TA 35

LANL/ER/OU 1129

M E M O R A N D U M

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SUBJECT: COMMENTS ON THE LANL OPERABLE UNIT 1129 RFI WORK PLAN

DATE: January 29, 1993

The Hazardous and Radioactive Materials Bureau's **(HRMB's)** Agreement in Principle **(AIP)** personnel have completed their review of the Operable Unit **(OU)** 1129 RCRA Facility Investigation **(RFI)** Work Plan. This memo contains HRMB's questions and concerns regarding the Work Plan. Part of the HRMB's mission under the AIP is to assure that environmental restoration efforts are conducted in compliance with state regulations.

GENERAL COMMENTS

1. Sediment sampling methodology described in the Work Plan is generally vague in that it does not state specific grain size(s) that will be targeted for each site. Sediment sampling at sites (drainages) that are potentially radioactively contaminated should target silt- and clay-sized sediment because of the adsorptive properties of the finer-grained particles. The primary objective for sampling in drainages should be to assess the presence of contaminants available for transport offsite via ephemeral discharge. This can only be accomplished by knowing the actual concentration available for transport. Bulk samples that contain a significant amount of coarse sediment will not provide an accurate assessment.

2. Wording in the Work Plan suggests that phased investigations may occur in the event that "Stage I data show that contaminants are present above action levels". Unless Stage I investigations are adequate for confidently determining the vertical and horizontal extent of contamination confirmed by

Level IV laboratory analysis of samples, Phase II investigations will be required.

3. The decision logic of estimating mean contaminant levels over an exposure unit has been suggested in this and several other of the Work Plans reviewed to date by the AIP staff. Our understanding is that Subpart S does not allow for the practice of contaminant "dilution" in this manner. Please explain.

4. RCRA assessments assume direct ingestion by the receptor of the most contaminated soil remaining on-site.

5. Contamination left in place will require a formal decision by the Department regarding the necessity of groundwater monitoring.

6. Most of the channel sediment sampling plans propose to collect samples ~~from between~~ the outfall point to the toe of the slope. This methodology for characterizing the outfall areas and associated drainages does not provide enough certainty that contaminants, if present, will be found. It is not necessarily the case that contaminants are still located in sediments at the toe of the slope. Contaminated sediments may have moved some distance down-channel, and could be buried beneath younger sediments. Point bars are a good sampling target, however, the upper 5-10 cm of sediment likely represents very young deposits and may not accurately assess the levels of contamination stored within that geomorphic feature.

7. LANL should bear in mind that Voluntary Corrective Actions performed without review by HRMB may not be found adequate. HRMB recommends that such plans be reviewed prior to execution.

8. Random sampling is based on population statistics, which assumes that the population will be dispersed over an area. If the contamination is not dispersed over the area there is a real possibility of missing contamination. Therefore sampling should follow a grid spacing, based on known pathways, defined drainages, fall lines, and expert judgement.

SPECIFIC COMMENTS

HRMB's comments are keyed to the section numbers of the document, as well as to the paragraph ("p"), bullet number ("b"), figure ("f") or table ("t"), as applicable.

3.7.2.1 SWMU's 55-010, Solvent Spill and 55-011(a-e), Drains and Outfalls. Neither of these SWMU's have sampling and analysis plans nor are they listed in the proposed No Further Action list.

4.2.2 p1 "No hydraulic connection has been demonstrated between the shallow perched aquifers of the Laboratory and the main aquifer;" The potential for migration from perched aquifer to main aquifer has not been addressed to date. Water levels have shown consistent mounding in the main aquifer at TW1 and ~~no mounding in TW1A~~ (~~screened~~ in the ~~perched~~ aquifer) which may suggest a speculative connection between perched and main aquifer.

4.3.1 p4 "Atmospheric conditions at the Laboratory are conductive to the ~~rapid~~ vaporization of volatile organic compounds (VOCs) in the ~~shallow vadose~~ zone." ~~VOCs have been detected in the vadose zone at---------- ---- years after the release.~~

4.3.2 p1 "Fluid migration in the tuff below OU 1129 is expected to be limited as a result of the low unsaturated hydraulic conductivity (10^{-8} cm/s) and the moisture content as discussed in Chapter 2.0." There is evidence that water in Los Alamos Canyon has infiltrated through the entire thickness of the Bandelier tuff.

4.3.4 p2 "Several hydrogeologic studies indicate that perched groundwater and surface water are not hydraulically connected to the main aquifer, which is estimated to be about 950-ft-below OU 1129". See comment 4.2.2 above.

4.5 p1 "The determination of background concentrations for organic, inorganic, and radioactive constituents at OU 1129 is necessary to set an environmental base line for the site." No background concentrations exist for any of the regulated volatile or semivolatile organic compounds.

