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CERTIFIED MAIL
RETURN RECEIPT REQUESTED

July 14, 1997

Mr. G. Thomas Todd, Area Manager
Department of Energy-Los Alamos Area Office
528 35th Street, Mail Stop A316
Los Alamos, New Mexico 87544

Dr. Sigfried Hecker, Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop A100
Los Alamos, New Mexico 87545

Dear Mr. Todd:

RE: Notice of Deficiency: RFI Report for Potential Release Sites (PRSS) 15-004(a-d,f), 15-007(b), 15-008(a,b), 15-009(e,j), 15-012(b), C-15-004 located in former Operable Unit 1086, Field Unit 2 Technical Area 15, dated November, 1995
LANL [NM 089 0010 515]

The New Mexico Environment Department (NMED) Hazardous and Radioactive Materials Bureau (HRMB) has completed its review of the captioned RCRA Facility Investigation (RFI) Report (dated November, 1995) and found it to be deficient. Attachment B lists the deficiencies identified during the review of this RFI Report. Attachment A details modifications requested to the US Environmental Protection Agency (EPA) approved Workplan. Please note that Attachment A is **not** a list of deficiencies for the approved Work Plan. LANL must address both the Workplan modifications (Attachment A) and the deficiencies (Attachment B) within thirty (30) calendar days of receipt of this letter.

Also, LANL stated in Section 4.5.3.2 of the report that further evaluation of PRS 15-008(b) would be included in the R-44 firing site report to be submitted by May 22, 1996. HRMB has no record of submittal of this report. LANL is required to submit this report within thirty (30) calendar days of receipt of this letter.



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Mr. Todd and Dr. Hecker
July 14, 1997
Page 2 of 2

Should you have any questions concerning this letter, please contact either myself or Mr. John Kieling, HRMB's LANL Facility Manager, at (505) 827-1558.

Sincerely,



Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau

BJG:mjc

cc w/ attachments:

R. Dinwiddie, NMED HRMB	T. Baca, LANL EM-DO, MS J591
T. Davis, NMED HRMB	J. Jansen, EM/ER, MS M992
J. Kieling, NMED HRMB	T. Glatzmeier, DDEES/ER, MS M992
J. Parker, NMED DOE OB	D. McInroy, EM/ER, MS M992
S. Yanicak, NMED DOE OB, MS J993	T. Taylor, LAAO, MS A316
M. Leavitt, NMED GWQB	H. LeDoux, LAAO, MS A316
G. Saums, NMED SWQB	M. Johansen, LAAO, MS A316
	D. Neleigh, EPA, 6PD-N

FILE: Reading and HSWA LANL 2, 1086, 15

TRACK: LANL, 7-3-97, N/A, DOE/LANL, HRMB/MJC, RE:, File:

ATTACHMENT A

WORKPLAN MODIFICATIONS

1. LANL must explain why organic analyses were not conducted for PRSS 15-004(a,d), 15-004(b,c), 15-004(f) and 15-008(a). HRMB recognizes that the RFI Work Plan does not specify organic analyses for these PRSSs, but the Work Plan is deficient in providing a basis for this.
2. HRMB recognizes that the RFI Work Plan does not specify sampling the 6 to 18 inch interval, or in most cases a maximum depth to be sampled, but the Work Plan is deficient in this respect. LANL must give a detailed explanation as to how this sampling scheme serves to define the vertical extent of contamination.
3. The conceptual model developed in the RFI Work Plan (LANL 1993, 1087) indicated that erosion by surface runoff and aerial resuspension were the principal migration pathways at these PRSSs. Unfortunately, the conceptual model is deficient in discussing possible migration to groundwater. Reference Section 4.2.3; "In general, transport of contaminants through the unsaturated zone to groundwater **probably** [emphasis added] is not a pathway of immediate concern at TA-15." Reference further Table 4.2-1; "Ephemeral aquifers **may** [emphasis added] exist in Water and Potrillo canyons but are unlikely to receive **large** [emphasis added] quantities of contaminants from TA-15." This language is vague, and inconsistent with Section 3.6.1 discussing the Potrillo Canyon discharge sink; "Because of the large volume of streamflow (up to a million gallons per event) that infiltrates into this rather small area (less than 150,000 m²), this area potentially could be an area for potential recharge of the main aquifer along the Pajarito Plateau." With no groundwater monitoring included in this report, there is no way of determining if ground water has been effected. LANL shall include a discussion of plans for ground water monitoring at TA-15.

