



GARY E. JOHNSON  
GOVERNOR

State of New Mexico  
**ENVIRONMENT DEPARTMENT**  
Hazardous & Radioactive Materials Bureau  
2044 Galisteo  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-1557  
Fax (505) 827-1544



MARK E. WEIDLER  
SECRETARY

EDGAR T. THORNTON, III  
DEPUTY SECRETARY

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

September 22, 1997

Michael J. Zamorski, Acting Area Manager  
U.S. Department of Energy, Kirtland Area Office  
P.O. BOX 5400  
Albuquerque, NM 87185-5400

Dear Mr. Zamorski:

**RE: Request for Supplemental Information - RCRA Facility  
Investigation Work Plan for Southwest Test Area (OU 1335)  
Sandia National Laboratories, March 1996.**

The New Mexico Environment Department's (NMED) Hazardous and Radioactive Materials Bureau (HRMB) has completed a review of the Sandia National Laboratories (SNL) March 1996 submittal of a RCRA Facility Investigation (RFI) Work Plan for the Southwest Test Area (OU 1335) and requires Supplemental Information. General and specific questions and comments are contained in Attachment A. SNL must respond to the request for supplemental information noted in Attachment A within thirty (30) calendar days of receipt of this letter.

Should you have any questions please contact Ms. Stephanie Kruse, HRMB's SNL Facility Manager, or myself at the above address or by telephone at (505) 827-1561.

Sincerely,

Robert S. (Stu) Dinwiddie, Ph.D., Manager  
RCRA Permits Management Program

RSD/mjc

cc w/ attachment:

Benito Garcia, Chief, HRMB	Roger Kennett, DOE Oversight Bureau
Stephanie Kruse, HRMB	Warren Cox, SNL, Manager, ER Project
John Parker, Chief, DOE Oversight Bureau	Mark Jackson, DOE
	David Neleigh, EPA 6PD-N

Track: SNL, 9-22-97, N/A, DOE/KAO, HRMB/mjc, RE:, File  
File: HSWA, SNL, OU 1335 97

c:\wpwin\sandiafy.97\1335swta.rfi\suppinfo.req



HSWA, SNL-041335-97

## ATTACHMENT A

### GENERAL COMMENTS

1. Sites which are proposed but not approved for NFA may require a separate RFI Work Plan, or an addendum to this RFI Work Plan, in order for the investigation to be completed. Additionally, Sandia has indicated that some of the NFA proposals have not been submitted to EPA or NMED as of this date. SNL/NM must specify the schedule for submittal of these NFA proposals.
2. Because the surface soil at most of these sites may contain the highest concentrations of contaminants, surface soil sampling must be taken from less than 6 inches.

### SPECIFIC COMMENTS

#### Section 3.0

1. **Page 3-25, Paragraph 2; "Figure 3.6-2 shows the background sample locations..."**  
Figure 3.6-2 is the vadose zone hydrogeologic setting. The above sentence probably refers to Figure 3.6-3 which shows background sample locations. SNL will confirm whether this is correct.
2. **Page 3-33, Table 3.6-6; "Background Concentrations of Metals and Radioisotopes for OU 1335"**  
According to page 3-25, Paragraph 1, Table 3.6-6 refers to soil or surface-water samples. In Paragraph 2, Table 3.6-6 is described as summarizing the results of the soil analysis. The title of Table 3.6-6 does not specify the matrix analyzed. Regarding Table 3.6-6, the number of data points used to determine the background range and UTL must be specified; that is, the number of data points of each constituent of concern must be added to the table. Also, an indication must be provided regarding how these data compare to site-wide background data.
3. **Page 3-38, Figure 3.6-4; "Groundwater Monitoring Wells in the Vicinity of Southwest Test Area"**  
The AVN-1 and AVN-2 wells are not located correctly. The map must be revised to show the well symbol approximately 2000 feet to the west of the location presently marked on the figure.

