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Date: June 15, 2000
 Refer to: ER2000-0265



Mr. John Kieling
 NMED-HRMB
 P.O. Box 26110
 Santa Fe, NM 87502

SUBJECT: SUBMITTAL OF RESPONSE TO REQUEST FOR SUPPLEMENTAL INFORMATION (RSI) FOR THE VOLUNTARY CORRECTIVE MEASURES (VCM) REPORT FOR POTENTIAL RELEASE SITES (PRSS) 16-006(g), DRUM STORAGE AGEA AGGREGATE [16-029(g2) and C-16-074], 16-005(d) and 16-034(p)

Dear Mr. Kieling:

Enclosed are three copies of the Los Alamos National Laboratory Environmental Restoration (ER) Project's Response to your RSI on the VCM Report for PRSS 16-006(g), Drum Storage Area Aggregate [16-029(g2) and C-16-074], 16-005(d) and 16-034(p). The RSI was received at the ER Project Office on April 18, 2000. The response was originally due to your office on May 18, 2000, but because of the Cerro Grande Fire, a 30-day extension was allowed.

If you have any questions or concerns please feel free to call Dave McInroy at (505) 667-0819 or Joe Mose at (505) 667-5808.

Sincerely,

Julie A. Canepa, Program Manager
 Los Alamos National Laboratory
 Environmental Restoration

Sincerely,

Theodore J. Taylor, Program Manager
 Department of Energy
 Los Alamos Area Office

JC/TT/NR/ev

Enclosure: Response to RSI for the VCM Report for PRSS 16-006(g), Drum Storage Area Aggregate [16-029(g2) and C-16-074], 16-005(d) and 16-034(p)

Hswa LAWL 3/1082/16

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Response to

REQUEST FOR SUPPLEMENTAL INFORMATION

VCM REPORT FOR POTENTIAL RELEASE SITES 16-006(g), DRUM STORAGE

AREA AGGREGATE [16-029(g2) AND C-16-074], 16-005(d), AND 16-034(p)

LOS ALAMOS NATIONAL LABORATORY, NM0890010515

INVOICE #HRMB-LANL-99-009

INTRODUCTION

Subsequent to receipt on April 17, 2000, of this Request for Supplemental Information (RSI), two events impacted this LANL response; 1) a meeting with New Mexico Environment Department (NMED)/Hazardous representatives to review a draft of this RSI response, and 2) the Cerro Grande fire.

Representatives of DOE and LANL's ER Project met on May 4, 2000 with personnel from NMED-HRMB to review a draft of this response. At this meeting HRMB 1) emphasized that in future site characterization reports, when human-health risk assessments are performed using industrial exposure scenarios to site workers, a residential exposure scenario should also be included in the risk assessment and used for comparison, and 2) stated that, even though data was provided demonstrating an elevated uranium background at TA-16, the uranium detected should have been screened against background values documented in "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments and Bandelier Tuff at Los Alamos National Laboratory" (Ryti, et al.) and, upon failing this screening analysis, carried forward in the report as an "unbounded" COPC for uncertainty analysis and risk assessment, if necessary. The submitted report did not satisfy either of these requests. In future reports: 1) residential screening will be completed if this is required by current NMED guidance (it is recognized by LANL that this issue is in a state of flux); and 2) unbounded constituents that are apparently within a local background range will be carried forward as a COPC for further uncertainty analysis and risk assessment.

In addition to concerns regarding the risk screening, the NMED identified issues of data quality, nature and extent of contamination, and screening levels that may impact approval of NFA for these PRSs. It is important to note that all of the PRSs included in this report have been proposed for consolidation as part of the 1999 Annual Unit Audit. 16-006(g) has been grouped into consolidated PRS 16-029(x)-99, 16-029(g2) and C-16-074 have been grouped into consolidated PRS 16-013-99, 16-005(d) has been grouped into consolidated PRS 16-026(q)-99, and 16-034(p) has been grouped into consolidated PRS 16-029(z)-99. Hence, the data associated with each of these PRSs will be used in future reports to address decisions for the consolidated PRSs. If, in light of the proposed HRMB policy on conducting human health risk assessment, issues requiring additional data collection remain, LANL proposes to complete any required additional sampling in the context of the consolidated PRS sampling. LANL will defer any recommendations for PRS-specific NFA until an evaluation of the consolidated PRS can be completed.