ATTACHMENT B

List of Deficiencies

RFI Report for Potential Release Sites (PRSs) 15-004(a-d,f), 15-007(b), 15-008(a,b), 15-009(e,j), 15-012(b), C-15-004 located in former Operable Unit 1086, Field Unit 2, Technical Area 15, Los Alamos National Laboratory

General Comments:

1. LANL shall provide a description of analyses, instrumentation and QA/QC procedures used in the mobile field labs and with field instrumentation.
2. The use of tolerance intervals is an alternate approach to the analysis of variance in determining the presence of statistically significant contamination. A tolerance interval is constructed from data obtained from (uncontaminated) background soil locations. The concentrations from the site investigations are then compared with the tolerance interval. If the site constituent concentrations fall outside the tolerance interval, statistically significant contamination is evinced. Tolerance intervals may be used for determining statistically significant contaminant concentrations; however, the following criteria must be met and documented:
 - The presence of homogeneous soil types must be verified. The use of Upper Tolerance Limits (UTLs) is appropriate for sites that overlie extensive homogeneous geologic deposits (e.g., thick homogeneous lacustrine clays) that do not naturally display geochemical variations.
 - The tolerance interval must be calculated using an adequate data set (minimum of 8 data points).
 - Calculated UTLs must be compared to human health and ecological screening values to determine their relevance.
 - For adequate review, the Administrative Authority (AA) must be provided the entire data set (including non-detectable concentrations) used to perform the statistical analysis and the type of statistical analysis performed.
 - For adequate review, the AA must be provided all background data points.
 - Variability within each data set must be defined (i.e., minimum and maximum constituent concentrations, average

constituent concentration value and the standard deviation).

- A normality test must be applied to the data set prior to the derivation of a UTL.
- The data set must be inspected for outliers (i.e., unusually high or low values) and their identity and source (such as analytical laboratory transcription errors) should be documented.

If these criteria are met, LANL must recalculate UTLs based on the 95 percent confidence level of the 95th percentile of distribution [USEPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities - Interim Final Guidance*, NTIS PB89-151047]. If these criteria cannot be met, LANL must calculate the background concentration based on the 95 percent upper confidence level of the arithmetic average concentration.

3. LANL shall provide a description of instrumentation, calibration procedures, employee training and QA/QC procedures used with the HE Spot Test kit.
4. The conceptual model developed in the RFI Work Plan (LANL 1993, 1087) indicated that erosion by surface runoff and aerial resuspension were the principal migration pathways at many of these PRSs. Also, Table 4.2.2; SUMMARY OF GENERAL DATA NEEDS FOR THE TA-15 OU RFI in the RFI Work Plan identifies the following objectives; "Identify any migration of contaminants at each PRS.", and "Determine contaminant fate and transport." In light of this it is difficult to understand why surface runoff migration pathways and fate and transport of contaminants were not investigated in this report. This report can not be considered complete until these required investigations have been addressed by LANL.
5. The report indicates soil samples were collected using a hand auger. Were samples collected from the disturbed auger cuttings or was a core barrel or split spoon advanced beyond the bottom of the auger hole to collect an undisturbed sample?
6. This RFI Report presents qualified data to the extent that HRMB must question the QA/QC procedures used, and the validity of both the results obtained and the resulting data analyses. The only quantified example from the report text is as follows; "Holding times for approximately 90% of the high explosives (HE) samples in PRS-004(b,c) and PRS 15-004(f) were missed." This is unacceptable. LANL shall identify the source of these results (fixed lab, mobile lab, etc.), explain the cause of the QA/QC problems, and detail measures to ensure

that these problems do not reoccur.

- 6a. LANL shall include in the Report a tabular summary per constituent of the qualified data, including but not limited to the percent of qualified results, number of qualified results, total number of samples, and the source of the data, such as fixed lab, mobile lab, etc. Also, the sections of the report which discuss data analysis shall include summary discussions of the above topics.
7. LANL must resample all samples with analytical results that are "R" qualified, as well as all samples with low bias which may be present in concentrations greater than background.
8. In the data evaluation sections of the report, LANL describes the contamination levels as being "of concern" to human health or not. It is inappropriate for LANL to dictate what levels of contamination are "of concern" to the citizens of New Mexico. LANL will revise this language accordingly.
9. LANL must clarify which land use scenarios were used to generate SALs for each of the Multiple Chemical Evaluations (MCEs) performed in this report. LANL shall base its SALs on U.S. Environmental Protection Agency (USEPA) Region IX *residential* Preliminary Remediation Goals (PRGs). In addition to performing the MCE based on residential risk, LANL may present an evaluation of risk based on a most likely exposure scenario. In response to this NOD comment LANL shall submit a table of revised SALs, SALs applied in the RFI report, and discuss any resulting differences which may effect the decisions made in this RFI report.
10. LANL shall not use field instrumentation or historical data to determine the areal extent of contamination. When field instrumentation is used for screening LANL shall provide assurances (such as detection limits and calibration records) that appropriate Quality Assurance/Quality Control criteria were adhered to. LANL must also obtain confirmatory samples from a fixed lab when using field screening.
11. All tables which give sampling data must specify the source of that data (e.g., fixed lab, field lab, field instrumentation), and the level of QA/QC associated with each result.
12. In the data evaluation sections of the report, LANL describes the contamination levels as being "of concern" to human health or not. It is inappropriate for LANL to dictate what levels of contamination are "of concern" to the citizens of New Mexico. LANL will revise this language accordingly.