## Section 4.0

4. Page 4-4, Section 4.1.3.1; "Each OU 1335 SWMU that is proposed for an NFA decision has met one or more of the following criteria:..."  
The NFA process and criteria must be updated to those listed in Annex B of the Document of Understanding.
5. Page 4-6, 4.1.3.3 SWMUs Proposed for Limited Confirmatory Sampling to Support NFA Determination; "...each site must meet one of the three criteria..."  
See comment 4.
6. Page 4-13, Paragraph 2; "Based on the described studies, SNL/NM does not believe it is necessary to sample for HE at the following sites where OB/OD occurred."  
Information based on interviews and/or partial facility records may give an incomplete picture of how high explosives (HE) were used and whether explosives tests went high order. OB/OD sites must be evaluated based on HE data from each site. Soils at ER Sites 55, 85, 86, 91, 109, and 193 must be sampled for HE (preferably at ground zero) to confirm existing site information.

## Section 5.0

### ER Site 14 - Burial Site (Building 9920)

7. A meeting between NMED and SNL since this draft work plan was submitted resulted in the following points of agreement and issue clarifications on the assessment approach for the accelerated sampling of Firing Site 3 at ER Site 85:
  - Firing Site 3 will be resurveyed for surface radioactive anomalies by the SNL/NM Radiation Protection Operations because documentation of earlier surveys is not available.
  - The number of samples and the sampling locations planned for firing Site 3 are acceptable.
  - Isotopic uranium analysis will be performed at each sampling location in conjunction with gamma spectroscopy.
  - 20% of the samples collected will have split samples analyzed by a CLP laboratory for verification purposes.

- Soil at the sampling location closest to the center of Firing Site 3 will be analyzed for high explosives residue with a split sample analyzed at a CLP laboratory.
- 8a. **Page 5-4, Paragraph 1, 2, and 3; "(Ref.844)"**  
Reference 844 is not included within Section 6.0 References.
  - 8b. **Page 5-7, 5.2.3 Conceptual Model, Paragraph 2; "Figure 5.2-3 shows the probable location of the pit."**  
If fluorescent light bulb glass shards are not found at the probable pit location, other locations should be investigated. This may require investigating other possible pit sites or expanding the current sampling grid to encompass a larger area. Another investigative option would be to carefully blade off the area using a dozer (or other appropriate heavy equipment) to determine the exact pit location.
  9. **Page 5-4, Paragraph 3; "...an aboveground explosive test was conducted with 6,000 to 8,000 fluorescent light bulbs..."**  
Soils at the location of the light bulb test must be sampled for HE and metals (including Hg).
  10. **Page 5-11, 5.2.5.2 Intrusive Sampling; "A 20- by 20- foot grid centered on the burial site location will be set up..."**  
If the pit location is not known for certain (see comment 8) how will SNL know if they are centered on the burial site? Additional samples may be required to determine the extent of the pit and potential contaminants. If the pit location is known, a map must be included that shows the actual placement of the sample grid with respect to the pit.

The glass shards and soil that remain may be a safety hazard. SNL must consider the removal of this soil, if no contaminants are found.

### **ER Site 85 - Firing Site (Building 9920)**

11. **Pages 5-13 and 5-16.**  
Potential Constituents of Concern (COCs) are listed on these two pages. Nickel was used and possibly released at Site 85, and must be included in the list of metals to be analyzed for on page 4-15.
12. A meeting between NMED and SNL since this proposed work plan was submitted resulted in the following changes to the characterization approach proposed in the draft work plan:

- Recent process history for the site indicates that the potential release of organics just outside the door of Building 9920 consisted of cleaning pieces of sheet stainless steel with isopropyl alcohol. Because no appreciable release has likely occurred, no soil sampling is necessary.
- An expanded geophysical survey will cover the area west and east of the cable run boxes west of Building 9920 to try to locate the former test pits at Firing Site 1.
- If the geophysical survey detects anomalies that could be pit locations, boreholes will be drilled to collect samples at least 12 feet below grade. If no anomalies are detected, three boreholes will be drilled west of the existing locations at Firing Site 1. Borehole locations will be selected based on consultations with NMED Oversight Bureau.
- Soil samples will be collected in the gridded area on figure 5.3-5a of the draft RFI Work Plan northwest of Building 9920 in the general location of the former surface firing site.
- Because of the small number of samples being collected, all of the samples will be analyzed by one of DOE/SNL's off-site CLP laboratories.

