



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 6  
1445 ROSS AVENUE, SUITE 1200  
DALLAS, TX 75202-2733

MAY 19 1994

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. Joseph C. Vozella, Chief  
Environment, Health and Safety Branch  
Department of Energy  
Los Alamos Area Office  
Los Alamos, New Mexico 87544

OU 1111

Re: Notice of Deficiency, Operable Unit 1111  
Los Alamos National Laboratory, NM0890010515

Dear Mr. Vozella:

The Environmental Protection Agency (EPA) has reviewed the Resource Conservation and Recovery Act (RCRA) Facility Investigation Work Plan for Operable Unit 1111, and found it to be deficient. Enclosed is a list of deficiencies for which a response is required to the specific comments within thirty days from receipt of this letter. LANL shall submit all revised pages of the work plan (including figures) by July 31, 1994.

In addition, the New Mexico Environment Department will be field checking all sites for which no further action has been requested.

Should you have any questions, please contact Barbara Driscoll at (214) 655-7441.

Sincerely,

*for Don Honker*  
William K. Honker, Chief  
RCRA Permits Branch (6H-P)

cc: Benito Garcia, NMED  
Jorg Jansen, LANL, M992  
P.O. Box 1663  
Los Alamos, New Mexico 87545



2901

led Paper

TC

**List of Deficiencies  
Los Alamos National Laboratory  
Operable Unit 1111**

**General Comment:**

1. Throughout the Workplan, LANL is under the impression that if they find contamination and it is above background, but is under the screening action levels, then no further action is needed, even though the full extent of contamination has not been demonstrated. This is not correct. LANL must find the full extent of contamination and must demonstrate that there is a "clean zone" beneath the contamination. For example, if a soil sample shows PCB contamination exists from 0-2' (above background but below screening action levels), but the 2-5' zone was found to be "clean", then LANL could demonstrate that the contamination has been delineated vertically. If the contamination in the 0-2' interval is below health based numbers for a specified use (e.g. an agreed upon industrial setting), then LANL could request a no further action remedy .

2. In addition, at many SWMUs, LANL is not taking soil samples deep enough vertically to justify a no further action determination. For example, at outfall areas, 6 inch deep soil samples may not reach sediments from the past which have been buried by younger deposited sediments. Also, volatile organics may not show up in surface samples and may show up in deeper intervals. This concern is also appropriate at other SWMUs contained in the Workplan.

3. **Remediation Decisions and Investigation Objectives:** Just because EPA did not comment on this section for a particular group of SWMUs, does not mean that EPA agrees with the Remediation Decisions and Assumptions or the Logic Flow Diagrams presented in this workplan by LANL.

4. Throughout Chapter 5 of the Workplan, LANL talks about SWMUs being field mapped. LANL should have already performed the field survey for each SWMU and presented the survey in the RFI Workplan for each SWMU. Please submit in the revised Workplan a map for each SWMU, with the sampling locations identified.

5. Under each SWMU investigation narrative (Chapter 5 of the work plan), please include the method by which each sample is taken. For example, surface soil samples will be taken by the spade and scoop method, subsurface samples will be taken by a hollow stem auger.....

6. EPA feels that DOE needs to investigate the SWMU's contained in this workplan before they spend money investigating the C designated sites. It is EPA's opinion that the C sites should be investigated after the SWMUs are investigated.

This way investigations will be performed on the higher priority sites first.

7. Each boring log/description in the RFI Report must include the following: note whether or not there is visual contamination in each interval, note whether or not there is an olfactory contamination in each interval; and, include the PID or OVA reading for each interval. There should also, at a minimum, be a brief description (characteristics such as color, texture, and changes in horizon) of the soil sampled.

8. 4.6.4, P. 4-21 - "Phase I investigations will be performed under analytical Levels I, II, III, and IV, as discussed in... the IWP...". LANL shall indicate in the RFI work plan what data quality levels will be used for which decision types.

9. This RFI work plan makes the repeated statement that phase II actions will be taken only for locations where a single contaminant exceeds screening action levels. LANL shall also consider the possible cumulative effects from multiple contaminants .