Further, on May 10, 2000 the Cerro Grande Fire spread through TA-16 V-Site destroying all of the buildings (except Building 16-516, the historic high-bay assembly building, and Building 16-517) and burning grass and trees on the land surface. With the exception of PRS 16-034(p) the PRS's discussed in this VCM Report were exposed to surface fires. Comments provided in this RSI Response may

address uncertainties introduced by the Cerro Grande fire; however they will not reflect any assessment of the effects of this fire.

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories as presented in the letter. Los Alamos National Laboratory's (LANL's) responses follow each NMED comment.

General Comments

NMED Comment

1. At this time, it is reasonable to expect that the future land use for TA-16 will remain industrial. However, if there is even a possibility that parts of TA-16 will become open to the public as part of a historical preservation area, then LANL should perform a human health screening using a residential scenario in order to evaluate potential future risk. LANL should provide updated documentation as evidence that the future land use for TA-16 will remain industrial.

LANL Response

1. As stated in the VCM Report (Section 2.4.1.1 and others), "No change in the industrial land-use designation for this area is expected according to the land use master plan and future land use map for the Laboratory; these documents are a part of the Site Development Plan – Annual Update 1995." This land-use designation for TA-16 is re-affirmed in LANL's Comprehensive Site Plan 2000 (CSP 2000). The planning window for this document is 30 years. The CSP 2000 identifies TA-16 as part of the Experimental Engineering Planning Area with current and future land use slated as HE Research and Development. The TA is restricted and closed to all nonexplosives development, testing and storage activities. As a result, TA-16 is isolated for security and safety reasons; it is located within an Existing Limited Security Area controlled by fences and security gates.

All of the buildings in V-Site were destroyed in the Cerro Grande fire except Buildings 16-516 and 16-517. Building 16-516 has the most historic significance as it is the building where components of the first atomic bomb were tested for fit before it was sent to Trinity site for detonation. Thus, it is possible that V-Site will remain as a historic site. However, it remains unlikely that access to V-Site will be allowed to anyone except escorted visitors, which is inconsistent with a residential scenario. If, in the future, NMED continues to require residential scenario evaluation of all PRSs, LANL will complete such an evaluation of the V-Site consolidated PRSs.

NMED Comment

2. The background values in the document titled "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments and Bandelier Tuff at Los Alamos National Laboratory" (Ryti, et al.) have been accepted and verbally approved by HRMB. The LANL-wide background data set was designed to eliminate the need to collect separate background data sets. Even though most of the uranium values in this report are higher than the laboratory-wide uranium background value of 1.82 mg/kg, LANL should

use the approved values for comparison purposes in this report. None of the uranium values should have been eliminated from further screening assessment based on comparison to the derived TA-16 specific background value of 3.85 mg/kg.

LANL Response

2. In the data review section for inorganic chemicals for each of the PRSs in this report, inorganic sample analytical results were consistently compared to the LANL-wide inorganic BV's, including comparison of uranium sample results to LANL-wide uranium BVs. It was noted that uranium concentrations slightly exceeded the LANL-wide uranium BV at each PRS except 16-034(p).

This observation, and the absence of any evidence of a uranium release at V-Site, prompted further examination and statistical evaluation of earlier sampling campaigns in TA-16. The statistical evaluation of earlier sampling campaigns in TA-16 (presented in Appendix E) indicates that the total uranium background for this Technical Area is probably slightly elevated above the LANL-wide total uranium background. During the data review, the investigators noted that the uranium values for each SWMU appeared to be within the TA-16 background range and eliminated them as COPCs. The key point is that LANL did not attempt to demonstrate a decreasing trend in uranium concentrations because such an effort would be difficult (if not impossible) when the observed uranium concentrations are hypothesized to be "background".

Again, this section of the report 1) compared specific results to LANL-wide BVs, 2) noted that the sample results exceeded LANL-wide BVs, 3) introduced and provided the rationale for comparing the TA-16 uranium background (while referring the reader to Appendix E where the TA-16 sampling history and statistical data-evaluation were presented,) and, 4) dropped uranium from further consideration when the sampling results indicated that the sample concentrations were within the range of values measured in the background at TA-16.