Specific Comments:

Please note that text from the report is italicized, responses are in normal font.

CHAPTER 1: INTRODUCTION

1.2: RFI Overview

1.2.1: PRS 15-004(b,c), Firing Site A-B, Page 1-5

"The conceptual model developed in the RFI Work Plan (LANL 1993, 1087) indicated that erosion by surface runoff and aerial resuspension were the principal migration pathway at these PRSs."

1. See Attachment A, Comment 3.
2. See General Comment 4.

1.2.3: PRSs 15-004(f), 15-008(a), 15-009(e) and AOC-15-004: E-F Aggregate Page 1-8

"For the septic tank, the principal migration pathway would be release from the tank and migration through the soil vadose zone."

3. The soil under the septic tank and associated piping and outfall must be investigated.

1.3: Field Activities, Page 1-16

"Use of a remote-controlled drill rig was required by Laboratory policy because of the potential presence of HE in the soil. This rig was not powerful enough to drill completely through the mounds to the soil/tuff interface. The deepest it was able to penetrate was 16.5 ft, approximately 4 ft above the soil/tuff interface."

4. Were any samples taken at the 16.5 ft depth that the remote drill rig was able to reach? This is not made clear in the report.
5. Since no positive HE sampling data was reported for this PRS, can the sampling specified in the Work Plan now be attempted by a drill rig capable of reaching the soil/tuff interface?

"The NOD to the RFI Work Plan (LANL 1993, 1087) called for three samples to be collected from each debris pile at PRS 15-008(a), with one sample at depth. The sampling team collected three samples at each debris pile, all to the soil/tuff interface."

6. Please clarify why all samples were collected to the soil/tuff interface.

"All fourteen surface samples were collected; however, refusal of the hand auger occurred at eight locations, so only six subsurface samples could be collected."

7. See General Comment 5.

"The fourth deviation was in reference to the NOD issued by the EPA for the RFI Work Plan (LANL 1993, 1087) for AOC C-15-004:..."

8. Please clarify what the deviation is here.

"The area just below the support structure that held the transformers is on a very steep slope towards the bottom of a drainage, so any contamination that may have been present in the past is unlikely to have remained there."

9. LANL shall explain why the surface migration pathway of the COPC has not been investigated to determine if PCBs have been released. See General Comment 4.

1.3.1 through 1.3.6: Pages 1-18 and 1-19

10. No information is given on calibration, QA/QC or employee training. See General Comment 1.

CHAPTER 2: ENVIRONMENTAL SETTING

2.2.1: General Geology, Page 2-1

"In the absence of additional structures, such as faults and fractures, the horizontal uniformity in rock type implies relative uniformity in surface hydrologic and geologic properties throughout the area."

11. The report does not demonstrate that there are no faults and/or fractures in the area. Further, this statement is contradictory to the Work Plan Section 3.4.2; "The fault planes (Rendija Canyon and Guaje Mountain) or, perhaps, more feathered fracture patterns may be reasonably thought to lie beneath TA-15." Hydrologic and geologic properties must be demonstrated, not implied. LANL shall explain this inconsistency, and present any updated geological information on TA-15.

2.2.3: Sedimentation and Erosion, Page 2-3

"Sediment accumulation in excess of three feet from a single event have been measured in the active channel in Potrillo Canyon east of OU 1086."

12. The possible impacts to Potrillo Canyon from these SWMUs have not been investigated. LANL must sample channel sediments and stormwater events to determine fate and transport of contaminants from TA-15. See General Comment 4.

2.3.1: Surface Water, Pages 2-3 and 2-4

"Four separate watersheds, each with an established stream-channel drainage network, are present within OU 1086...All surface water transport of contaminants at OU 1086 ultimately will flow into one of these four canyons."

13. Given this inevitability, the fate and transport of contaminants from OU-1086 to the canyons must be investigated. The investigation of these SWMUs cannot be considered complete until the possible impacts to the canyons is determined. See General Comment 4.
14. The hydraulic sink in Potrillo Canyon has not been addressed. Until the role of the hydraulic sink as a possible contaminant pathway to a perched intermediate zone, should it exist, or to the regional aquifer has been determined, the investigation of OU 1086 cannot be considered complete. See Attachment A, Comment 3.

2.3.2: Groundwater, Page 2-4

"Saturated groundwater occurs in three modes on the Pajarito Plateau: shallow, alluvial groundwater bodies in canyon bottoms; isolated perched horizons in conglomerates and basalts at depths between 120 and 200 ft; and the main aquifer underlying the entire plateau."

15. This generalization is not adequate to characterize the geohydrology of OU 1086. Without monitor wells, the hydrogeology of the area and the possible effects to shallow ground water, or pathways to the regional aquifer (identified as the "main aquifer" in this section of the report) cannot be known.

