TA-49

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April 26, 1993

Mr. Jerry Bellows, Manager
Los Alamos Area Office
528 35th Street
Los Alamos, NM 87544

Re: AIP Review of the OU 1144 RFI Work Plan

Dear Mr. Bellows:

My Agreement in Principle (**AIP**) staff have reviewed the Operable Unit (**OU**) 1144 RCRA Facility Investigation (**RFI**) Work Plan and provided these comments for my information.

It appears that one of the main issues raised in this review is the interpretation of Department of Energy (**DOE**) Order 5820.2A in the subject workplan. The following comments on this issue have been transmitted in my cover letter for the AIP comments on the OU 1144 RFI Workplan and are repeated here, as they are equally applicable in the present case. The OU 1144 Workplan implies that DOE Order 5820.2A indicates near-surface disposal units containing transuranic-contaminated (**TRU**) waste need to be shown capable of preventing migration of these wastes into the environment only over a 100-year time frame. A review by AIP staff of the order as well as the TRU-waste specific document referenced in Attachment 1, page 3, paragraph 22 (DOE/JIO-025) of the order does not support the interpretation implied in the subject RFI workplan.

DOE Order 5820.2A does not address TRU-waste management as specifically as it does that for low level waste (**LLW**). It lists as objectives for LLW disposal units that these should, 1) "Assure that the committed effective dose equivalents received by individuals who inadvertently may intrude into the facility after the loss of active institutional control (100 years) will not exceed 100 Mrem/yr. . ." [§3.A(3)]; and 2) "Protect groundwater resources consistent with Federal, state and local requirements." [§3.A(4)] Neither does document DOE/JIO-025 appear to limit concerns regarding a release from units to the 100-year period of institutional control.

As the environmental hazards posed by LLW are certainly not greater than those of TRU wastes, the requirements for near-surface disposal units containing TRU wastes should be at least as stringent as those containing LLW. As the constituents which have been disposed of in shafts at TA-49 include extremely long-lived isotopes of plutonium and uranium, the limitation of the required

integrity of the disposal units to 100 years would not seem to be protective of human health or of the environment from a purely technical standpoint. AIP staff recommends that these near-surface TRU disposal units be evaluated with regard to their probable adequacy or inadequacy to isolate their contents from the environment over the period of time during which the contaminants remain hazardous.

It should be noted that the comments transmitted under the AIP are technical in nature and do not have direct regulatory impact. However, the comments are copied to the State's RCRA Permitting and RCRA Technical Sections for their consideration of issues over which the State has jurisdiction. As the transmittal of the attached comments has been coordinated with transmittal of those from EPA Region VI, it is appropriate that DOE/LANL's response to the AIP comments be provided within the same time frame as those for EPA.

If you have any questions please contact Teri Davis of my staff at 665-7128.

Sincerely,

Kathleen M. Sisneros
NMED AIP Administrator

KMS/td

cc: Benito J. Garcia, Chief, HRMB
Neil Weber, Chief, DOE Oversight Bureau
Barbara Hoditschek, Manager, RCRA Permits
Steve Alexander, Supervisor, RCRA Technical Section
Guanita Reiter, Acting Chief, RCRA Permits, EPA Region VI
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MEMORANDUM

TO: Kathleen M. Sisneros
NMED AIP Administrator

THROUGH: Benito J. Garcia, Bureau Chief
Hazardous and Radioactive Materials Bureau

Bruce Swanton, POC
AIP DOE/LANL

FROM: Teri D. Davis
LANL/DOE Oversight Program

DATE: April 23, 1993

SUBJECT: **Comments on LANL's 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 contains the AIP's comments and concerns on the Work Plan.

General Comments/Questions

1. Evaluation of potential risk at a site proposed for permanent disposal 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. 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. Differentiation between field lab and laboratory measurements is not made in Appendix E tables. The level of QA/QC available for the mobile lab is not clearly stated. Clarification is needed concerning the LD and QC level attainable for individual constituents using the mobile lab. Is such information referenced in a SOP? Also, if the number of samples intended for field lab analysis were indicated on these Appendix E tables the sampling plans would be clearer.

3. 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.

4. Has soil deposition occurred over Area 11 since 1961? What impact, if any, would this have on rad survey results? This question should be asked of all areas of concern.

5. Where are the experimental shafts located in relation to the RFI sampling locations?

6. 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 comparison.

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.

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 General Comment 1.

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. See General Comment 1.

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 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.

4.4.3.2
f4.4-3 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.

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 It may be recommended that wind entrainment and dispersal of surface soil to BNM which is <3000 feet from SWMU with known soil contamination be considered.

6.2.1p3 "The likelihood for significant impact to public health or environment from Area 11 contaminants is minimal over the assumed institutional time frame of 100 yr." See General 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(a) (SW 8240) for SVOC analysis. This is the case for all Appendix tables vs tables in text. Which method is proposed?

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?" It is recommended that airborne dispersal 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.

6.2.5.1p1 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 would be helpful to specify the node spacing to be used.

6.2.5.4 Is one surface soil sample 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 Did all of the "salvage materials" get disposed of elsewhere?

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.

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).

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

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 It is recommended that the number of soil samples to be taken reach a 95% confidence level that contamination within that gridded area is not missed.

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

It is recommended that discrete sampling be conducted at the known location of the former 6 ft diameter hole to verify the absence of contaminants.

6.4.5.1p3 Does the number of samples to be analyzed represent a 95% confidence level that contamination within the gridded area is not missed?

6.4.5.2 Is the depth of accumulated materials known within these sumps? 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 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.

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, expect 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 The rad survey area can not be seen in this figure.

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 It is suggested that the rad survey area include all locations to be sampled.

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.

f7.5-3 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.

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. 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.

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