When these PRSs (and other TA-16 PRSs) are re-assessed as consolidated PRS, uranium will be carried through the screening assessment as a COPC and evaluated in uncertainty assessments and risk assessments.

Specific Comments

NMED Comment

PRS 16-006(g)

3. Section 2.2.2 Operational History, page 6, paragraph 2:

LANL Statement: *"The inspection and repair room floors were fitted on three sides with lead-lined troughs leading outside to the trough under the porch"*

HRMB Comment: *"This statement gives little information regarding the intended use of the trough, and the handling and disposal of the waste that entered the trough. LANL should include this information,*

along with information on the waste characteristics and the ultimate destination of the waste in the trough.”

LANL Response

3. The troughs were used to capture HE-bearing wastes from the casting room in building TA-16-515. In the early days of TA-16, lead lining was used to line such troughs, because lead does not react with TNT, the principal cast explosive used (Lee Hilton interview, 1993). HE residues within the building (on walls, floors, and in casting kettles) were washed out and the washwater was directed into the troughs. The troughs drained northward into a SE-NW trending trough (still visible prior to the Cerro Grande fire) outside the building that drained northward into the sump that was located west of TA-16-515 (see Figure 2.2.1 of VCM report). During operations this sump was routinely pumped/emptied and the HE residues were burned at the TA-16 Burning Grounds. The drainlines from this sump continued from NW to SE and daylighted in the V-Site 'pond' several hundred ft SE of V-Site. This trough, its associated drainlines, and the V-Site 'pond' are PRS 16-029(x), which had its fixtures removed, its soil cleaned up, and the residual soil characterized during the V-Site D&D and VCM. The data for PRS 16-029(x) showed that the cleanup achieved the V-Site cleanup levels, but did not achieve full nature and extent of contamination characterization, and did not pass the ecological screening assessment for all constituents. Hence, this PRS was not included in the V-Site Report.

NMED Comment

4. Section 2.3.4.2 VCM Plan Requirements, page 10, paragraph 3:

LANL Statement: “Table 2.3-1 presents the soil cleanup levels according to the approved VCM plan (LANL 1997, 55653.2). The EPA Region 9 PRGs for industrial soil were used as cleanup levels for the VCM activities. Note that some of the Region 9 PRGs have changed since they were included in the approved VCM plan.”

HRMB Comment: “LANL should document and discuss the changes in these PRGs.”

LANL Response

4. The EPA Region 9 industrial PRGs (used as cleanup levels in the 1997 VCM Plan) were cited because the Plan, and cleanup levels in the Plan, were approved. For information purposes, the table below lists the PRGs from the 1997 VCM Plan and the 1998 Region 9 PRGs, used in human health screening in the 1999 VCM Report. Note that EPA Region 9 PRGs are updated approximately yearly and some PRGs change due to changes in methodology or toxicological criteria. The following differences between the two sets of PRGs (from 1997 Plan to 1999 Report) are noted:

- PRG for barium increased by an order of magnitude from 1000 mg/kg to 10000 mg/kg.
- PRG for beryllium increased dramatically from 11 mg/kg to 22000 mg/kg.
- PRG for cadmium decreased from 185 mg/kg to 83 mg/kg.
- PRGs for the following constituents increased slightly to moderately: copper, cyanide (based on free cyanide), DNB mixture (based on 1,3-DNB), DNT mixture, HMX, nickel, RDX, and TNT.
- PRG for TNB increased dramatically from 3.5 to 2600 mg/kg.

Therefore, PRGs from the 1999 VCM Report are less conservative for most chemicals than those from the 1997 VCM Plan. Exceptions are cadmium, which is more conservative than the previous number, and chemicals for which the PRG remained the same (chromium, lead, and silver).

Note that the following adjustments, per NMED guidance, were made to PRGs as they appear in the Region 9 spreadsheets:

- noncarcinogenic chemicals – PRGs are multiplied by one-tenth to account for multiple noncarcinogenic constituents.
- carcinogenic chemicals with a cancer classification of “C” (possible human carcinogen) are multiplied by 10 to account for the weak weight-of-evidence for carcinogenicity.