CHAPTER 3: APPROACH TO DATA ASSESSMENT AND ANALYSIS

Table 3-1: PRS 15-004(a,d), Page 3-2

"Arsenic recoveries low by a factor of 5.6 relative to the nominal value for the QC sample. Low bias of arsenic indicates that arsenic may be at concentrations greater than background, and data are considered suspect."

16. LANL must resample this PRS for arsenic.

"Data qualified as R. Recommended holding time exceeded."

17. LANL must resample this PRS for mercury.

Table 3-2: PRS 15-004(b,c), Page 3-3

"Arsenic recoveries low by a factor of 5.6 relative to the nominal value for the QC sample. Low bias of arsenic indicates that arsenic may be at concentrations greater than background, and data are considered suspect."

18. LANL must resample this PRS for arsenic.

"Data qualified as R. Recommended holding time exceeded."

19. LANL must resample this PRS for high explosive.

Table 3-3: PRS 15-004(f), Page 3-4

"Data qualified as R for antimony."

20. LANL must resample this PRS for antimony.

"Low bias of cadmium indicates that cadmium may be at concentrations greater than SAL for two samples, and data for these samples (indicated by *) are considered suspect."

21. LANL must resample this PRS for cadmium.

"Data not qualified. Recommended holding time exceeded. Samples received at laboratory at temperatures greater than recommended. Data considered suspect and not usable."

22. LANL must explain why this data is not qualified as R. LANL must resample this PRS for mercury.

Table 3-3: PRS 15-004(f), Page 3-5

"Data qualified as R. Tetryl recovery below acceptable recovery for QC sample."

23. LANL must detail how low tetryl recovery affects sample results, and resample the appropriate constituents.

Table 3-3: PRS 15-004(f), Page 3-6

"Data qualified as R. Recommended holding time exceeded."

24. LANL must resample this PRS for mercury.

Table 3-4: PRS 15-007(b), Page 3-7

"Data qualified as R. Surrogate recoveries less than acceptable limits."

25. LANL must detail how low surrogate recovery effects sample results, and resample the appropriate constituent.

Table 3-5: PRS 15-008(a), Page 3-8

"Data qualified as R. Recommended holding time exceeded."

26. LANL must resample this PRS for mercury.

"Data qualified as R for antimony."

27. LANL must resample this PRS for antimony.

"Low bias of cadmium indicates that cadmium may be at concentrations greater than SAL, and data are considered suspect."

28. LANL must resample this PRS for cadmium.

"Data qualified as R. Teteryl recovery below acceptable recovery for the QC sample."

29. See Specific Comment 23.

Table 3-6: PRS 15-008(b), Page 3-9

"Data qualified as R. Recommended holding time exceeded."

30. LANL must resample this PRS for mercury.

Table 3-7: PRS 15-009(e), Page 3-10

"Data qualified as R. Recommended holding time exceeded."

31. LANL must resample this PRS for mercury.

"Data qualified as UJ or J. Recommended holding time exceeded by a few days. Data considered valid."

32. LANL must;
- (a) specify by how many days the recommended holding time was missed; and
 - (b) provide the guidance detailing by how many days a holding time must be missed before data is qualified as R; or

(c) LANL must resample this PRS for beryllium and lead.

3.1.1: Inorganic Analyses, Pages 3-12 and 3-13

[for PRS 15-004(a,d)], and [for PRS 15-004(b,c)]

"These data indicate that arsenic may be at concentrations greater than background, and the data are considered suspect. However, arsenic is not considered to be present as a result of activities at this site."

33. Please clarify how the conclusion that arsenic is not present was reached.

[for PRS 15-004(f)]

"...data usability was affected for some antimony samples as a result of low percent recovery in the blind QC sample. These data were unusable. Data usability was affected for two cadmium samples as a result of low percent recovery in the matrix spike. These data indicated that cadmium may be at concentrations greater than its SAL, and the data are considered suspect. Mercury data for twelve samples were also considered unusable because the holding time was exceeded."

35. LANL must resample this PRS for antimony, cadmium and mercury.

[for PRS 15-008(a)]

"...data usability was affected for two cadmium samples as a result of low percent recovery in the matrix spike. These data indicated that cadmium may be at concentrations greater than its SAL, and the data are considered suspect. Data usability was affected for two antimony samples as a result of low percent recovery in the blind QC sample. These data were unusable. Mercury data for two samples were also considered unusable because the holding time was exceeded."

36. LANL must resample this PRS for antimony, cadmium and mercury.

[for PRS 15-008(b)]

"...mercury data for five samples were unusable because the holding time was exceeded."

37. LANL must resample this PRS for mercury.

[for PRS 15-009(e)]

"Two mercury samples were unusable as a result of exceeding holding times."

38. LANL must resample this PRS for mercury.

3.1.2: Organic Analyses, Page 3-13

"Some of the volatile and semivolatile organic data from PRS 15-007(b) were affected by QA/QC issues (Table 3-4). For the acid semivolatiles in three samples, data were unusable as a result of low surrogate recoveries."

