TA 49

LANL 1992/00 1144

MEMORANDUM

TO: Barbara Hoditscheck, RCRA Permit Program Manager
Ed Horst, RCRA Enforcement Program Manager

THROUGH: Bruce Swanton, POC
AIP DOE/LANL

FROM: Teri D. Davis
LANL/DOE Oversight Program

DATE: May 10, 1993

SUBJECT: **Comments on LANL's May 1992, Operable Unit 1144 RFI Work Plan**

The Hazardous and Radioactive Materials Bureau (HRMB) Agreement in Principle (AIP) personnel have completed their review of the Operable Unit (OU) 1144 RCRA Facility Investigation (RFI) Work Plan. The following memo is divided into two sections. Section 1 contains technical comments and recommendations on Hazardous and Solid Waste Amendment (HSWA) issues. The AIP program is submitting these HWSA-related comments and technical recommendations to the HRMB's RCRA Permitting and Enforcement/Technical Programs because of eventual New Mexico HSWA authorization. Section 2 contains comments concerning non-HSWA issues and is provided in this memo for the sake of completeness of the Work Plan review. These non-HSWA issues are those that are not specific to the RCRA regulations.

SECTION 1, HSWA-RELATED ISSUES

Key Comments

1. Evaluation of potential risk at a site proposed for permanent disposal of RCRA metals or mixed-waste should be based on the possibility of transfer of contaminants to the environment over the life of the contaminants rather than for a period of 100 years (see E.1.5p4, 4.4.3.2p1, 6.2.1p3, and 7.4.1p2). This evaluation should consider elements such as seismic hazard effects, cliff retreat rates, surficial erosion, and possible eventual vadose zone transport to zones of saturation (perched or main aquifer).

2. VOCs do not appear in the list of indicator analytes in some sampling plans in which the area of concern is known to have had significant VOC use (see 6.4.5, 6.6.4, and 7.4.2b1).

3. The level of QA/QC available for all analytical procedures using the mobile lab is not clearly stated. Clarification is needed concerning the limit detection and QA level attainable for individual constituents using the mobile lab.

4. The transport mechanisms for subsurface contaminant migration are not well understood. Figure B-8 in Appendix B shows that a concealed fault may exist in close proximity to the experimental shafts. Given the nature and quantities of contaminants present in the subsurface, the potential for ground water pathways should be of more immediate concern (see section E.1.5p3).

5. Research has shown that the lack of humic material and nutrients in the soil will greatly retard degradation of HE. The degradation of HE over 30 years at LANL is in question and should not be used as a criteria for NFA (see section 8.4).

6. Contour lines should not be drawn using different types of data (eg. production well screen intervals are different than test well screen lengths). Contouring this type of data can lead to significant error in flow direction interpretation (see section 4.4.3.2,fl.4-3).

7. NFA recommendations should not be based on Level I, II screening data (see section 6.4.5.4).

General Comments

1. Maps should be prepared that indicate the locations of the experiemental shafts in relation to the proposed RFI sampling locations (see section 7.0).

2. It is suggested that the results from the A411 sampling event be plotted on the Phase I RFI soil sampling and borehole location figures for comparision (see section 7.0).

3. Differentiation between field lab and laboratory measurements is not made in Appendix E tables (see Appendix E, Table E-2(b)). If the number of samples intended for field lab analysis were indicated on these Appendix E tables the sampling plans would be clearer.

4. The totals for laboratory measurements (e.g. U, Pu, metals and SVOC) do not equal the number of boxes marked in most of the Appendix E tables (see Appendix E, Table E-2(b)).

5. Will the five-foot sections from boreholes be composites or will discrete samples be taken from some interval within the section? Will this apply to all such sampling (see section 6.3.4.1p3)

Specific Comments

E.1.5p3 The contaminant pathways of immediate concern should include surface water and air pathways based on known surface contamination at Area 2 and Area 11.

E.1.5p4 With regard to the extremely long-lived isotopes in the MDA and the uncertainty of continued DOE site control over this time period, this land use scenario does not seem appropriate based on the nature of contaminants present.

E.2.1 This statement assumes that soil contamination at Area 11 or other potential soil contamination areas is insignificant with respect to posing an environmental risk. When compared with 40 kg of Pu and 263 kg of uranium isotopes, these hot spots may only seem minor. The sentence, "Sampling plans take these factors into account to maximize the effectiveness of the RFI" appears misleading. It is suggested that it be omitted.

