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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 12, 2010

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Michael J. Graham
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**RE: NOTICE OF DISAPPROVAL
UPPER MORTANDAD CANYON AGGREGATE AREA
INVESTIGATION REPORT
LOS ALAMOS NATIONAL LABORATORY
EPA ID #NM0890010515
HWB-LANL-09-053**

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) *Upper Mortandad Canyon Aggregate Area Investigation Report* (Report), dated September 2009 and referenced by LA-UR-09-6081/EP2009-0441. NMED has reviewed the Report and hereby issues this Notice of Disapproval (NOD).

General Comments

- 1. Section 9.2, Request for Certificates of Completion, Second, Fourth And Sixth Paragraphs, Pages 129 and 130:**

NMED Comment: Requests for Certificates of Completion must be submitted under separate correspondence and not as part of the Report. Statements concerning site risks and the need for further investigation of Areas of Concern (AOCs), Solid Waste Management Units (SWMUs)



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and various Consolidated Units (CUs) are appropriately addressed in either the Conclusions or Recommendations Sections of the Report. The Permittees must remove the requests from this Report and submit the requests (as appropriate) in separate correspondence.

2. Report Data Analysis Sections and Appendix I:

NMED Comment: The intent of this comment is to direct the Permittees to combine information related to data analysis in one section of future reports to facilitate NMED's review of those reports. NMED is currently reviewing the Permittees' December 21, 2009 *Request for Concurrence on Changes to the Format and Content of Investigation Reports Prepared by the Los Alamos National Laboratory* (EP-2009-0688) and will be providing a response letter in the next few weeks. In the future, the Permittees must combine report sections pertaining to data analysis and the content of Appendix I within sections like Section 2.0 through 7.0 of this Report to facilitate NMED's review of the document. Due to the size and complexity of this Report, it is not necessary for the Permittees to revise the Report by combining the information discussed in this comment.

3. NMED Comment: The Report contains a discussion of the identification of contaminants of potential concern (COPCs) for sites that were investigated even though the Report states that investigation is not complete and additional site sampling is necessary. Since additional data will be collected at these sites, evaluation of the COPCs is premature. The new data, when added to the existing database, will require re-evaluation of the COPCs and updates to the statistical evaluations of the datasets. Therefore, COPC selection for those sites was not reviewed at this time. Review of COPC selection for these sites will be completed once the datasets are revised and completed.

4. NMED Comment: In determining the selection of COPCs, if the maximum detected concentration at the site was less than the maximum detected background concentration, the constituent was eliminated as a COPC. This approach is not consistent with the methodology for conducting a site attribution analysis (see also, General Comment 7 below). In addition, using the approach of being less than the maximum background could result in overlooking low level contamination. It is noted that graphical representation of the data are provided, which in most cases confirms that the site data are not elevated when compared to background; however, the Report appears to provide the graphs as a summary of the data and not as a step in the site attribution analysis. If the site concentrations are greater than background, and the graphical data (e.g., histograms and/or box and whisker plots) are used to demonstrate that site data are not elevated compared to background, the Report must include a brief discussion of this analysis and the Permittees must revise the Report accordingly.

5. NMED Comment: NMED notes some incorrect soil screening level (SSL) values in Table 1.6-1 as well as some missing constituents in the table. The Permittees must review the values presented in the table for accuracy and include other constituents and SSL values that were used in evaluating COPCs throughout the Report. For sites where human health and/or ecological risk screening was performed, the Permittees must review the SSL values that were used in the

screening process to ensure that correct SSL values were applied for a particular scenario. For example, the Permittees should compare the SSLs for TCDD[2,3,7,8-] equivalent that are presented in Report Table J-4.2-29 to those presented in Table J-4.2-32. Also, it is not clear from the various site data that speciation information for chromium is available. As such, if the speciation is unknown, or if data are not available to justify speciation, then data for hexavalent chromium must be applied. The Permittees must revise the screening assessments as appropriate. See also Specific Comment 1. below

6. Appendix I, Section I-1.2, Fifth Paragraph, Page I-2:

Permittees' Statement: "Four inorganic chemicals, calcium, magnesium, potassium, and sodium, receive additional consideration if they are detected above their BVs. These inorganic chemicals are essential nutrients that are common in the natural environment. For this reason, they are not identified as COPCs if they are detected above background infrequently or slightly above background concentrations (generally less than 2–3 times the maximum background concentration), particularly if they are not likely to have been associated with historical Los Alamos National Laboratory (LANL or the Laboratory) activities at the site."