39. See Specific Comment 25.

3.1.4: High Explosives Analysis, Page 3-14

"Holding times for approximately 90% of the high explosives (HE) samples in PRS 15-004(b,c) and PRS 15-004(f) were missed."

40. HRMB respectfully suggests that the submittal of reports such as this with gross QA/QC problems is in the interest of neither DOE/LANL nor the State of New Mexico. Limited resources would be better served by the submission of reports with quality data.

3.2: Screening Assessment Methodology

3.2.2: Screening Action Levels Comparison/Other Standards Page 3-15

"The Laboratory has adopted the U.S. EPA's Region IX Preliminary Remediation Goals (PRGs) as soil SALs for comparative purposes."

41. See General Comment 9.

3.2.3: Ecological Screening Assessment Methodology

3.2.3.1: Ranking of Landscape Condition and Receptor Accessibility to COPCs, Page 3-21

"If the potential for access by receptors is highly unlikely, then the accessibility is scored as zero."

42. LANL must provide additional rationale for a score of zero for potential accessibility by biological receptors. Unless a PRS is totally enclosed, a "potential" accessibility would exist for receptors.

3.3: Risk Assessment Methodology, 3-22

"No human health risk assessments are presented in this report."

43. LANL must explain why no human health risk assessments are presented in this report. This is especially confusing in light of the fact that the Work Plan requires a human health

risk assessment prior to recommending the No Further Action (NFA) alternative, and NFA is proposed in the report without benefit of a risk assessment.

3.4: Development of Conclusions and Recommendations, Page 3-22

"Field screening was used to bias samples sent for fixed laboratory analysis, as well as to determine the areal distribution of the contamination."

44. See General Comment 10.

CHAPTER 4.0: SITE-SPECIFIC RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

"The purpose of sampling at the locations covered by this report was to determine whether any significant chemical, radioactive, or HE contamination could be found at TA-15."

45. See General Comment 4.

4.1: PRS 15-004(b,c): Firing Site A-B

4.1.1: Previous Investigations, Page 4-4

"No SVOCs were detected, and Toxicity Characteristic Leaching Procedure (TCLP) test results for metals were below EPA guidelines."

46. TCLP analyses are not to be used for site characterization.

"VOCs and SVOCs were not expected at this PRS and were not included in analytical tests."

47. However, the fourth paragraph of page 4-3 begins; "Information regarding COPCs used at these firing sites is minimal,...". This seems contradictory with the above statement. LANL must explain why VOCs and SVOCs were not expected at this site.

4.1.3: Screening Assessment, Page 4-6

"The QA/QC assessment of the data associated with the collected samples indicates that the analytical results were acceptable, except for eight samples in which arsenic may be present at concentrations greater than background and HE data that exceeded holding times."

48. LANL must resample this PRS for arsenic and HE.

"Arsenic is not considered to be present at the site as a result of site activities and is thus not considered in the screening assessment."

49. However paragraph 4 of page 4-3 begins; "Information regarding COPCs used at these firing sites is minimal,...". This seems contradictory with the above statement. LANL must provide evidence for not considering arsenic to be present.

4.1.3.2: Data Interpretation, Page 4-11

"Extension of the XRF sampling northward has roughly bounded elevated lead concentrations. As shown in figure 4-1, the hot spots are geographically nearer PRS 15-004(b) than 15-004(c)."

50. See General Comment 10.

"Lead concentrations of up to 651, 885, and 1593 ppm for successively northward hotspots are revealed by XRF data. The highest value of lead discovered so far approaches 4 times the SAL and confirms the extent of lead on site at concentrations of potential concern."

51. See General Comment 10.

4.1.3.4: Ecotoxicological Screening Assessment, Page 4-12

"All inorganic COPCs detected in soil samples taken at Firing Site A-B..."

52. Arsenic has been inappropriately discarded as a COPC.

"Analyses for organic chemicals and HEs were not conducted on samples from Firing Site A-B."

53. HE analysis **was** conducted for this PRS, but the samples exceeded holding times. LANL must explain this statement.

4.1.4: Conclusions and Recommendations, Page 4-12

"Additional field XRF screening in the vicinity of the three lead hotspots north of PRS-004(b) during 1995 has defined the extent of soil contamination,...".

54. See General Comment 10.

"Surface soils at Firing Site A-B contain barium, cadmium, copper, lead, mercury, and uranium levels that exceed screening criteria for reproductive and survival effects on vertebrates. Phytotoxicity criteria also were exceeded,...The significance that these COPCs hold for the long-term persistence of resident plant and animal

populations cannot be adequately assessed in a screening assessment and must be addressed in a baseline ecological risk assessment".

55. These statements demonstrate that proposing NFA for this PRS is inappropriate. Also, the RFI Work Plan stipulates that a human health risk assessment will be performed prior to NFA proposal.