4.10 p2 "Data gathered during the RFI will help to assess migration potentials and risk scenarios in a consistent manner with the Environmental Protection Agency concerns over future unrestricted public use scenarios. The future recreational scenario addresses people who may spend a limited amount of time at or near a site while hiking, riding, camping, or picnicking." Residential or recreational use scenarios are not acceptable for risk evaluation of hazardous contamination. Trigger levels in soil should be calculated pursuant to the proposed rule, Subpart S to 40 CFR Section 264 (see the July 27,

1990 Federal Register, page 30870, Appendix D, paragraphs 3 and 4). Trigger level values should be included in the Work Plan. RCRA baseline risk assessments assume direct ingestion by the receptor of the most contaminated soil remaining at the site.

5.2.7 b1 "the mean sample concentration for any listed COC does not exceed the risk-based action levels for that COC," Subpart S does not allow for the dilution of contamination by using mean contaminant levels over an exposure unit. Additionally, unless Stage I investigations are adequate for confidently determining the vertical and horizontal extent of contamination (see item #2 of General Comments above), Phase II investigations will be required.

5.2.7 b2 "the aggregate risk value for the sum of the health-risk quantified COCs present does not exceed the acceptable value set by the ER Program office." See comment 4.10, p2 above.

5.2.7 p3 "However, pending further ER Program Office guidance, the need to carry a SWMU into the CMS or for corrective action whenever COC's are detected in concentrations that exceed Subpart S action levels may not be necessary. If further site-specific risk assessment indicates that human health and the environment are not at risk (e.g. if no plausible pathway exists from source to potential receptors), then no further action may be appropriate." See comment 4.10 p2 above.

7.3.3 p3 "Thus, if the x-y-z coordinates for sampling are randomly selected, any individual cell has a theoretically equal chance of being sampled, and in the case of the vertical spacing, the chance of missing a pollutant horizon by using fixed interval sampling is reduced." See item #8 in General Comments above.

7.5 SWMU Aggregate A

7.5.2 p1 "If point sources are identified during these surveys, voluntary corrective action (VCA) to remove point sources, and surface sampling will be implemented." HRMB suggest LANL conduct sampling regardless of point source identification.

7.5.2 p3 "If hot spots are detected, hand-held detectors will be used to define precisely the hot spot locations and the lateral distributions of contaminants and the hot spot will be sampled. The distribution of spatial

contaminants will be determined by collection of one soil sample at a depth of 6 to 12 in below the hot spot and another sample 3 ft away at the same depth at which the hotspot was located." This approach will not address contamination at depth.

7.6 SWMU Aggregate B

See the concerns addressed in the preceding two paragraphs.

7.7 SWMU Aggregate C

7.7.1 p1 "Archival information indicates that potential contaminants that may be present at the former septic tank, SWMU No. 5-004, include radioactive and unknown chemical constituents (Section 3.2)." If there are unknown chemical constituents, then HRMB suggest that LANL add VOCs to the sampling list.

7.7.2 p8, "Surface soil/rock samples will be collected from any locations in the erosional drainage that show anomalies from the field environmental surveys or from 5 locations along the erosional axis at 15 ft intervals where topography allows (Figure 7-8)." Why is there no proposed surface sampling within the 30 x 50 ft grid? See item #6 under General Comments above.

7.8 SWMU Aggregate D

Figure 7-13.
Schematic sample location map for SWMU Aggregate D [SWMUs 35-003 (d,l,q)]. This figure does not show surface sampling locations are referred to in Figure 7-11. Also Figure 7-13 does not show outfall lines 71 and 95 as referred to in text, second paragraph, page 7-44.

SWMU No. 35-003(r), page 7-46.

See item #6 under General Comments above. Why have proposed surface sample locations been omitted from Figure 7-16?

7.9 SWMU Aggregate E

Why are proposed boring depths only to 2 feet? See item #6 under General Comments above. Why have proposed surface sample locations been omitted from Figure 7-17?

7.10 SWMU Aggregate F

7.10.1 p2 "Because no information is available that might limit suspected contaminants, all samples will be analyzed for a wide variety of COCs, metals, SVOCs, as well as...." Because it is unclear what contaminants were disposed, HRMB suggest that LANL sample for VOCs as well.

7.10.2 p7

"Surface sample locations will be selected in the field on the basis of detectable concentrations of above-background radioactivity measurements obtained during the environmental surveys. If no anomalies are found, sample locations will be located at 20 ft intervals beginning at the outfall discharge point, as indicated in Figure 7-21." HRMB suggest that LANL sample immediately beneath where the septic systems were located regardless of whether radioactive anomalies are found in addition to the proposed borings for this SWMU aggregate.

7.10.2 p8

"For boreholes near tanks, samples should be collected beginning with the second core interval (5-10 ft, 10-15 ft, and 15-20 ft)." Why not sample the first core interval of 0-5 ft as well?

7.10.2 p 12

"(Note: If the tank and dosing chamber are removed as a VCA before sampling begins and no contaminated soils are encountered around the structures, borings B-1 and B-2 will not be drilled)." HRMB suggest that LANL drill these borings anyway. This applies to SWMUs 35-009 (b), (c), & (d) as well.

Please refer to item #6 of General Comments for outfall sampling.