E.2.2 Some mention of QA/QC should be included in this section.

3.2.6 "Likewise, measurable surface contamination attributable to TA-49 has never been found beyond the TA-49 boundary." What sampling has been done to confirm this statement?

3.4.2p1 "Surface water and air pathways are not of immediate concern because the majority of TA-49 contaminants are buried in shafts." Landfill 47-004 is next to Water Canyon and Area 11 with leachfield and soil contamination near drainages. How is the above statement consistent with that fact?

4.4.3.2p1 "The groundwater pathway is not likely to be important at the TA-49 OU over the 100 year time period assumed for institutional control". It is recommended that this time frame not be used for consideration of contaminant migration. Migration from the site must be considered over the life of the contaminants. It is suggested that until some consensus between DOE, NMED and EPA is reached on this matter that this wording is avoided.

4.4.3.2p6 Flow velocity "is approximately 345 ft/hr." Should this be 345 ft/yr?

4.4.3.3p6 Calculated ground water age is stated to be ">50 yrs (piston-flow model)", Table 4.4-4 indicates >15 yrs.

6.2.1b2 Does the statement "there are no aquifers known or expected in the area" refer to perched aquifers? This bullet needs clarification.

6.2.1b3 Wind entrainment and dispersal of surface soil to BNM should be considered a pathway for contaminant transport. BNM is less than 3000 feet from SWMU with known soil contamination.

6.2.1p3 "The likelihood for significant impact to public health or the environment from Area 11 contaminants is minimal over the assumed institutional time frame of 100 yr." (see Key Comment #1).

6.2.1
t6.2-1 The method (SW 8270) listed in Table 6.2-1 is different than the method listed in Appendix E-2(b) (SW 8240) for SVOC analysis. This is the case for all Appendix tables vs tables in text. The method listed in SW 846 for SVOC is 8270; SW 8240 is for VOC.

6.2.2p8 What is the depth of top and bottom of the leachfield? If this value is unknown, it seems inappropriate at this time to specify at the exact depth that will be sampled.

6.2.4 Decision Question: "Given the contamination levels and site properties, are runoff and infiltration significant transport mechanisms for the leachfield?" The above decision question should include airborne dispersal to be considered as a significant transport mechanism.

6.2.5.1p2 It is unclear how many surface soil samples are to be taken when comparing Table 6.2-1, Table E-2(a), Figure 6.2-5 and the text: "a 20- by -20ft mesh square grid over the leachfield area, as indicated in Figure 6.2-5". If a specific number of additional samples have been included in the total number of samples reported this value should be specified. It may be clearer if all references to specific sampling plans were located together in one section.

6.2.5.4 One surface soil sample can not be statistically significant.

6.2.5-5 There is no mention of the four surface soil samples shown in Figure 6.2-5 in the text.

t6.3-2 It is suggested that the units be consistent (eg. ug/g vs ppm).

6.3.2.4p2 Were all of the "salvage materials" disposed of elsewhere?

6.3.4.1 It would be helpful if the SWMU numbers appeared in the section titles.

6.3.4.1p2 Specify what type of sampling is to be conducted (e.g. surface soil).

6.3.4.2p1 If hot spots are located it is recommended that the same procedure as described for the open burning/landfill area be followed.

6.3.4.2p2 Why are only the lowest 5 ft of the small landfills to be sampled? Is the depth of the landfills known? What is the rational for this sampling plan.

6.3.4.3 The number of soil samples to be taken should represent a specified confidence level that contamination within that gridded area is not missed.

6.4.5 Near-surface soil samples should be analyzed for VOCs in areas of known source terms such as near trailer J-13-3 and associated drainlines.

Discrete sampling should be conducted at the known location of the former 6 ft diameter hole to verify the absence of contaminants.

6.4.5.1p3 The number of soil samples to be taken should represent a specified confidence level that contamination within that gridded area is not missed.

6.4.5.2 Is the depth of accumulated materials within these sumps known? Just because "the sump holes were open when (and if) discharges were made to them" may not indicate that stratification of materials did not occur to some extent. Sumps may contain stratified layers of

grain sizes, particularly clay sized materials which may impede migration of contaminates to the bottom of the sumps. This section needs clarification.

6.4.5.4 It is recommended that a statistically significant number of samples be taken to verify the absence of PCBs.

6.5.1p2 In the sentence "migration pathway at Area 5", should this be Area 10?