NMED Comment: During a conference call on December 2, 2009, LANL and NMED staff representatives discussed how essential nutrients would be addressed in the site attribution analysis. As agreed upon, essential nutrients will follow the same tiered approach as other inorganics. Using an arbitrary amount (two to three times above background) is not an appropriate method to determine whether a constituent is site-related. For essential nutrients, the following process must be followed.

- Compare maximum detected site concentrations to a background reference value (*e.g.*, upper tolerance limit, UTL);
- If the site maximum exceeds the background reference value, and sample size is sufficient, statistically compare the site data set to the background data set using appropriate statistical analyses (*e.g.*, Wilcoxon Rank Sum Test);
- Conduct a graphical analysis of site data and background data (*e.g.*, histograms and/or box and whisker plots);
- Conduct a geochemical analysis of site data to a background reference chemical; and/or,
- Evaluate essential nutrients and compare to recommended daily allowances and/or upper intake limits.

Revise the Report accordingly.

Specific Comments:

1. Table 1.6-1, Soil Screening Levels and Screening Action Levels, Page 287:

NMED Comment: The SSL for Aroclor-1254 under the industrial scenario listed in the

table (1.12 milligrams per kilogram (mg/kg)) is incorrect. The correct value for that constituent/scenario combination is 8.26 mg/kg. Elemental mercury and vanadium are not included in the listings for inorganic chemicals and must be added to the table. Additionally, the SSL for chromium appears to be incorrect and SSLs for both trivalent and hexavalent forms of chromium must be included in the table. The Permittees must correct these SSL values and review the entire table to ensure correct values are used and that all applicable analytes are included in the table. See also General Comment 6. above.

TA-03

2. Report Table of Contents (TOC), Page XIX, and Table 4.14-3, Pages 318 and 319:

NMED Comment: Review of the TOC and Table 4.14-3 (Organic Chemicals Detected at AOC 03-041) indicates the table numbering sequence may be listed incorrectly in the TOC and on the table itself. Other tables associated with AOC 03-041 (Tables 2.14-1, -2, and -4) are numbered differently. The Permittees must review the TOC and the table numbering sequence to verify that the numbering sequence is correct for this AOC, or correct the Report as needed.

3. Section 2.3.4, Delayed Site Investigation Rational, Page 16:

NMED Comment: During a June 19, 2009 meeting with NMED, the Permittees' representatives indicated that data from a Toxic Substances Control Act (TSCA) 1992 cleanup was not available at the time the Upper Mortandad Canyon Aggregate Area Investigation Work Plan (UMCAA IWP) was submitted. The Permittees have subsequently supplied sufficient information to support delaying investigation of AOC 03-003(i) until decontamination and decommissioning (D&D) of building 03-32 is conducted. See also General Comment 5. above and Specific Comment 3. of the March 24, 2008 Approval with Modifications, Investigation Work Plan for Upper Mortandad Canyon Aggregate Area (AWM). Other than acknowledging that Specific Comment 3 of the AWM will be complied with at the time of D&D of building 03-32, no further response to this comment is needed.

4. Section 2.9.4 Delayed Site Investigation Rational, Page 26:

NMED Comment: The Permittees must comply with the sampling and analytical requirements outlined in Specific Comment 10 of the AWM.

5. Section 2.14.4.2, Soil, Rock, and Sediment Field-Screening Results, First Sentence, Page 34:

Permittees' Statement: "No elevated organic vapors were detected during [photo-ionization detector] PID screening of subsurface cores."

NMED Comment: At AOC 03-041, elevated organic vapors (greater than 100 parts per million (ppm)) were noted in Table 1.4-2 at the following locations: MO-604987, 20-21.5 feet, 119 ppm; MO-604988, 1-2.5 feet, 131 ppm; MO-604988, 16-17.5 feet, 127 ppm; and, MO-604988, 26-27.5, 133 ppm. Although none of the samples with elevated readings contained volatile organic compounds (VOCs) at detectable concentrations, the Permittees' statement must be revised to acknowledge the elevated PID readings.

