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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

April 1, 2011

George J. Rael, Assistant Manager
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3747 West Jemez Road, MS A316
Los Alamos, NM 87544

Michael Graham, Associate Director
Environmental Programs
Los Alamos National Security, L.L.C.
P.O. Box 1663, MS 991
Los Alamos, NM 87545

RE: NOTICE OF DISAPPROVAL
INVESTIGATION REPORT FOR
ANCHO, CHAQUEHUI, AND INDIO CANYONS
LOS ALAMOS NATIONAL LABORATORY (LANL)
EPA ID #NM0890010515
HWB-LANL-11-010

Dear Messrs. Rael and Graham:

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) *Investigation Report for Ancho, Chaquehui, and Indio Canyons* (Report), dated February 2011 and referenced by LA-UR-11-1234/EP2011-0006. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD). The Permittees must address the following comments before NMED can consider the Report further.

GENERAL COMMENTS

1) NMED's review would be greatly facilitated if certain modifications were made to the presentation of the sampling results. Provide maps for each individual reach showing the distribution and extent of contamination, including all analysis results for inorganics and naturally occurring radionuclides above background values, anthropogenic radionuclides

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above fallout values, and detected organic compounds. Provide tables containing these results, not just averages or maximums for each reach. Non-detect results utilized for demonstration that extent has been defined should be included in these tables. In addition, include a "Samples Collected and Analyses Requested" table.

2) Although analyses for dioxins were requested for some surface water samples collected at Ancho, Chaquehui, and Indio Canyons, it does not appear that dioxins/furans were included in the analytical suites for sediment samples, as indicated in Tables C-2.0-1 and C-6.0-1. Due to the nature of activities conducted at Technical Area (TA)-49 (burn site), chemical releases of dioxins/furans are expected to have occurred within Area 6 of TA-49. Although dioxin/furan releases are also expected to have occurred during the 1977 La Mesa Fire, laboratory activities have likely contributed to concentrations of dioxins/furans at Ancho, Chaquehui, and Indio Canyons. As such, one of the objectives of this investigation should be to determine if dioxins/furans related to laboratory activities have migrated into the canyons. The lack of data on concentrations of dioxins/furans at reaches sampled within Ancho, Chaquehui, and Indio Canyons constitutes a data gap for the nature and extent of contamination investigations, and the human and ecological risk assessments. Amend the Report to include analytical data for dioxins/furans in canyon sediments, or propose in a separate work plan collection and analysis of such samples.

3) The USEPA Regional Screening Level (RSL) for mercury (inorganic salts) was utilized for the residential scenario. Clarify whether analytical results speciate mercury, thus justifying the use of the RSL and toxicity data for mercury salts.

4) The tap water screening level (SL) and ecological screening level (ESL) for chromium III were applied in the risk assessments. In contrast, the soil screening level (SSL) for chromium VI was utilized in the human health risk assessment from exposure to canyon sediments. Clarify whether species-specific laboratory results were obtained for chromium and determine whether screening levels for chromium III or chromium VI should be utilized in the risk assessment.

5) It is not clear what explosives were included for analyses; results are only provided for triaminotrinitrobenzene (TATB). It is not clear that TATB would represent all potential explosives that could be present in sediments/surface water. Provide a description of all explosives included in the analyses and justify the inclusion or exclusion of specific explosive compounds in the analyses.

6) It appears that surface water data are limited for certain analytes, as analytical suites were not requested of the lab for many of the surface water samples. In particular, dioxin analyses were only requested of the lab for three samples at two locations. Clarify the rationale for requesting dioxin analyses from limited samples. Determine whether adequate analyses were conducted for surface water.

SPECIFIC COMMENTS

7) **Section 8.1.4, Results of Screening Comparison for Soil, page 32 and Tables 8.1-1 through 8.1-8, HQs, pages 100-107.**

NMED Comment: The rationale for utilizing a hazard quotient (HQ) of 3.0 as a criterion to determine whether COPCs should be retained for further evaluation in the screening level ecological risk assessment is unclear and not justified. LANL's *Screening Level Ecological Risk Assessment Methods Revision 2* (2004) states that an HQ of 0.3 should be used as a criterion for determining ecological COPCs. In addition, NMED's *Guidance for Screening Level Ecological Risk Assessments* (2008) states that an HQ of 0.3 for individual chemicals or a hazard index (HI) of one (1) should be used for determining whether ecological COPCs should be evaluated further in the ecological risk assessment. It is acknowledged that previous assessments where site-specific biota studies were conducted, such as Los Alamos and Pueblo Canyons (LANL 2004, 087390, p. 8-2); Mortandad Canyon (LANL 2006, 094161, p. 96); Pajarito Canyon (LANL 2009, 106939, p. 64); and Sandia Canyon (LANL 2009, 107453, p. 77) utilized a HQ of 3.0 for determining ecological COPCs. Since a site-specific biota study has not been conducted at Ancho, Chaquehui, and Indio Canyons, revise the ecological risk assessment for consistency with guidance. A hazard index of one (1) should be used as the threshold value for determining whether ecological COPCs should be further evaluated in the ecological risk assessment.

