboratory staff will keep NMED advised of the decision and the new date to resume the work.

The Laboratory appreciates the cooperation and consultation NMED staff provided on this challenging matter. If there are any questions, please contact Mark Everett at (505) 667-5931 (meverett@lanl.gov) or Nancy Werdel at (505) 665-3619 (nwerdel@doeal.gov).

Sincerely,

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

David R. Gregory, Project Director
Environmental Operations
Los Alamos Site Office

MG/DG/PH/DK/ME:sm

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