Table 4-4: Comparisons of ESALs with Data From Firing Site A,B, Page 4-13

56. See General Comment 10.

4.2: PRS 15-004(a,d) Firing Site C

4.2.3: Screening Assessment Results for Firing Site C 15-004(a,d), Page 4-16

"The QA/QC assessment of the data associated with the collected samples indicates that the analytical results were acceptable, except for three mercury samples which were qualified as R, eight arsenic samples that may be present at concentrations greater than background and HE data that exceeded holding times."

57. LANL must resample this PRS for mercury, arsenic and HE.

"Arsenic is not considered to be present at the site as a result of site activities and is thus not considered in the screening assessment."

58. LANL must provide evidence for not considering arsenic to be present.

"Analyses for organic chemicals and HES were not conducted on samples from Firing Site C."

59. See Specific Comment 53.

Table 4-5: Firing Site C PRS 15-004(a,d), Pages 4-18 and 4-19

60. See General Comment 11.

4.2.3.2: Data Interpretation, Page 4-21

"The data show elevated levels of copper, lead, mercury and uranium, but none at levels of concern for human health. There are no COPCs for this site."

61. Based on the Ecotoxicological Screening Assessment, copper, lead and uranium are COPCs. LANL must clarify this statement.

62. See Specific Comment 52 and General Comment 12.

4.2.3.4: Ecotoxicological Screening Assessment, Page 4-21

"All inorganic COPCs detected in soil samples taken at Firing Site C and exceeding their natural background UTLs (Section 4.2.3.1) were compared to ecotoxicological screening criteria (Table 4-7)."

63. See Specific Comment 52.

"Analyses for organic chemicals and HES were not conducted on samples from Firing Site C."

64. See Specific Comment 53.

4.2.4: Conclusions and Recommendations, Page 4-23

"15-004(a,d) is an inactive firing site with no COPCs based on human health concerns."

65. See Specific Comment 52.

"No further action is proposed for this site based on human health screening."

Surface soils at Firing Site C contain lead and uranium levels that exceed screening criteria for reproductive and survival effects on vertebrates. Phytotoxicity criteria also were exceeded to a lesser degree...The significance that these COPCs hold for the long-term persistence of resident plant and animal populations cannot be adequately assessed in a PRS-specific screening assessment and must be addressed in a baseline ecological risk assessment."

66. See Specific Comment 55.

4.3: E-F Aggregate (15-004[f], 15-009[e], C-15-004)

4.3.2: Field Investigations, Page 4-24

"The objectives of the Phase I sampling were to determine the extent, concentration, and depth profile of any COPCs at this site."

67. See General Comment 4.

"Samples were obtained from the surface (0-6 in) and/or subsurface or refusal (18-24 in) using the spade and scoop technique and hand auguring, respectively..."

68. See General Comment 5.

"The QA/QC assessment of the data associated with the collected samples indicates that the analytical results were acceptable except for 27 antimony samples and ten mercury samples that were considered unusable, two cadmium samples that may be present at concentrations greater than its SAL, and HE data that exceeded holding time."

69. LANL must resample this PRS for antimony, mercury, cadmium and HE.

4.3.3.1: Comparison to Background/SALs, Pages 4-26 to 4-28

"All inorganic COPCs detected in soil samples taken at E-F Aggregate were compared with their natural background UTLs."

70. Cadmium has been inappropriately discarded as a COPC.

"Because of the large size of this site, it is appropriate to follow the first-stage MCE by a second, more accurate representation of the worst-case scenario."

71. LANL must explain why the second MCE is more accurate.

72. LANL must explain how a less conservative approach to the MCE can still be considered a "worst-case" scenario.

4.3.3.1: Organics, Page 4-27

73. Two samples taken below the former transformer location at AOC 15-004 were analyzed for PCBs. The report states that no PCBs were measured but the data are not reported. The PCB results should be reported in the appendices with the other data results. LANL shall state why two samples from the same location of this PRS are sufficient. Information on the sample depths of PCB soil samples should be provided.

4.3.3.1: Multiple Chemical Evaluation (MCE), Page 4-28

74. Since the non-carcinogenic SAL has been exceeded in the E-F Aggregate for several inorganics (copper and manganese) and a normalized value would already exceed 1 for each of these inorganics, an MCE should consider the total contribution of all non-carcinogenic analytes and to what degree each analyte contributes to the total potential hazard.

75. Each individual inorganic should be investigated for its percent contribution to a normalized value of 1 and the decision to continue to include an inorganic as a COPC be based on some percentage contribution to a normalized value of 1 that the risk manager agrees to.