SWMU #35-009(e), a sewage drain line, is not addressed in this Sampling and Analysis Plan nor is it recommended for NFA.

7.11 SWMU Aggregate G

7.7.2 p3 "A single hole will be drilled using a wireline coring method at a 45 degree angle under the lagoons to try to intersect fractures and to determine if leakage is occurring." One borehole does not appear to be adequate coverage for an area approximately 600 feet x 600 feet.

7.12 SWMU Aggregate H

7.12.2 p2 "At location B-3 (SWMU No. 35-014[b]), samples will be analyzed for radionuclides and PCBs (Table 7-11)." HRMB suggest that LANL include sampling this SWMU for VOCs, SVOCs, and metals.

7.13 SWMU Aggregate I

Table 7-12
Waste oils typically have metals associated with them. HRMB suggest that LANL include metals in the sampling plan for this SWMU aggregate.

7.14 SWMU Aggregate J

7.14.2 p1 "Because of the limited incinerator operations and previous site D&D activities, assessment of local surface contamination was deemed unnecessary for all SWMUs except for the septic tank outfall and the outdoor decontamination area drainage channel." HRMB suggest that LANL perform surface sampling at all of these SWMUs unless they can demonstrate where the previous sampling occurred during D&D activities and HRMB deems this to be adequate.

7.14.2 p16
"The system received sanitary and industrial wastes from incineration and decontamination activities conducted in the building." If this is the case, then PCBs should also be added to the sampling list to cover all types of industrial waste.

SWMUs 42-003 (b) & (c) Surface Investigation.

See item #6 in General Comments.

7.15 SWMU Aggregate K

7.15.2 p3 "Soil samples with detectable levels of organic vapors, screened using a PID or organic vapor analyzer (OVA), will be analyzed for VOCs." NMED suggest that a certain subset of soil samples be lab analyzed regardless of non-detect on field screening equipment. See comment #2 in General Comments above.

7.16 SWMU Aggregate L

7.16.3 p1 "Samples with detectable levels of organics indicated by the PID or OVA will be analyzed for metals, and samples collected from the mercury storage area will be analyzed for mercury." See comment #2 in General Comments above.

7.17 SWMU Aggregate M

7.17.1 b2 "Any remaining contaminant plumes may have moved vertically along fracture planes that are in contact with the leach fields and outfalls because of the transport mechanism provided by liquids associated with the waste stream." HRMB suggest that LANL investigate the groundwater at this SWMU. There are two reasons for this suggestion. The first is that fracture planes have been identified in this area there is a possibility that contamination pathways cannot be identified by locating all fracture planes. The second is that there is a possibility of a perched aquifer in the area based on Basaltic lithologic samples from test well TW-8. Basalt has been associated with perched aquifers in this area.

7.17.2 p2 "If no anomalies are present, soil boring locations will be selected at random within each of the six grid blocks." See comment #8 under General Comments above.

7.17.2 p7 "The objective of the outfall area sampling will be to determine the presence of potential contaminants along the trace of the outfall to the toe of the slope." See comment #6 under General Comments above.

7.18 SWMU Aggregate N

7.18.1 p3 "If contamination is detected above background during Phase I, Phase II will investigate the remaining sections of lines 34, 36, and 38 located within the security fence a TA-48." Please refer to item #2 of General Comments above.

7.18.2 p4 "One soil sample will be collected from each test pit at anomalous areas identified during the radiation and surveys. If no anomalies are identified during the field surveys, samples will be collected from the approximate depth of the former waste line (i.e. the fill/natural soil contact). NMED suggest that one sample per excavation is an inadequate subsurface investigation. HRMB suggest at least three non-composite samples from each trench.

7.18.2 p7 "If no anomalies are identified, channels will be sampled along the trace of the outfall to the toe of the slope as shown in Figure 7-43." Please refer to item #6 of General Comments above.

7.19 SWMU Aggregate O

7.19.1 b3 "If present, contaminant plumes may have moved vertically (long fracture planes that are in contact with the leach fields and outfalls) along the path of the waste stream." HRMB suggest that LANL investigate the groundwater at this SWMU. There are two reasons for this suggestion. The first is that fracture planes have been identified in this area and there is a possibility that contamination pathways cannot be identified because of the inability to locate all fracture planes. The second is that there is a possibility of a perched aquifer in the area based on Basaltic lithologic samples from test well TW-8. Basalt has been associated with perched aquifers in this area.

7.19.2 p4 "B-8 will only be drilled if COCs are discovered in the leach field." HRMB suggest that LANL drill this boring regardless of discovering COCs in the leach field as COCs may have infiltrated and traces may not have remained on the surface.

7.20 SWMU Aggregate P

7.20.2 p6 "If above-background readings are detected at the 60-ft depth, then drilling will continue until radiological and VOC measurements are below background for two consecutive intervals, or until the drilling rig is not capable of going deeper." Please refer to comment #2 in the General Comments section above.

TA-55

TA-55 SWMUs 55-010 and 55-11(a-e) are not in the Sampling & Analysis Plan nor or they referred for NFA.