6. Section 2.17.4.4, Nature and Extent of Contamination, Last Paragraph, Page 43:

Permittees' Statements: "The lateral extent of aluminum, chromium, total cyanide, lead, and perchlorate are not defined on the south side of the site." and, "The lateral and vertical extent of all other inorganic, organic, and radionuclide COPCs are defined."

NMED Comment: At CU 03-049(b)-00, chromium concentrations are increasing with depth at sample locations MO-605026 and MO-605031 which indicates the vertical extent of chromium contamination has not been defined on the east side of the site at those locations. Barium and beryllium concentrations are also increasing with depth at sample location MO-605031 which indicates the vertical extent has not been defined for those metals at that location. Lead and nickel concentrations are increasing with depth at sample location MO-605027 which indicates the vertical extent has not been defined for those metals at that location. The Permittees must revise the text statements in the Report to reflect all observed site conditions and propose additional evaluation at CU 03-049(b)-00 to determine the vertical extent of metals at the locations discussed in this comment.

7. Section 9.2, Request for Certificates of Completion, Pages 129 and 130:

NMED Comment: The Permittees requested Certificates of Completion without controls for eleven sites discussed in the Report. The request includes SWMU 03-034(a) which is located in building 03-154 and consists of four underground RLW storage tanks which are each located inside concrete vaults. The RWL tanks were taken out of service in 1985 and have not been reconnected to a replacement waste line installed at that time.

Four soil borings were placed around the perimeter of building 03-154. Based on analytical data from samples collected from the borings, a risk-screening assessment concluded the site does not pose unacceptable human health risks under a residential scenario. The soil samples were collected from depths over 15 feet below ground surface (bgs) so no complete exposure pathways are present at the site and ecological risk screening was not conducted for the site.

Soil samples have not been collected from beneath or immediately adjacent to the RLW tanks or from the concrete floors in the building. In Section 2.12.7 of the Report, the Permittees indicated that investigations performed to-date at the site are not sufficient to fully determine the nature and extent of potential contamination at the site. The Permittees have also indicated that further investigation of the site should be delayed

until such time as buildings 03-154 and 03-29 (also known as the Chemistry and Metallurgy Research building) are decontaminated and decommissioned. Accordingly, NMED cannot consider issuance of a Certificate of Completion (with or without controls) until site risks are fully evaluated at SWMU 03-034(a). See also General Comment 1.

8. Appendix I, Data Review and Assessment, Section 1-2.15.1.1, Inorganic Chemicals in Soil, Fifth Paragraph, First Sentence, Page 1-44:

Permittees' Statement: "Hexavalent chromium, nitrate, and perchlorate were detected in at least soil sample and have no BVs."

NMED Comment: Revise the text to indicate the number of samples the constituents were found in at SWMU 03-049(a).

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9. Section 3.2.4.4, Nature and Extent of Contamination, Last Paragraph, Page 53 and Appendix I, Section I-3.1.5.1, Second Paragraph, Page I-86:

Permittees' Statements: "The lateral and vertical extent of cesium-137 are not defined at SWMU 35-016(g) in the drainage at location MO-605136." and, "Chromium was detected above the BV in the deeper samples at locations MO-604933 and MO-604935, at concentrations of 26.3 and 18.1 mg/kg, respectively. These concentrations are less than twice the maximum background concentration. Chromium was not detected above the BV in the samples at the farthest downslope locations MO-604936 and MO-604937. The lateral and vertical extent of chromium are defined."

NMED Comment: Citing sample location MO-605136 may represent a typographical error; based on the discussion presented in Section I-3.1.5.1, the applicable sample location is likely MO-604937. While NMED agrees that the extent of cesium-137 contamination has not been defined, the Permittees must review the Report figures and tables to confirm the applicable sample location.

At SWMU 35-016(g), chromium is reported at 9.3 mg/kg in the 0-1 foot interval at sample location 35-02386. At adjacent sample location CAMO-09-5978, chromium is reported present at 26.3 mg/kg in the 1.5-2.5 foot sample interval, indicating the vertical extent of chromium contamination has not been identified at that location. Comparison of contaminant concentrations with background values (BVs) or multiples of background values is not appropriate when determining vertical extent; if the concentration is increasing with depth and the highest relative concentration is in the deepest sample interval, vertical extent has not been determined at that location. The Permittees must revise the text statements in the Report to reflect site conditions and discuss the potential need for additional evaluation of chromium at SWMU 35-016(g).

