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NEW MEXICO ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

July 14, 2011

George J. Rael
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National Nuclear Security Administration
Los Alamos Site Office
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Los Alamos, NM 87544

Michael J. Graham
Associate Director Environmental Programs
Los Alamos National Security, L.L.C.
P.O. Box 1663, MS M991
Los Alamos, NM 87545

RE: APPROVAL WITH MODIFICATIONS
COMPLETION REPORT FOR REGIONAL AQUIFER WELL R-54
LOS ALAMOS NATIONAL LABORATORY
EPA ID#NM0890010515
HWB-LANL-10-047

Dear Messrs Rael and Graham:

The New Mexico Environment Department (NMED) is in receipt of the United States Department of Energy (DOE) and Los Alamos National Security, L.L.C.'s (collectively, the Permittees) document entitled *Completion Report for Regional Aquifer Well R-54* (Report) dated June, 2010 and referenced by EP2010-0143. NMED hereby approves the Report, with the following modifications.

1. **Section 5.2, Groundwater, page 6:**

   The Permittees state that groundwater was first observed at a depth of 767 feet below ground surface (bgs) with an estimated production capacity of 15 gallons per minute (gpm). The Report also states that after reaching the total drilling depth of 944.5 ft bgs, the water level stabilized at 815 ft bgs, which is 48 ft below the apparent top of saturation at 767 ft bgs. This description suggests that perched

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groundwater is present at or near 767 ft bgs or that a discrepancy exists with respect to determining the top of saturation of the regional aquifer at this location. A review of the Permittees' open-hole video log along the 767 to 783 ft (top of water) bgs interval indicates unsaturated conditions and the absence of free-flowing groundwater. A discussion of this apparent discrepancy should have been presented in the Report. In future submittals, the Permittees must clearly state whether discrepancies exist and attempt to resolve such discrepancies.

2. **Section 8.1.1, Well Development Field Parameters, page 9 and Section 8.2, Aquifer Testing, page 10:**

   During well development and aquifer testing, flow-through cells were not used to measure water quality parameters. This introduces uncertainty with sensitive measurements such as dissolved oxygen and temperature. The direction to use flow-through cells during well development and aquifer testing is documented in other NMED correspondence to the Permittees (e.g., *Approval with Modifications Completion Report for Regional Aquifer Well R-46*, November 24, 2009). The Permittees must use flow-through cells during development and aquifer testing of all new regional and intermediate aquifer wells.

3. **Appendix B, *Groundwater Analytical Results*, Table B-1.2-1, pages B-5 through B-8**

   Dissolved oxygen (DO) results as presented in the table appear to be a combination of DO measurements in concentration units (mg/L) and values that may represent DO saturation in percent units. The reported values ranged from 4.12 mg/L, a value within the range observed in the regional aquifer, to as high as 100.6 mg/L, which is much greater than the possible dissolved oxygen saturation range. DO results that exceed approximately 7.7 mg/L are likely not representative of aquifer conditions at R-54. The Permittees must correct the reported values and send of replacement table.

The corrected table must be submitted to NMED no later than **August 5, 2011**. With the exception of the required replacement table, no other revision of the Report is necessary.

Should you have any questions or comments regarding this approval, please contact Michael Dale at (505) 661-2673.

Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

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