**Specific Comments:**

1. Page ES-3; Table ES-1: Taking four years to perform the RFI investigation is unacceptable. Please revise your schedule for performing the work and the date the RFI Report will be submitted to EPA.

2. Table 4-6, p. 4-12 - LANL shall provide an explanation why UF<sub>6</sub> not included in this table when the text on page 5-45 indicates its use at TA6-8.

3. Page 4-19; 4th paragraph: If visual or olfactory contamination is evident in a specific section of the 6 inch sample, then that zone should be sampled and not homogenized with the other soil. Mixing of soil samples are not allowed if volatile organics are present.

4. Page 4-19; 5th paragraph: All SOPs for collecting soil and tuff under this workplan must be finalized or complete, and not under development.

5. Aggregate 1, Materials Disposal Area F and Adjacent Pit, SWMUs 6-005, 6-007(a-e) -

a. 5.1.1.1, Description and History, p. 5-2 - LANL shall provide the analytical results for the 1987 sampling of Pit 6-007(e).

b. 5.1.3.1.1, Source Characterization, p. 5-9 - The work plan

indicates " These geophysical techniques may be tested in any sequence." There should be an established order for the use of geophysical techniques, and this should be included in LANL's SOP. LANL shall indicate the types of geophysical methods which will be used, and the order of that use in the work plan. In addition, LANL shall cite the appropriate SOPs which will be used.

**c. 5.1.4 Sampling and Analysis Plan, p. 5-11, -**

i. The boring log/description in the RFI Report should also include the following: note whether or not there is visual contamination in each interval, note whether or not there is a olfactory contamination in each interval; and, include the PID or OVA reading for each interval. Also, justify in the revised workplan why straight vertical borings will be able to detect contaminants as effectively as angled borings.

ii. Explain why soil samples are being taken at the 1 foot interval? EPA believes the 1 foot samples should be taken at another interval within the boring, such as the bottom depth of the pit.

iii. LANL shall indicate by what method the soil cores are being collected.

iv. Indicate what method is being used for collection of the water samples from the seeps and springs.

v. Indicate how deep the surface soil samples will be taken. What method is being used for the collection of the surface soil samples?

**6. Aggregate 2, Plating and Etching Outfall and Related Run-off Area, SWMU 22-015(c)**

**a. 5.2.3.1.1 Source Characterization, p. 5-16 -**

i. LANL shall include a narrative on the field mapping process. Will the staining be mapped on an aerial photograph?

ii. Page 5-17 - LANL needs to justify in the revised work plan, why the piping that transported the waste from building TA-22-52 to the outfall is not being checked to see whether it might have leaked. LANL also needs to include a narrative describing various details of the piping; such as material composition, age of piping, how the piping is connected, approximate volume of waste transported and any previous pipe leak tests performed.

iii. Page 5-17 - Composite sampling is not acceptable for

any area of this SWMU (S1, S2, S3, U1, U2, U3, U4). Separate samples must be taken. Please indicate in the revised workplan the number of samples to be taken in each designated zone.

iv. Page 5-19 - It might be advantageous for LANL to conduct backhoe trenches at selected locations along the outfall area. This would allow LANL to determine the horizontal extent of (especially in the U zones) contamination and would give a good view of vertical contamination. If the bottommost sample still contains contaminants above background levels, LANL must then take deeper samples, regardless of the screening action levels.

v. Page 5-19 - "The number of samples will be sufficient to detect contaminants above SALs with at least an 80% certainty if the contaminants cover 20% or more of the area being sampled." The use of this technique has not been approved or disapproved by EPA or the New Mexico Environment Department (NMED). Guidelines for use of such techniques must be developed in cooperation with these agencies.

**b. 5.2.5 Sampling and Analysis Plans, p. 5-20 -**

i. Since LANL has mobilized the sampling equipment to this location, they should take samples at deeper intervals (4-5'), to verify that vertical contamination has been delineated and that surficial contamination has not migrated downward. LANL must find the full extent of contamination and must demonstrate that there is a "clean zone" beneath the contamination.

ii. Compositing of samples is not acceptable.

iii. Additional Samples in Pond - Soil borings done in the pond area should at a minimum go to 5 feet.

iv. Unstained area: Which vertical intervals are being sampled?