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10. Section 4.2.4.2, Soil, Rock, and Sediment Field Screening Results, First Sentence, Page 58:

Permittees' Statement: "No elevated organic vapors were detected during PID screening of samples."

NMED Comment: At CU 42-001(a)-99, elevated organic vapors (greater than 100 ppm) were noted in Table 1.4-2 at the following locations: MO-605060, 0-0.5 feet, 2,900 ppm; MO-605068, 40-41.5 feet, 386 ppm; MO-605068, 50-51.5 feet, 612 ppm, MO-605288, 0-0.5 feet, 141 ppm; and, MO-605288, 4-4.5 feet, 1,299 ppm. VOCs were not analyzed at locations MO-605060, 0-0.5 feet or MO-605288, 0-0.5 feet. Both sample locations were described as "fill". According to the discussion in the last paragraph of Section 4.2.1 (Site Description and Operational History), SWMU 42-003 (which is included in CU 42-001(a)-99) consisted of a septic system that included a septic tank, a drainline, a filter trench, a tile leach field and an outfall to Mortandad Canyon. The discussion also indicates the septic system may have received solvents, acids, and grease. The Report text must be revised to include a discussion concerning the detected organic vapors at the site and how field decisions were made concerning whether or not to analyze samples for VOCs at locations with elevated vapor readings. The discussion must include an analyses of whether additional site evaluation is needed for VOCs at CU 42-001(a)-99.

TA-48

11. Section 5.3.4.4, Nature and Extent of Contamination, Last Paragraph, Page 65 and Appendix I, Section I-5.2.1.1, Fifth Paragraph, Second Sentence, Pages I-115 and I-116:

Permittees' Statements: "The lateral and vertical extent of all inorganic, organic, and radionuclide COPCs are defined, except for the vertical extent of perchlorate." and, "Mercury is interpreted as being substantially above background, and no further evaluation is necessary."

NMED Comment: Sample locations 48-02133 and MO-604926 had reported mercury concentrations of 22.4 mg/kg and 27.6 mg/kg, respectively. These concentrations are approximately three times higher than the residential SSLs for mercury (7.71 mg/kg) and were found in the 0-0.5 foot interval at each location. In the case of location 48-02133, deeper samples were not collected so the vertical extent has not been determined at that location. The Permittees must consider limited soil removal and sampling to confirm removal of mercury-contaminated soils at these two locations. According to Section 5.3.1 of the Report, approximately 200 rusty flasks were found during an inspection at SWMU 48-002(a) in 1986. Each flask apparently held approximately two quarts of high purity mercury. The Report indicates the flasks had been present since about 1976 and that they were removed in 1989 but the Report does not indicate whether any soil was

removed during flask removal activities. Section 5.3.3 of the Report indicates an expedited cleanup plan was developed for SWMUs 48-002(a and b) and implemented in 1995. The cleanup plan established soil cleanup levels for mercury and polycyclic aromatic hydrocarbons (PAHs) and provided for soil removal activities in an area east of SWMU 48-002(a). The Report does not indicate what the established cleanup levels were, how much soil was removed, or the final disposition of the contaminated soil. The limited, future soil removal action may be proposed as part of Phase II sampling efforts to delineate perchlorate vertical extent and mercury vertical extent at sample location 48-02133.

Residential SSLs are also exceeded for certain PAH compounds at sample locations MO-604921, MO-604924 and MO-604926 (also an elevated mercury location). The Permittees must also consider proposing limited soil removal and confirmation sampling for PAHs at these locations during Phase II sampling efforts.

The areas of elevated mercury and PAH compounds are quite small, with all affected sample locations less than approximately 35 feet from each other according to Report Figures 5.3-2 and 5.3-3.