8) **Section 8.1.7, Evaluation of Ancho, Chaquehui, and Indio Canyon COPEC Concentrations for Biota Studies, pages 33-37**

NMED Comment: Concentrations of ecological COPCs were compared to concentrations of COPCs from previous biota studies in other canyons at LANL where associated effects information indicated no unacceptable ecological risks. While this comparison may potentially provide relevant information for Ancho, Chaquehui, and Indio Canyons, it should not take the place of a site-specific biota study or a refined ecological risk assessment using the methods outlined in LANL (2004) and NMED (2008). Refinement of the ecological risk assessment may include the use of area use factors, population area use factors, and/or use of lowest-observed adverse effect levels (LOAELs). Comparisons with previous biota studies at other LANL sites could be included as additional evidence in a weight of evidence analysis, for example, at Ancho, Chaquehui, and Indio Canyons. Revise the ecological risk assessment accordingly.

9) **Table 6.2-1, Inorganic COPCs in Ancho, Chaquehui, and Indio Canyon Sediment Samples, page 79**

NMED Comment: The residential SSL for chromium is annotated by footnote "e", indicating that the USEPA RSL was used. It appears that this footnote is incorrect as the

value listed is from NMED (2009). Revise Table 6.2.1 to display the correct source for the chromium SSL.

10) **Table 6.3-1, Inorganic COPCs in Filtered Nonstorm-Related Surface-Water Samples, page 83**

NMED Comment: A water ESL is not listed for chromium. The ECORISK (v.2.5) database lists an ESL of 77 µg/L for chromium and an ESL of 11 µg/L for Chromium VI. Modify Table 6.3-1 to include the water ESL for chromium. It is noted that this omission is not repeated in subsequent tables and does not affect the results of the ecological risk assessment. Revise the table accordingly.

11) **Table 6.4-1, Stormwater Comparison Values, page 93**

NMED Comment: The human health persistent stormwater comparison value for thallium (6.3 µg/L) presented on Table 6.4-1 is inconsistent with the New Mexico Administrative Code (NMAC) surface water standard (0.47 µg/L) listed in Section 20.6.4.900 (J) presented on the following website: http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.htm. Resolve this inconsistency and update Table 6.4-1 to include the correct stormwater comparison value for thallium. Determine if the detected concentrations of thallium in stormwater at Ancho, Chaquehui, and Indio Canyons exceed the NMAC surface water standard of 0.47 µg/L.

12) **Table 6.5.1, Ancho, Chaquihui, and Indio Canyons COPC and Stormwater Summary, pages 95-98**

NMED Comment: Several types of water media were evaluated at Ancho, Chaquehui, and Indio Canyons (i.e., non-storm related surface water, spring water, and stormwater) and compared with different sources of standards. The manner in which the hierarchy of standards is presented and surface water COPCs were screened and identified is difficult to follow. The groundwater screen is not included in the investigation report, and Table 6.5-1 does not indicate which comparison values were applied for each type of media for each analyte. Revise Table 6.5.1 to clearly illustrate the screening values that were used for surface water screening at Ancho, Chaquehui, and Indio Canyons.

13) **Table 8.2-4, Residential Risk Ratios Used to Identify Surface-Water COPCs for Human Health Risk Assessment, Noncarcinogens, page116**

NMED Comment: There is an erroneous footnote in Table 8.2-4. The first time that footnote "a" appears in the table is next to the row heading entitled "Residential SL (µg/L)" indicating that all the values in this row are maximum contaminant levels. Revise the table to display accurate footnotes.

14) Table 8.2-5, Residential Risk Ratios Used to Identify Surface-Water COPCs for Human Health Risk Assessment, Carcinogens, page 117

NMED Comment: Detected concentrations of arsenic in surface water were not included in the risk assessment. It is recognized that arsenic was only detected in filtered surface water samples, and Section 8.2.2.3 explains that detections only in unfiltered samples were included for evaluation in the risk assessment. Because arsenic was identified as a COPC in sediment in the human health risk assessment and was retained for further evaluation, detections of arsenic in filtered surface water samples should be included in the risk assessment. Furthermore, some of the detections of arsenic in filtered surface water (2.9 µg/L and 1.88 µg/L; Table 6.3-1) are greater than the NMED (2009) tap water screening level of 0.448 µg/L. Revise the risk assessment to include detections of arsenic in surface water that were obtained from filtered samples.

The Permittees must address all comments herein and submit a revised Investigation Report by **April 29, 2011**. 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. In addition, submit a redline-strikeout version that includes all changes and edits to the Investigation Report (electronic copy) with the response to this NOD letter.

Please contact Ben Wear at (505) 476-6041 should you have any questions.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

cc: R. Solomon, Acting Director, NMED WWMD
J. Kieling, NMED HWB
D. Cobrain, NMED HWB
B. Wear, NMED HWB
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File: Reading and LANL '11, South Canyons, Ancho, Chaquehui, and Indio Canyons