Table 4-8: Firing Site E-F PRS 15-004(f), Page 4-29,

Table 4-9: E-F Site PRS 15-008 (a), Page 4-40,

Table 4-10: Septic System PRS 15-009(e), Page 4-42,

Figure 4-4: Locations of samples above background, Page 4-43,

Figure 4-5: Locations of samples above background, Page 4-44,

Figure 4-6: Locations of samples above background, Page 4-45,

76. See General Comment 11.

4.3.3.1: Multiple Chemical Evaluation (MCE), Page 4-46

77. Table 4-11 lists the normalized values of the MCE for the E-F Aggregate for the cumulative maximum normalized value for the entire site. Table 4-12 lists the normalized values of the MCE for the E-F Aggregate for the sample area within the entire site with the highest normalized value. Given this, the values in Table 4-12 should be either equal to or less than the values in Table 4-11. This is not the case for antimony. LANL shall verify the values and correct these tables where appropriate.

4.3.3.2: Data Interpretation, Page 4-47

"The values on the map are from fixed lab analyses wherever a sample was sent in for analysis, from the historical data used by White et al. (1980, 0771), and from predicted values of total uranium based on the XRF values reported by the chemistry van (see Appendix c)."

78. See General Comment 10.

"...and AOC 15-004 has no COPCs."

79. See Specific Comment 9.

80. Please clarify why Figure 4-6 shows locations of samples above background if AOC 15-004 has no COPCs.

4.3.3.4: Ecotoxicological Screening Assessment, Page 4-47

81. LANL may need to reevaluate the ecotoxicological effects of this site once an eco-risk approach has been agreed to by all parties.

Table 4-14: Comparisons of ESALs... PRS 15-004(f), Page 4-49

82. Please explain why no sample depths are given for several samples.

83. See General Comment 10.

4.3.3.4: Ecotoxicological Screening Assessment, Page 4-57

"No organic chemicals or HES were detected in samples from the E-F Firing Site."

84. LANL shall not state that an analyte is not detected when that analyte has experienced QA/QC problems (HE in this instance).

4.3.4: Conclusions and Recommendations, Page 4-57

"No further action is proposed for AOC 15-004. The only suspected contaminant from the transformer station was PCBs, and none were detected."

85. See Specific Comment 9. Also, the RFI Work Plan stipulates that a human health risk assessment will be performed prior to NFA proposal.

"A VCA is recommended for Septic Tank 15-009(e) to remove the sludge and liquid, removing the opportunity for leakage from the tank."

86. LANL has not demonstrated that leakage has not already occurred. The proposed VCA will investigate the soil under the tank, related piping and outfall.

4.4.2: Field Investigation, Page 4-60

"Because most of the materials in the landfill came from PHERMEX, the major contaminants were known,..."

87. LANL must include an explanation of process knowledge for wastes produced at PHERMEX.

87a. To be sure of the major contaminants by process knowledge, LANL should be able to explain from where **all**, not **most** of the contaminants are derived.

"Samples were obtained from the surface (0-6 in) and deep (18-24 in or refusal) using the surface scoop technique and hand auguring, respectively..."

88. See General Comment 5.

4.4.3: Screening Assessment Results for Material Disposal Area Z (15-007 [b]), Page 4-61

"The QA/QC assessment of the data associated with the collected samples indicates that the analytical results were acceptable except for three acid semivolatle samples that were qualified as R."

89. See Specific Comment 25.

Table 4-16: MDA Z PRS 15-007 (b), Page 4-63

90. See General Comment 11.

4.4.3.2: Data Interpretation, Page 4-68

"These results, however, may not necessarily be representative of the entire landfill, as no samples were collected from the interior."

91. This is contradictory to Section 4.4.2 Field Investigation; "The objectives of the Phase I sampling were to determine whether COPCs were present at concentrations above SALs in surface and near-surface soils at the landfill, and to determine their extent." LANL must explain why no samples were collected from the interior.

4.4.4: Conclusions and Recommendations, Page 4-69

"The location of the site makes it likely that COPCs may be transported to other locations, making them more available to ecological receptors."

92. LANL must investigate possible fate and transport of contaminants.

93. LANL must explain why transport to other locations would not make contaminants available to human receptors also.

Table 4-19: Comparisons of ESALs With Data From MDA Z, PRS 15-007 (b), Page 4-70

94. See General Comment 11.

4.5: PRS 15-008 (b) Surface Disposal Area at R-44, Page 4-73

"Consequently, some debris from the explosions has been scattered through the air into the canyons on either side of the firing site.

In addition, some of the material in the debris pile was pushed over the edge of the canyon, as can be seen by visual inspection."

95. This constitutes refuse in a watercourse, and under regulations established by the New Mexico Water Quality Control Commission (NMWQCC) in the State of New Mexico Standards for Interstate and Intrastate Streams, 20 New Mexico Administrative Code (NMAC), 6.2 Section 2201: "No person shall dispose of any refuse in a natural watercourse or in a location and manner where there is a reasonable probability that the refuse will be moved into a natural watercourse by leaching or otherwise."

95a. This section of the report should contain figures, maps or some method of viewing which canyons are being impacted.

96. See General Comment 4.

"The major potential pathway to receptors would occur by direct contact..."

97. Transport to receptors by surface water can not be ignored. LANL must investigate the fate and transport of contaminants from this PRS.