12. Sections 5.7.4.1, 5.7.4.2, and 5.7.4.3; Discussions Concerning Delayed Investigations, Pages 72, 73, and 74:

NMED Comment: CU 48-004(a)-99 includes SWMU 48-004(a,b,c) which includes sumps and tanks in the basement of the main radiochemistry laboratory (building 48-1). The Permittees have provided documentation to support delaying investigation of the CU until D&D of building 48-1. Information provided by the Permittees includes drawings which illustrate piping, floor drains, and sumps located in the building basement and on the first building floor. A drawing showing the layout of the RLW as it exits from building 48-1 was also provided. The Report indicates that although various sumps located in building 48-1 are no longer active, they function as part of a secondary containment system within the building. Placing borings in the sumps would compromise the integrity of the system. Field notes taken during the June 19, 2009 on-site meeting indicate the Permittees would provide inspection records, photographic documentation of tank integrity, and facility procedures for inspecting and repairing flooring cracks. Section 5.7.1 of the Report indicates the sumps and tanks were last inspected in late-1991 or early-1992. The information requested at the June 2009 meeting is not provided in the Report and must be included in the revised Report.

13. Section 5.8.4.1 Soil, Rock, and Sediment Sampling, First Paragraph, Last Sentence, Page 76:

Permittees' Statement: "Sampling at SWMU 48-005 will consist of the following activities:"

NMED Comment: Subsequent Sections of the Report include discussion of the sampling that was completed in 1997 and 2009. The language may be a carry-over from a previous work plan submittal. Revise the sentence to reflect what sampling was completed as part of the investigation.

In Sections 5.8.5 and 5.8.6 (Summary of Human Health Risk Screening and Summary of Ecological Risk Screening, respectively), the Report discussion is focused on AOC 48-001 rather than SWMU 48-005, while the following Section (5.8.7, Delayed Site Investigation Rational) continues discussion of 1993 sampling results at SWMU 48-005. Review the affected Sections and revise the numbering as needed.

14. Section 5.9.4.2 Soil, Rock, and Sediment Field Screening Results, First Sentence, Page 81:

Permittees' Statement: "No elevated organic vapors were detected during PID screening of samples."

NMED Comment: At SWMU 48-007(a)-00, elevated organic vapors (greater than 100 ppm) were noted in Table 1.4-2 at the following locations: MO-605119, sample intervals from zero to 17 feet had PID readings of 340 to 2,231 ppm, MO-605121, sample intervals from zero to 19 feet had PID readings of 281 to 2,416 ppm, and MO-605122, sample intervals zero to 19 feet had PID readings of 218 to 2,416 ppm. Although only one of the samples with such elevated readings contained VOCs at detectable concentrations (MO-605121, acetone at 0.00795 ppm), other samples collected at intervals where VOCs were detected by PID were not analyzed for VOCs. The Report text must be revised to include a discussion concerning elevated organic vapors detected by field screening and the basis for field decisions made concerning whether or not to analyze samples for VOCs at locations with elevated organic vapor readings.

15. Section 5.12.4.2, Soil, Rock, and Sediment Field Screening Results, First Sentence, Page 88:

Permittees' Statement: "No elevated organic vapors were detected during PID screening of samples."

NMED Comment: At SWMU 48-007(f), elevated organic vapors (greater than 100 ppm) were noted in Table 1.4-2 at the following locations: MO-605097, zero to 0.5 feet, 1 to 2 feet and 3 to 3.5 feet intervals all reported PID readings of greater than 10,000 ppm, MO-605099, 2.5 to 3 feet had a PID reading of 3,275 ppm, and MO-605101, zero to 0.5 feet, 1 to 2 feet, and 3 to 3.5 feet had PID readings of 750, 3,497 and 229 ppm, respectively. The intervals with elevated readings were either not analyzed for VOCs or VOCs were not present at detectable concentrations. The Report text must be revised to include a discussion concerning elevated organic vapors at the site and the basis for field decisions concerning whether or not to analyze samples for VOCs at locations with

elevated vapor readings.

16. Section 5.13.4.1, Soil, Rock, and Sediment Sampling, First Paragraph, Last Sentence, Page 90:

Permittees' Statement: "Sampling at AOC 48-011 will consist of the following..."

NMED Comment: In Section 5.13.4.1, change the tense from future tense to past tense in the last sentence of the first paragraph.