6.5.3p1 What potential contaminant sources exist within the experimental chamber? It is not clear if the source terms mentioned, materials that may have ended up at the bottom of the shafts, are the same as in the chamber. Is the calibration chamber unit the same as the experimental chamber?

6.5.4p1 In the sentence, "is not present in Area 11", should this be Area 10?

b16.5.5 Explain the rational for this assumption.

6.6.4 It is recommended that near-surface soil samples be analyzed for VOCs in areas with known source term such as the Bottle House.

Has soil deposition occurred over Area 12 since 1961? What impact, if any, would this have on rad survey results?

6.6.4p4 NFA recommendations should not be based on screening results. It is recommended that a statistically significant number of samples be taken to verify the absence of PCBs.

app E
tE-6 QA/QC samples are not indicated for SVOC.

f6.6-3 It is recommended that at least one sample be taken near A411(9) to verify the absence of contamination.

It is suggested that the rad survey area be extended at least 5 feet south of the discolored soil area.

It is unclear from Table E-6 which samples are at which locations, the number of samples shown in this figure do not equal those in the table. Please clarify.

f7.2-all These figures lack scale and north arrow.

t7.3-1 This table is misleading; as mentioned in Table 7.3-2, Area 1 had only 19 samples for Pu-238 not 34 as indicated in this table. A more comprehensive table could be constructed or a notation explaining this added.

7.3.5p3 At what depths were these (1987) soil samples collected?

f7.3-1 It is recommended that concentrations detected be shown for each location.

7.4.1p2 The 100 year time frame should not be the objective for the data needs at this site.

7.4.1p9 The statement, "deep groundwater and surface water at TA-49 has been monitored for over 30 years with no indication of water contamination, except in Core Hole 2" is based on 3 main aquifer wells which are not ideally located to monitor source terms. Area 1 is the only hydronuclear shaft area that has three wells downgradient. Based on direction of ground water flow, source contamination from Area 1 is not in direct line with DT-5A, DT-10 or DT-9. This sentence presumes that monitoring wells are in place to detect contamination. It is recommended that a more concise statement be made.

7.4.2b1 The list of indicator analytes appears adequate with the exception of VOCs in areas of known significant use.

f7.5-1 It is recommended that at least two 10 foot boreholes be drilled to characterize the subsurface. Table 7.3-2 shows that Cs-137 was detected in vegetation samples and numerous soil samples were above background levels. Is this an instrumentation problem, the result of fallout contamination (hence these values would be no larger than background), or does the data from the 1987 A411 survey suggests possible subsurface contamination?

f7.5-2 The proposed lateral borehole is included in Phase I rather than Phase II as indicated in this figure.

It is recommended that a 10 and 150 foot corehole be drilled in Area 2B since shafts that contain shots with Pu and U do exist there.

The surface soil sampling locations do not reflect the Pu shot shafts concentrated in the northeast corner of Area 2B. Should surface soil samples be situated over the shaft locations that contain shot with Pu, U or tracer.

f7.5-4 It is recommended that at least two 10 foot boreholes be drilled to characterize the subsurface. See comment f7.5-1.

7.6.4.3 Explain rational for proposing a 700 ft vertical borehole at Area 1 and not at Areas 2B and 4.

7.6.6 Explain rational for proposing a lateral borehole at Area 1 and not at Areas 2B and 4.

SWMU Proposed For No Further Action

8.4 It is recommended that the sentence "HE residuals at a depth of about 4 ft are the only credible contaminants, and these should have been degraded substantially by natural processes in the three decades since the area was used" be omitted.

SECTION 2, NON-HSWA ISSUES

Key Comments

1. Has soil deposition occurred over areas of concern since 1961? What impact, if any, would this have on rad survey results?

Specific Comments

6.2.5.1p1 How was the value of 90% arrived at for the area to be covered by rad survey?

When tripod detection methods are used in rad surveys it is necessary to specify the node spacing to be used.

6.3.3b2 What criteria is used to determine which 10% of the total area is chosen not to be surveyed?

f6.3-7 The rad survey area can not be seen in this figure.

f7.5-1 The rad survey area can not be seen in this figure.

f7.5-2 It is suggested that the rad survey area include all locations to be sampled.

f7.5-3 The rad survey area can not be seen in this figure.

f7.5-4 The rad survey area can not be seen in this figure.

SWMU Proposed For No Further Action

8.6 It is suggested that staging and drainage control areas have rad surveys conducted to verify lack of contamination.