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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

June 24, 2008

David Gregory
Federal Project Director
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

David McInroy
Remediation Services Deputy Project Director
Los Alamos National Laboratory
P.O. Box 1663, MS M992
Los Alamos, NM 87545

**RE: DIRECTION TO MODIFY
SUPPLEMENTAL INVESTIGATION REPORT FOR CONSOLIDATED UNIT
21-018(a)-99, MATERIAL DISPOSAL AREA V, AT TECHNICAL AREA 21,
REVISION 1
LOS ALAMOS NATIONAL LABORATORY (LANL),
EPA ID #NM0890010515
HWB-LANL-08-003**

Dear Messrs. Gregory and McInroy:

The New Mexico Environment Department (NMED) has received the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C.'s (LANS) (collectively, the Permittees) *Response to the Notice of Disapproval for the Supplemental Investigation Report for Consolidated Unit 21-018(a)-99, Material Disposal Area V, at Technical Area 21* (Response), dated April 2008 and referenced by LA-UR-08-2316/EP2008-0171, and the *Supplemental Investigation Report for Consolidated Unit 21-018(a)-99, Material Disposal Area V, at Technical Area 21, Revision 1* (Report), dated April 2008 and referenced by LA-UR-08-2315/EP2008-0172. NMED has reviewed the Response and the Report and directs the Permittees to modify, pursuant to Section III.M.2 of the March 1, 2005 Order on Consent (Order), the Report as follows:

30335



(Comment numbers correspond to the original NOD dated March 4, 2008)

Specific Comments

3. Appendix D, Section D-2.1, VOCs in Pore Gas Samples, page D-2:

NMED Comment:

As stated in NMED's February 20, 2007 letter, an assessment of tritium across the entire Delta Prime Mesa "does not address the more immediate concern of vapor-phase tritium contamination found in the subsurface at MDA V." However, NMED recognizes the benefits of understanding trends in vapor-phase tritium concentrations on Delta Prime (DP) Mesa. NMED therefore requires that a TA-21-wide Vapor-Monitoring Plan (Plan) be submitted no later than July 23, 2008. The Plan must include drilling and installation of a vapor-monitoring well below a depth of 380 feet in the vicinity of borehole location 21-24524 and all other additional vapor-monitoring wells proposed for DP Mesa that will comprise the DP Mesa vapor-monitoring network.

4. Appendix D, Section D-3.1, Monitoring Distribution and Frequency, page D-2 – D-3:

NMED Comment: NMED acknowledges that *in situ* collection of liquid phase samples is impractical in the subsurface at MDA V. However, NMED requires other evidence to support the conclusion that the vapor sample results can be used directly to represent the tritium activity in the liquid pore water.

Because no detailed sampling procedures were provided in the Supplemental Investigation Work Plan, NMED assumes that the reported concentration of 132,100 pCi/L was obtained by collecting subsurface water vapor using silica gel. Dried silica gel is used as a desiccant to remove moisture from the subsurface pore gas, followed by distillation, condensation, collection of water as a liquid, and subsequent analysis for tritium. If the reported value of 132,100 pCi/L (=A) is the direct measured result of tritium (pCi/L of liquid-phase water extracted from water vapor), and if the total collected water weight (=B, kg) and vapor volume (=C, liter) for each sample are measured, the vapor concentration of tritium in the pore gas would be easily calculated ($=A*B/C$). Otherwise, the average absolute humidity in the subsurface gas must be estimated to convert the measured concentration to the vapor phase concentration according to a 1999 Los Alamos National Laboratory (LANL) report (LA-UR-99-1107). The absolute humidity is associated with subsurface vapor temperature and pressure and can be estimated using the formula listed in the following reference, http://www.gorhamschaffler.com/humidity_formulas.htm. Then, an effective Henry's law constant as listed in a LANL report (CMS Report for MDA H, Rev.1, page I-1, ER2005-0020) can be used to calculate tritium concentrations in the liquid pore water. This is a more appropriate way to estimate the vapor concentration of tritium in the subsurface pore gas.

Ultimately, NMED is interested in whether or not the concentrations of tritium in subsurface pore gas would result in concentrations above the groundwater MCL of 20,000 pCi/L if

Messrs. Gregory and McInroy
June 24, 2008
Page 3

vapor-phase tritium partitioned to groundwater. NMED is unable to make this determination based on the Permittees' response. The Permittees must therefore address this issue in the TA-21-wide Vapor-Monitoring Plan as required in comment # 3 above.

The Permittees must submit a TA-21-wide Vapor-Monitoring Plan by July 23, 2008. All submittals (including maps) must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order.

Please contact Kathryn Roberts at (505) 476-6041 should you have any questions.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

cc:

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file: Reading and LANL'08, TA-21 (Consolidated Unit 21-018(a)-99)