13. **Page 5-20, Table 5.3-1; Summary of Analytical Results at ER Site 85**

In soil samples taken in August of 1995, the maximum concentrations of arsenic, barium, lead, and silver are above the proposed 95th UTL or 95th percentile of the corresponding background concentration as listed in the report *Background Concentrations of Constituents of Concern to the SNL/NM ER Project and the KAFB IRP* (March 1996). A summary of the entire data set for the 5 boreholes must be included in the work plan instead of just the ranges. The locations (including depths) of the samples must be shown on the map and/or table.

Footnote (a) at the bottom of Table 5.3-1 references the October 1994 Background report for the data given; however, these data do not match those found in the referenced October report. However, the data do match the OU 1335 background data presented on page 3-33. Besides the background data provided, a comparison must be provided showing how the data on page 3-33 compare to the UTLs and 95th percentiles proposed in the March 1996 report.

14. Page 5-23, Table 5.3-2 Data Quality Objectives for ER Site 85 At Building 9920, VOC's must be added to the list of analytes at exterior doors and/or at the location that VOC's were released (see comment 12).

15. Page 5-24, 5.3.5.3 Intrusive Sampling, Paragraph 3; "If the GPR detects pits or a trench to the west of the cable run boxes..."

It is not clear where the cable run boxes are in relation to Building 9920 and the 5 borehole sample locations. This relationship must be shown on Figure 5.3-3 and, if possible, on Figure 5.3-5a. Soils at Firing Site 1 must be sampled both east and west of the cable run boxes, and north of Building 9920, to address the site location discrepancies.

The work plan does not address whether the 1995 boreholes were centered on known pit locations. Although testing was reported to have been done north of Building 9920, no boreholes were drilled in this area.

At a minimum, surface soil samples must be collected and analyzed for beryllium, cadmium, and explosives. A borehole must be drilled in the center of each pit location to a depth of at least 12 feet. Borehole samples must be collected at 3 foot intervals and analyzed for beryllium and explosives.

16. Page 5-25, Figure 5.3-5a Potential soil sampling locations at ER site 85 and Page 5-16, Paragraph 1

It would seem more probable that the steam explosions at Firing Site 2 would result in a distribution of contaminants spread radially about the VGES tank. SNL must explain their rationale for believing that contamination is restricted to the northernmost corner of the tank. Unless a reasonable explanation is provided, in addition to soil sampling already planned, at least four additional samples of surface soil surrounding the collar of the tank must be collected. The four samples must be analyzed for nickel, cadmium, chromium, and uranium.

SNL must identify and sample surface soils at locations where wastewater and simulated core material waste were dumped on the ground as a result of Firing Site 2 activities.

SNL must explain how and where the simulated core material was "burned" for the Firing Site 2 tests.

At a minimum, surface soil samples must be collected at Firing Site 3 and analyzed for explosives and uranium.

17. **Page 5-26, Figure 5.3-5b Potential soil sampling locations at ER site 85**  
The sample coverage at Firing Site 4 is not adequate. At firing sites with a known ground zero, a sample must be taken at ground zero. In addition, it may be preferable to construct a radial sampling pattern that is centered at ground zero. At a minimum, surface soil samples must be collected and analyzed for barium, explosives, and uranium.
18. **Page 5-28, Table 5.3-3 Summary of Nonintrusive and Intrusive Sampling at ER Site 85**  
This table must be adjusted to include VOC's for the area surrounding Building 9920 (see comment 14) and HE for each firing site location.