**7. Aggregate 3, Sump and Dry Well Systems and Adjacent Wash Pad, SWMUs 22-012, 22-014(a-b), 22-015(a-b, d-e) and 40-005:**

**a. 5.3.1.1 Description and History, p. 5-25 -**

i. LANL shall verify in the revised workplan that explosive constituents are the only constituents that have been handled by this system. Also, is there a drain line from the sump to the seepage pit? If there is, include a narrative describing various details of the piping; such as material composition, age of piping, length of piping, how piping is connected, and any previous pipe leak tests

performed.

ii. LANL shall include a more detailed drawing of the interconnections of the different lines, drains and sumps.

iii. p. 5-26 - SWMU 22-015(a) received solvents after 1987, and therefore may be subject to RCRA permitting or closure conditions under 40 CFR Part 264.

b. 5.3.3.1.1 Source Characterization, p. 5-34 - Are all present and historical drain lines included on maps in this workplan, if not, include this information in the revised workplan.

c. Table 5-6, p. 5-32 - Please explain the meaning of the footnote "Activity in excess of  $^{238}\text{U}$  natural chain".

d. Figure 5-11, p. 5-36 - EPA disagrees with parts of this diagram? If mixed waste is found in a sump, DOE can still sample the media underneath the sump. If mixed waste is found in an inactive sump, then that material should be removed and sent to a authorized mixed waste storage area. NMED should also be notified of this new RCRA unit.

e. 5.3.4 Sampling and Analysis Plans, p. 5-37 -

i. If mixed waste is found in an inactive sump, then that material should be removed and sent to a authorized mixed waste storage area. It should not be left in sump.

ii. Outfalls and Related Run-Off Areas: LANL shall include a detailed map showing the sampling locations. Since LANL has mobilized the equipment, they should take samples at deeper intervals (4-5'), to verify that vertical contamination has been delineated and that surficial contamination has not migrated downward. Also, please state in the narrative part of the workplan what constituents the soil samples are being analyzed for.

iii. Active Sumps: Please justify in the revised workplan why angled borings cannot be taken. Also, please state in the narrative what constituents the soil samples are being analyzed for.

iv. Inactive Sumps: If there is nothing in the sumps, EPA feels that swipe samples are not necessary. Also, if the sumps are empty and are going to be removed, why doesn't LANL wait until the sump is removed and then sample the soils underneath the removed sumps and drain lines? Please clarify in the revised workplan.

v. Page 5-38; 2nd paragraph: LANL shall clarify in the

revised workplan whether soil samples are being taken from the bottom surface of the excavation or from the soil surface before excavation. Also, please state in the narrative what constituents are the soil samples being analyzed for.

**vi. Page 5-41; 1st paragraph:** If volatile samples are being taken, then logging should be done quickly and not in great detail. Samples should be taken from interior of core. Also, please state in the narrative what constituents are the soil samples being analyzed for.

Is LANL saying that they will also take three samples at different levels within the drywell itself? Please clarify in the revised workplan.

**vii. Page 5-41; 2nd paragraph:** LANL shall include a map showing the locations of the proposed samples. Please explain why LANL is taking surficial asphalt samples. Also, please state in the narrative what constituents are the soil samples being analyzed for. In addition, please refer to previous comments regarding inactive sumps. Furthermore, what intervals are soil samples being taken?

**8. Aggregate 4, Inactive Firing Sites, SWMUS 6-003(a), 6-003(c-g), 6-008, C-6-019, 7-001(a), 7-001(b), 7-001(c), 7-001(d), Building TA-6-8 and surrounding Area**

**a. 5.4.1.1 Description and History, p. 5-45, paragraph 4 -** Please give the approximate dimensions of this crater, width versus depth. Soil samples should go to at least three feet from the surface of the SWMU. LANL shall revise the work plan accordingly.