17. Section 5.13.4.1, Soil, Rock, and Sediment Sampling, First Paragraph, Last Sentence, Page 90 and Section 5.13.4.4, Nature and Extent of Contamination, Second Paragraph, Page 91:

Permittees' Statements: "The vertical extent for all inorganic and organic COPCs is defined at AOC 48-011. Lateral extent was not evaluated because only one location was sampled, as directed by the approved work plan (LANL 2008, 100750; NMED 2008, 101110)." and, "Sampling at AOC 48-011 will consist of the following..."

NMED Comment: One sample was approved to determine if a release had occurred at this AOC; it sufficiently defined the vertical nature and extent at that sample location. However, additional sampling is needed at AOC 48-011 to define the nature and extent of contamination at the AOC. The Permittees must modify the Report to reflect that the extent of contamination is not defined at AOC 48-011. Revise the text to indicate past, rather than future, tense to describe the sampling that was performed at the AOC.

18. Section 5.14.5, Summary of Human Health Risk Screening, Page 93, Section 9.2, Request for Certificates of Completion, Fifth Paragraph, Pages 129 and 130 and Appendix J, Risk Assessments, Section J-4.2.6, AOC 48-012 Page J-15:

NMED Comment: AOC 48-012 had a slightly elevated cancer risk for the residential scenario when compared to the target risk level of 1E-05. The risk is primarily driven by the presence of PAHs. It is unclear whether the detections of the PAHs are due to the presence of asphalt or past site activities. A voluntary removal action was completed at this site and additional removal may be warranted. The Permittees must provide additional discussion of site data in the Report concerning whether additional removal may be warranted or if site controls such as limiting the site to industrial use only is justified.

TA-50

19. Section 6.3.4, Delayed Site Investigation Rational, Page 98:

NMED Comment: The Permittees have indicated a process is underway to provide upgrades to the vaults, including replacement of seals which have deteriorated over time,

allowing infiltration of stormwater into the vault/manhole penetrations. The Permittees have not indicated when the upgrades will be completed. The Permittees must provide a schedule for upgrading the vault/manhole seals. Revise the Report as necessary.

20. Section 6.4.1, Site Description and Operational History, Page 99:

NMED Comment: The Report indicates that waste line 67 was plugged in 1975 but the Report does not indicate whether additional waste lines or tanks that are no longer in use at SWMU 50-002(a) have been plugged as directed in the AWM. Revise the Report to include discussion on the status of inactive lines and tanks at the SWMU and provide a schedule for plugging or otherwise abandoning inactive structures as appropriate.

21. Section 6.6.4.3, Swipe Sampling Analytical Results, Page 102, Section 6.6.7, Delayed Site Investigation Rational, Page 103 and Section 8.1.5, TA-50, Page 126:

NMED Comment: The Permittees have provided sufficient documentation to support delaying investigation of AOC 50-002(d) until D&D of the TA-50 RLWTF by providing additional information on construction details and noting that area access is very difficult due to space and utility concerns. However, the Permittees state that the nature and extent of contamination is defined at AOC 50-002(d). It is not clear how the Permittees made this determination based on analyses of four swipe samples. The site has never been characterized. NMED noted that swipe samples collected at AOC 50-002(d) contained several metals and PAHs in addition to Aroclor-1260. The Report indicates that since the tank was only used to store nitric acid and the detected swipe sample inorganic and organic contaminants from the sump below the tank "...are unrelated to AOC 50-002(d)." While this assertion may or may not be the case, no discussion of the source of the contaminants is provided. The future site investigation work plan to define the nature and extent of site contamination must include proposed analyses of nitrate, nitrite, target analyte list (TAL) metals, polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs), gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium.

22. Section 6.8.4.2, Soil, Rock, and Sediment Field-Screening Results, Page 105, Table 6.8-2, Inorganic Chemicals above BVs at Consolidated Unit 50-004 (a)-00, Page 511, and Appendix B, Deviations from Work Plan, Section B-8.0, Page B-5:

Permittees' Statement: "No elevated organic vapors were detected during PID screening of samples."

NMED Comment: At CU 50-004(a)-00, elevated organic vapors (greater than 100 ppm) were noted in Table 1.4-2 at the following locations: MO-605625, 15 to 17 feet, 139 ppm and MO-605625, 20 to 21.5 feet, 115 ppm. Although VOCs were not reported present in either sample interval, the Report text must be revised to discuss the observed, elevated PID readings in the samples and provide the basis for field decisions that were

made concerning whether or not to analyze samples for VOCs at locations with elevated vapor readings.

