

TA-03 LANL 2002  
State of New Mexico  
**ENVIRONMENT DEPARTMENT**



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JOHN R. D'ANTONIO, JR.  
SECRETARY

**CERTIFIED MAIL  
RETURN RECEIPT REQUESTED**

December 12, 2002

Everett Trollinger, Project Manager  
Office of Los Alamos Site Operations  
Department of Energy  
528 35<sup>th</sup> Street, Mail Stop A316  
Los Alamos, NM 87544

Dr. John C. Browne, Director  
Los Alamos National Laboratory  
P.O. Box 1663, Mail Stop A100  
Los Alamos, NM 87545

**RE: APPROVAL OF WORK PLAN FOR MORTANDAD CANYON  
LOS ALAMOS NATIONAL LABORATORY, NM0890010515  
HWB-LANL-99-023**

Dear Mr. Trollinger and Dr. Browne:

The Hazardous Waste Bureau (HWB) of the New Mexico Environment Department is in receipt of the Work Plan for Mortandad Canyon dated September 1997 (LA-UR-97-3291 and EM/ER:97-388), and the Response to Request for Supplemental Information (RSI) Concerning the Work Plan for Mortandad Canyon dated August 31, 1999 (EM/ER:99-249). With this letter, the HWB approves these documents. However, the HWB has identified deficiencies in the groundwater characterization activities and in the human health and ecological risk approach. LANL shall address the groundwater deficiencies in a separate work plan and develop a risk assessment approach for the final report. The plan shall be submitted to the HWB no later than June 30, 2003. At a minimum, the work plan shall include the following additional activities.



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1. One alluvial monitoring well shall be installed directly upstream from the Mortandad-Effluent Canyon confluence. In addition, LANL shall install one alluvial monitoring well (proposed alluvial well MCO-6.8) and six piezometers, including one nested piezometer set, in the canyon bottom located approximately midway between existing wells MT-3 and MT-4. These wells and piezometers shall be used in conjunction with existing wells and piezometers to determine groundwater flow direction(s) and gradient(s) and to investigate alluvial system groundwater loss to the Cerro Toledo interval at that location.
2. LANL shall replace wells MCO-2 and MCO-3. Immediately following installation of the replacement wells, MCO-2 and MCO-3 shall be abandoned in accordance with the procedures provided in the LANL Order.
3. LANL shall install one alluvial well in Ten Site Canyon approximately 1,000 ft west of the confluence of Mortandad and Ten Site Canyons. LANL shall install a nested piezometer set in the vicinity of the well if groundwater is present in the newly installed well.
4. LANL shall install three monitoring wells in Cañada del Buey upgradient of CDBO-6 to investigate the source of alluvial saturation. At a minimum, the borings shall be advanced to the depth of the vapor-phase notch of the Bandelier Tuff.
5. LANL shall install four monitoring wells between wells CDBO-6 and CDBO-7 to identify the boundaries of alluvial saturation.
6. LANL shall install three wells to the top of the Bandelier Tuff intersecting the alluvial water in the vicinity of R-13.
7. LANL shall install a minimum of ten wells intersecting the intermediate zone groundwater. The wells shall be used to determine the number and extent of intermediate perched saturated zones, the gradients, directions, and velocity of groundwater flow, and the extent of contamination present in each saturated zone. Additional wells shall be installed intersecting the intermediate zones of saturation, as required by HWB, to adequately characterize the intermediate zone groundwater conditions. The wells shall be located as follows:
  - one approximately 0.25 mile downgradient from the TA-50 outfall;
  - one in upper Ten Site Canyon at the location of borehole 35-2028;
  - one approximately 1,000 ft west of the confluence of Mortandad and Ten Site Canyons;
  - one in the vicinity of well MCO-4;
  - one in the vicinity of well R-15;
  - one in the vicinity of well MCO-13;

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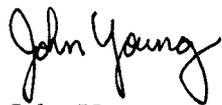
- one in the vicinity of well GS-2 on the south side of the Mortandad Canyon bench;
  - one between wells GS-1 and TW-8;
  - one approximately 1,500 ft east of well PM-5 along the access road to Mortandad Canyon; and
  - one approximately 3,500 ft east of well PM-5 along the access road to Mortandad Canyon.
8. LANL shall replace well TW-8. Prior to abandonment, neutron logging of TW-8 shall be performed. Immediately following installation of the replacement well, TW-8 shall be abandoned in accordance with procedures provided in the LANL Order.
9. LANL shall install one well intersecting the top of the regional aquifer in the vicinity of R-13. In addition, LANL shall install one well intersecting the regional aquifer downgradient from the TA-50 outfall at a location approved by HWB and one in between wells GS-1 and TW-8.

The alluvial groundwater monitoring system shall be designed to detect contamination upgradient and downgradient from the permeable reactive barrier located between wells MCO-4 and MCO-5.

LANL shall also provide the results of the sediment investigations performed in Mortandad Canyon to date. If LANL's Environmental Restoration database is not available on-line by January 31, 2003, LANL shall provide the data in table format and electronically (Microsoft™ Excel) to HWB no later than February 14, 2003. Maps showing sampling locations shall also be provided

Should you have any questions, please feel free to contact me at (505)428-2538 or Darlene Goering at (505)428-2548.

Sincerely,



John Young

LANL Corrective Action Project Leader  
Permits Management Program

JY:dxg

cc: J. Bearzi, NMED HWB  
D. Goering, NMED HWB

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C. Nylander, RRES/WQH, MS K497

N. Quintana, LANL RRES/ER, MS M992

D. McInroy, LANL RRES/ER, MS M992

file: Reading and LANL TA:0 (Groundwater Wells, Ten Site Canyon, Cañada del Buey)