**b. 5.4.3.1.1 Source Characterization, p. 5-49 -** LANL shall explain why sampling will only extend 10 feet beyond the perimeter of the firing pad.

**c. 5.4.4 Sampling and Analysis Plans p. 5-53 -**

**i.** LANL shall clarify whether the concrete bowl is in contact with the ground surface or is elevated above the ground surface.

**ii. Page 5-54; 3rd paragraph:** Why are surficial samples being taken from a removed underground storage tank. Soil samples should be taken underneath the location of the removed tank, unless contaminated soil was used to fill the excavation.

**iii. Page 5-55; 1st paragraph:** Give a more detailed

description on this SWMU and by what means contaminants reached the soil.

d. **Table 5-12, p. 5-60** - LANL shall explain why there will be no soil description information on these samples.

9. **Aggregate 5, Surface Disposal Areas, SWMUs 6-007(f) & (g), 40-010, 5.6.1.1 Description and History, p. 5-61** - EPA believes that all surface disposal areas should have soil borings going to a minimum of 3 feet. In addition, explain why LANL believes there was no trench disposal at this SWMU. LANL shall also explain when disposal of RCRA hazardous waste was discontinued at these sites?

10. **Aggregate 6, Septic Systems, 6-001(a & b), 22-010(a & b), 22-016, 40-001(a & b)**

a. General Comment: For all SWMUs in this section, LANL also needs to include a narrative describing various details of the piping; such as material composition, age of piping, how piping is connected, approximate volume of waste transported and any previous pipe leak tests performed.

b. **5.6.1.2.2 Potential Pathways and Exposure Routes, p. 5-70** -

i. EPA disagrees with LANL's assumption that drain pipes could not have leaked contaminants because of continued flow.

ii. **Page 5-70; 4th paragraph:** Information in this paragraph contradicts what is presented in Table 5-13. LANL shall clarify the discrepancy.

c. **5.6.2 Remediation Decision and Investigation Objectives, p. 5-72** -

i. **1st paragraph** - EPA is requiring the media surrounding the tank to be sampled during Phase I.

ii. **2nd paragraph:** If mixed waste is found in the septic tanks, then LANL should remove this waste to a more controlled area and notify the State that they have a hazardous waste unit. Also, when the tank is removed, LANL must sample the media underneath.

iii. **3rd paragraph:** EPA will also require that LANL sample the media underneath the tank. If no contaminants are found in the media underneath the tank, then sampling underneath the drain line is not necessary, unless the drain line is still in use and is receiving hazardous constituents.

iv. **Page 5-73; 2nd paragraph:** If mixed waste is found in the

septic tanks, then LANL should remove this waste to a more controlled area and notify the State that they have a hazardous waste unit.

**d. Figure 5-28, p. 5-74 -**

i. EPA disagrees partially with the logic flow of this diagram. If the tank, drain lines, and outfall areas are still receiving hazardous constituents, then LANL may be subject to periodic monitoring, which means additional sampling before decommissioning.

ii. EPA believes that this logic diagram should have had the following sentence in the first diamond "Are contaminants of concern present?" If the answer is yes to that question, then go to "Is mixed waste present?" LANL shall revise the flow chart accordingly.

**e. 5.6.4 Sampling and Analysis Plan, p. 5-75 -**

i. 5th paragraph - Soil borings at the outfall pipe should go to at least 5 feet. The borings located further from the pipe should go to at least 3 feet. LANL shall revise the work plan accordingly.

ii. 6th paragraph: Soil borings in the leach field and locations directly below the outfall pipe should go to at least five feet in depth. This statement also applies to drain tiles. LANL shall revise the work plan.

iii. Figure 5-29 - LANL shall include a cross sectional drawing of the following: the leach fields; sand filters; filter trenches; and seepage pits.

iv. Page 5-77: 3rd paragraph: Please explain why LANL is taking swipe samples from an empty septic tank?

v. Page 5-79; 1st paragraph: Samples should be taken to at least 3 feet, not shallower. LANL shall revise the work plan accordingly.

vi. Page 5-79; 2nd paragraph: Explain why LANL would backfill an excavation when contaminants of concern are found in the excavation.