Soil, sediment, and Qbt background values reported in the Table 6.8-2 for magnesium, manganese, mercury, nickel, nitrate, perchlorate, potassium, selenium, silver, thallium, vanadium, and zinc are incorrect. For example, the sediment background value for nickel is reported as 2,370 mg/kg while the correct value is 9.38 mg/kg. The Permittees must revise this table (and any other table with incorrect values) with correct background values.

The Permittees refer to sampling locations 4a-12, 4a-15, 4a-17, 4a-19, and 4a-30 through 4a-33 in the text and in Table B-8-0-1. The Permittees were not able to collect samples at these locations due to the presence of utilities and various safety concerns. These locations are not depicted on Figure 6.8-1 of the Report or on Figure 6.8-1 (Proposed Sampling locations at Consolidated Unit 50-004(a)-00) of the revised UMCAA IWP. Table 1.4-3 of the Report which provides the cross walk between proposed and sampled locations does not provide the information because samples were not collected. Without knowledge of locations where samples were proposed but not collected, it is difficult for NMED to determine if investigation is complete at CU 50-004(a)-00. The Permittees must provide a figure that depicts the locations where samples were proposed but could not be collected.

23. Appendix I, Radionuclides in Sediment, Section I-6.8.3.3, Page I-191:

NMED Comment: The Permittees state that at SWMU 50-006(a) americium-241 was detected in 37 sediment samples, with a maximum sample concentration of 2.844 pCi/g. Review of the data indicates that it was detected at concentrations of 4.172 pCi/g and 3.219 pCi/g at locations 50-06561 and 50-06563, respectively. Similarly, maximum sample concentration for plutonium-239/240 is 19.51 pCi/g (at location 50-06563), not 12.815 pCi/g as reported. The Permittees must revise the text accordingly.

24. Section 6.10.5; Summary of Human Health Risk Screening, Pages 111 and 112 and Section J-4.2.7, SWMU 50-006(c), Page J-15::

NMED Comment: SWMU 50-006(c) has an elevated residential cancer risk for the residential scenario. The primary risk drivers are PAHs. In addition to an elevated cancer risk, the radiological dose for both the industrial worker and the resident exceeded the target dose level of 15 millirem per year (mrem/yr). This also results in excess cancer risk in the residential scenario. Additional site evaluation is necessary if Corrective Action Complete without controls is the desired site status; otherwise, the site must be limited to industrial use only.

Several inconsistencies were noted between the text and Tables J-4.2-29 and J-4.2-30. For example, the total excess cancer risk and the Hazard Index (HI) under the industrial

scenario are 4×10^{-6} and 0.001, not 5×10^{-6} and 0.003, respectively. The Permittees must revise the text accordingly.

25. Section 6.15.4, Delayed Site Investigation Rational, Pages 117 and 118:

NMED Comment: The Permittees have provided some documentation to support delaying investigation of AOC 50-010 until D&D of the TA-50 facility. NMED noted that the floor drains in room 34B of building 50-1 and the connected piping that goes to a large tank in vault building 50-2 are no longer in use. Photos provided by the Permittees (Appendix C, C-13 a, b, and f) show an open floor drain located next to various containers and drums that are stored on secondary containment pallets. While NMED does not object to delay of investigation at this AOC, the revised Report must provide a schedule for plugging the floor drains in room 34B of building 50-1 and describe how the drains will be plugged. Alternatively, the Permittees must provide documentation indicating why the floor drains cannot or should not be plugged.

26. Section 6.16.3, Summary of Previous Investigations for SWMU 50-011(a), Page 118:

NMED Comment: The Permittees state that Phase I RFI activities were conducted at SWMU 50-011(a) in 1994, the data were presented in the RFI report, and no metals or radionuclides were detected above BVs. It is not clear if some of the data from 42 samples (six depths from seven locations) collected in 1994 is included in Table 6.16-1. Table 6.16-1 only reports data for seven samples collected from four locations. The Permittees must clarify if data from the 1994 investigations was of decision level quality and is included in the Report. Also provide information concerning the time-frame that samples with the "AAC0XYZ" designation were collected.