### ER Site 91 - Lead Firing Site (Thunder Range)

19. **Page 5-35, Paragraph 2; "Lead concentrations in the borehole samples ranged from nondetected to 17 mg/kg,..." and Table 5.4-1 Summary of Radiological Analysis at ER Site 91, July 1995**  
A summary of the entire data set for the 3 boreholes must be included in the work plan instead of just the ranges. Sample locations must be cross-referenced on a map. In addition, see comment 13. A lead concentration of 17 mg/kg is above the proposed 95th percentile (11.8 mg/kg, *Background Concentrations of Constituents of Concern to the SNL/NM ER Project and the KAFB IRP* (March 1996), which presumably characterizes background within the southwest area subsurface soils.
20. **Page 5-40, 5.4.5.3, Subsurface Sampling**  
SNL must provide its rationale for only sampling to a depth of 3 feet at locations 19-22. If no rationale is available, sampling must be conducted at a depth of 5 feet.

### ER Site 103 - Scrap Yard (Building 9939)

21. **Page 5-53, first paragraph**  
SNL must investigate the used crucibles contaminated with radioactive materials. How has SNL determined that they are not hazardous? SNL must specify the final disposition of the crucibles. How will the crucibles be disposed of?
22. **Page 5-54, Paragraph 6; "Total chromium ranges from nondetectable levels to 220 mg/kg over a background value ranging from 0.01 to 58.1 mg/kg."**

The source of the background values must be referenced. Table 5.5-3 does not contain any background values and must be revised to include the most recent background data. The proposed 95th percentile for chromium in surface soils within the region of interest is 17.3 mg/kg (*Background Concentrations of Constituents of Concern to the SNL/NM ER Project and the KAFB IRP*, March 1996) The Cr level reported at 220 mg/kg is above the 17.3 mg/kg background level, indicating that a release has occurred at ER Site 103.

23. **Page 5-54, Paragraph 7; "The maximum risk-based concentration level for the RCRA metal chromium VI is 390 mg/kg for the ingestion pathway for residential use (EPA March 1995)"**  
In addition to chromium, barium in Table 5.5-3 has a concentration of 64 to 190 mg/kg. The proposed 95th percentile of barium concentration in surface soils is 130 mg/kg (*Background Concentrations of Constituents of Concern to the SNL/NM ER Project and the KAFB IRP*, March 1996). Based upon this comparison, there has been a release of barium, and the extent of the release must be investigated.
24. **Page 5-55 and 5-56, Table 5.5-2 Summary of Radioisotope Analyses at ER Site 103 Soil Scoping Sampling, July 1995. and Table 5.5-3 Summary of Metals Analyses...**  
A summary of the entire data set for the 13 surface soil samples must be included in the work plan, instead of just the ranges; along with this, the proposed March 1996 Background UTL's must be given. All sample locations must be shown on a map.
25. **General Comment about ER Site 103**  
The area where the crucibles were cut must be investigated. SNL must provide details regarding the use and disposition of any coolant water and/or other coolants that were associated with sawing operations.

Radiological anomalies were found over much of the southern and western portions of the Large-Scale Melt Facility site. A map and table must be provided in the work plan showing the locations and radiological activities of the confirmation samples.

### **ER Site 117 - Trenches (Building 9939)**

26. **Page 5-71, Table 5.6-2 Summary of Nonintrusive Sampling at ER Site 117 and Page 5-70**  
There is disagreement between these two pages as to how the metals analysis will be done. Analysis of total metals (not TCLP metals) must be performed to define the nature and extent of a contaminant at an ER site.

Because of the crucible washing process, all five sodium disposal pits must be sampled for uranium, in addition to sodium. The sodium pit locations must be excavated to a depth of at least 12 feet.