**11. Aggregate 7, Active Firing Sites, 40-006(a-c), 40-009, TA-40-4, TA-40-12**

a. 5.7.1.1 Description and History, p. 5-81, 1st paragraph - Is LANL saying that they are investigating SWMU 40-009 only because it might have received fallout constituents from firing sites; or, is LANL investigating this SWMU because hazardous

constituents were placed into the landfill? Please clarify.

b. **Figure 5-31, p. 5-85** - LANL shall explain why the assessment is limited to the area south of the pad.

c. **5.7.4 Sampling and Analysis Plans, p. 5-85** - What is the "radiation count" proposed here?

d. **Table 5-18, p. 5-87** - LANL shall explain why there will be no soil description information on these samples. Why are volatile organics not included in the target analyte list for the landfill?

e. **Page 5-88; 2nd paragraph:** Soil borings should go to at least 3 feet. If the debris and sand piles are deeper, then borings should go 3 feet below the bottom of the debris piles.

## 12. Aggregate 8, Former Structure Sites

a. **5.8 Aggregate 8, Former Structure Sites, p. 5-89** - Please give a more detailed description of the sites designated with a C. Are these sites that contained or stored contaminants inside the building itself, without having drain lines or other release points to the outside environment? Please clarify.

b. **5.8.4 Sampling and Analysis Plans, p. 5-93, 5th paragraph** - Soil samples around the decommissioned septic tank must be taken at the bottom of the former tank and 3 feet below that level. Also, where does the pipe end or go to? Is it to a drain field? LANL shall clarify the text.

The investigation of the pipe should determine whether the pipe had leaks. Please include this information in the revised workplan.

c. **Table 5-20, p. 5-94** - LANL shall explain why volatile organics were not included in the target analyte list for SWMUs 6-002 and C-6-005.

## 13. Aggregate 9, Former Container Storage Areas, SWMU 6-006 and 40-004

Page 5-98; 5th paragraph: LANL should have already performed the field survey to locate the sampling points for the RFI Workplan. Please submit in the revised Workplan a map with the sampling locations identified. Soil samples must also be taken to depth of 3 feet. Please explain why there will be no soil description information on these samples.

Page 5-98; 4th paragraph: EPA believes that sampling the soil under the asphalt is sufficient. Sampling the asphalt probably

will be inconclusive and is not necessary.

**14. Aggregate 10, Storage Areas, SWMUS 40-007(a-e)**

Page 5-98; 7th paragraph: EPA is not clear whether the explosive wastes stored at these SWMUS are stored inside the building or on a pad outside of the building. Also, are there waste lines or drains exiting these buildings? LANL shall clarify this information in the revised RFI work plan.

**15. Chapter 6**

**a. 6.1.1 Description and History, p. 6-1, 1st paragraph -**

i. EPA is concerned about the SWMU locations which were mentioned in the SWMU report of 1990. Therefore, please include this information in the revised RFI workplan.

ii. In addition, how long has the treated liquid been discharged to the outfall? Was there a discharge prior to the NPDES permit? Also, include a descriptive narrative on this SWMU from the 1990 SWMU report in the revised Workplan.

**b. 6.1.2 Rationale for Recommendation of No Further Action,**

**p. 6-2 -** LANL shall describe in more detail how the tanks are exempt from RCRA permitting requirements. Also, HSWA authority can require investigation of hazardous waste satellite storage areas.

**c. 6.2.1 Description and History, p. 6-3, 2nd paragraph -** LANL shall include in the revised workplan the approved closure plan letters from the State for each RCRA unit.

**d. No Further Action Requests:** EPA agrees that the following units do not need to be added to the HSWA portion of the RCRA permit:

6-003(b) Explosion containers

6-004, Sump

22-014(c) Active Sump and Outfall

Area of Concern, C-6-020, Decommissioned Building Site

Area of Concern, C-40-001, Herbicide-Treated Area

LANL may request removal of the following units from the permit under a Class III permit modification:

22-011, Disposal Pit

40-001(a) Septic System