In October 2004, two boreholes were drilled (sampling locations 50-23548 and 50-23549) and three samples were collected from each borehole. Table 6.16-1 reports samples collected from only two depths for each location. The Permittees must provide an explanation for excluding data from the risk screening evaluations.

The Permittees refer to four samples collected from location 50-24250. The data are discussed in the text but were not included in Table 6.16-1 and the risk screening evaluations did not include data from this location in Table 6.16-1.

In Specific Comment 60 of the March 28, 2008 AWM, the Permittees were directed to provide documentation in the Report that describes the removal of the seepage pit and presents the results of post-removal confirmation sampling. The Permittees must provide the requested information in the revised Report, or explain why the work was not conducted and provide a work plan and proposed schedule for collection of the additional data.

27. Section 6.16.5.4, Nature and extent of Contamination, Page 120:

NMED Comment: In the revised UMCAA IWP, the Permittees proposed to delay investigation of SWMU 50-011(a) until D&D of the RLWTF. The Permittees did not collect any additional samples in 2009. No data have been collected from beneath the former septic tank, inlet or outlet pipes. The nature and extent of contamination is not defined for the SWMU. The Permittees must collect additional samples to define the nature and extent of contamination. The Permittees may defer the investigation until D&D of the RLWTF. Revise the Report accordingly.

28. Section 8.0, Conclusions, Pages 125 through 128 inclusive:

NMED Comment: Revise all subsections as appropriate based on the General and Specific comments in this NOD.

29. Appendix B, Field Methods, Section B-3.1, Field Screening for VOCs, Last Sentence, Page B-1:

Permittees' Statement: "The screening results are presented in Table 4.5-1 of the investigation report."

NMED Comment: According to the Report TOC, there is no Table 4.5-1 in the Report. The screening results are summarized in Table 1.4-2 of the Report, starting on page 257. Revise the statement to reference the correct table number.

30. Appendix I, Section I-1.2.1, Third And Fourth Paragraphs, Page I-3:

Permittees' Statements: "The standard set of tests is run whenever the detection rate for both the site data set and the Laboratory background data set is greater than 50%; if there are fewer than 50% detections in either set, then the Gehan test is not applicable." (emphasis added by NMED) and, "If the Gehan test is not applicable because either the site or background data set includes more than 50 percent nondetects, the quantile test is performed first.

NMED Comment: The Gehan test uses a modified ranking of sample results to accommodate non-detected values together with detected values, and then applies the Wilcoxon rank-sum test. The Gehan test is recommended when non-detects are relatively frequent (greater than 10% and less than 50%), but not if either of the two data sets has more than 50% non-detects. Therefore, the step wise approach described in the report appears to contradict the applicability of the Gehan test. Revise the Report to include a step-by-step description of the statistical procedures applied to the investigation data. See also: Gehan, E.A., 1965, *A Generalized Wilcoxon Test for Comparing Arbitrarily Singly-Censored Samples*. *Biometrika* 52.1 and 52.2: pp. 203-223; and, Millard, W.P. and S.J. Deverel. 1988, *Nonparametric Statistical Methods for Comparing*

Two Sites Based on Data with Multiple Nondetect Limits. Water Resources Research 24-12: 2087-2098.

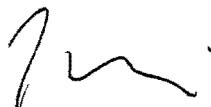
31. Appendix I, Nature and Extent of Inorganic COPCs, Section I-6.8.5.1, Page I-193:

NMED Comment: The Permittees state that the lateral and vertical extent of nickel is defined. The maximum detected concentration of nickel (58.9 mg/kg) was from the most distant sample point location in the canyon. Detected concentrations of nickel increased down slope; therefore, the lateral extent of nickel is not defined. The Permittees must revise the text to reflect site conditions.

The Permittees must address these comments and submit a revised Report by February 15, 2010. As part of the response letter that accompanies the revised Report, the Permittees shall include a table that details where all revisions have been made to the revised Report and that cross-references NMED's numbered comments. 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. The Permittees must submit a redline-strikeout version that includes all changes and edits to the Report (electronic copy) with the response to this NOD.

Please contact Daniel Comeau at (505) 476-6043, if you have any questions.

Sincerely,



James P. Bearzi
Chief
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