4.5.2: Field Investigation, Page 4-74

"The objectives of the Phase I sampling were to determine whether COPCs were present at concentrations above SALs in surface and near-surface soils at the disposal area."

98. This purpose statement would appear to address the Contaminant Sources Objective of the RFI Work Plan Table 4.2.2; SUMMARY OF GENERAL DATA NEEDS FOR THE TA-15 OU RFI. However, the Objectives of Contaminant Migration, number 1., "Identify any migration of contaminants at each PRS.", and Baseline Risk Assessment, number 2., "Determine contaminant fate and transport.", are not adequately addressed.

"Because of the previous INEL investigation (DOE, 1989, 0271) the major constituents were known..."

99. LANL must provide analytical data, methodology, instrumentation and QA/QC information if historical data is to be used to identify contaminants.

"Samples were obtained from the surface (0-6 in) and subsurface (18-24 in or refusal) using the spade and scoop technique and hand auguring, respectively..."

100. See General Comment 5.

"The QA/QC assessment of the data associated with the collected samples indicates that the analytical results were acceptable"

except for two antimony and seven mercury samples that were qualified as R, two cadmium samples that may be present at concentrations greater than its SAL, and HE data that exceeded holding times."

101. LANL must resample this PRS for antimony, cadmium and mercury.

4.5.3.1: Comparison to Background/SALs, Page 4-76

"Analyses for organic chemicals and HEs were not conducted on samples from the R-44 surface disposal area."

102. See Specific Comment 53.

Table 4-20: R-44 PRS 15-008(b), Page 4-77

103. See General Comment 11.

4.5.3.2: Data Interpretation, Page 4-81

"These results, however, are not considered fully representative of the disposal area, as very few samples were collected from lower sections of the canyon or laterally along the face of the disposal area."

104. HRMB agrees that the results are not fully representative of the disposal area. No response is necessary.

"Accordingly, further evaluation of this site has been delayed until May 22, 1996, when the report for the entire R-44 firing site will be submitted."

105. HRMB has no record of the submission of this report. Please submit it within thirty (30) days of receipt of this letter.

4.5.3.4: Ecotoxicological Screening Assessment, Page 4-82

"Analyses for organic chemicals and HEs were not conducted on samples from the R-44 surface disposal area."

106. See Specific Comment 53.

4.5.4: Conclusions and Recommendations, Page 4-82

"The location of the site makes it possible that COPCs may be transported to other locations, making them more available to ecological receptors,..."

107. LANL must investigate possible fate and transport of contaminants.

108. LANL must explain why transport to other locations would not make contaminants available to human receptors also.

Table 4-22: Comparisons of ESALs With Data From R-44 Disposal Area, PRS 15-008(b), Page 4-83

109. See General Comment 11.

4.6: PRS 15-012(b) Operational Release, Page 4-86

"In this area, the explosives groups at the Laboratory washed out vessels used for explosives testing."

110. The question of what was used to wash out the vessels is not answered. Although HRMB has received verbal notification that water was used to wash out the vessels, LANL shall include this information in the amended report.

"Samples were obtained from the surface (0-6 in.) and subsurface (18-24 in.) using the spade and scoop technique and hand auguring, respectively..."

111. See General Comment 5.

Table 4-23: R-183 Operational Release PRS 15-012(b), Page 4-90

112. See General Comment 11.

Table 4-25: Comparisons of ESALs with Data R-183 Operational Release, PRS 15-012(b), Page 4-93

113. See General Comment 11.

4.6.4: Conclusions and Recommendations, Page 4-94

"Based upon the results of the screening assessment, an EC is recommended for the soil at PRS 15-012(b)."

114. HRMB has received notification from LANL that a Voluntary Corrective Action (VCA) is now planned for this PRS. This information shall be included in the amended report.

4.7: PRS 15-009(j), Inactive Septic System

4.7.2: Field Investigation, Page 4-95

"The objectives of the Phase I sampling were to determine whether contamination was present."

115. LANL has failed to demonstrate that contamination is absent in the soil under the tank, associated pipe and fittings, or the

outfall. HRMB understands that LANL plans to sample these areas to determine the presence or absence of contamination as part of a Voluntary Corrective Action (VCA) for this PRS. Please state this in the amended report.

Table 4-26: Septic System PRS 15-009(j), Page 4-97

116. See General Comment 11.

4.7.3.4: Ecotoxicological Screening Assessment, Page 4-99

"An ecotoxicological screening assessment was not conducted for the contents of the tank because there is no pathway for exposure."

117. See Specific Comment 107.

4.7.4: Conclusions and Recommendations, Page 4-99

"The tank will be pumped of its 2 inches of sludge and liquid and backfilled."

118. HRMB has been informed that LANL now plans to remove the tank as part of the VCA. Please state this in the amended report.

Appendix A

119. Explanations are needed for the column headers (e.g., "Begin", "End", etc.).