**PRGs FOR INDUSTRIAL SOIL
CONTINUED LABORATORY OPERATIONS SCENARIO**

Chemical list from V-Site VCM Plan (1997)	Endpoint for Basis of Cleanup Level	Approved Soil Cleanup Levels for V-Site VCM Plan (1997) (mg/kg) ^a	Cleanup Levels for VCM Report (1999)(mg/kg) ^b
Barium	nc	1000	10000
Beryllium	c	11	22000
Cadmium	nc	185	93
Chromium (total)	nc	450	450
Copper	nc	6300	7000
Cyanide	nc	1400	2100
DNB mixture	nc	6.8	8.8
DNT mixture	c	2.8	3.6
HMX	nc	3400	5300
Lead	nc	1000	NA
Nickel	nc	3400	3700
RDX	c	17	27
Silver	nc	940	940
TNB	nc	3.4	2600
TNT	c	64	100

nc = noncarcinogenic. These chemicals are noncarcinogenic. Therefore, one-tenth of the PRG is used for screening per NMED guidance.

c = carcinogenic

a These cleanup levels were taken from EPA Region 9 database on Preliminary Remediation Goals, 1996.

b These cleanup levels were taken from EPA Region 9 database on Preliminary Remediation Goals, 1998.

NMED Comment

5. Section 2.3.4.3 Remediation Stage I, Page 11, paragraph 3:

LANL Comment: "According to the VCM work plan, one laboratory sample (0316-98-0100, location 16-3364) was collected from beneath the septic tank."

HRMB Comment: According to Figure 2.3-1, Location of PRS 16-006(g) samples, location 16-3364 is not located beneath the septic tank. Given that any contamination should be concentrated at the bottom of the drainline or the tank, a sample from beneath the tank should have been, at the least, field screened. LANL should clarify exactly where sample location 16-3364 is in the text and/or on the figure. If a sample was not collected directly beneath the tank, LANL should explain why.

LANL Response

5. Location of sample 16-3364 is described in the sample collection log as: "Sample was taken 0" to 6" below bottom of removed septic tank at South end – 1' North of chain fence."

The field team leader was interviewed and provided the following information:

The field team marked the location and dimensions of the septic tank before it was removed by D&D personnel. The sample was taken following removal beneath that septic tank at the downgradient end of the septic tank. There is high confidence that this location was very accurately placed. The graphic depicting the septic tank in Figure 2.3-1 is slightly off. It should cover location 16-3364.

NMED Comment

6. Section 2.5 Conclusions and Recommendations, page 31, paragraph 1:

LANL Comment: "HE's (HMX and RDX) were detected below the septic tank at 0.18 mg/kg and 0.191 mg/kg, respectively."

HRMB Comment: See comment #5.

LANL Response

6. See the response to Comment 5.

NMED Comment

7. Section 3.3.4.5 Data Review, page 45, paragraph 6:

LANL Statement: "As a result, the uranium values obtained in 1998 did not provide sufficient information for locating and characterizing a potential release. In 1999, uranium analyses with better detection limits were performed. These results show that the uranium concentration in V-Site samples does not differ statistically from other samples collected around TA-16. Therefore, uranium will not be carried forward into screening assessment."

HRMB Comment: According to Table D-2.0-3, the samples analyzed in 1998 were collected at 24-48 inches, while the sample analyzed in 1999 was collected at 0-6 inches. Given this, LANL should explain how the second sample serves as a substitute for the first set of samples. LANL should also explain how one sample taken at the surface proves that there was not a release at the entire PRS. Also, see comment #2.

LANL Response

7. The 1999 samples were not intended to be a direct replacement of the 1998 samples. The limited additional sampling campaign was designed to provide added confidence that the earlier data, which had elevated detection limits, had not missed a low-level uranium release. Uranium was evaluated based on a comparison of all valid V-Site uranium results to those of other samples collected around TA-16. Uranium was dropped from further consideration at all PRSs in this report because uranium was not found in any sample at concentrations that would indicate a release from any of these PRSs. Also see the response to comment 2.

NMED Comment

8. Section 3.3.35.1 Nature and Extent of Contamination in the Drum Storage Area Aggregate, page 49, paragraph 6:

LANL Statement: "Sample location 16-5820 was extensively sampled. Barium was detected"

HRMB Comment: Sample location 16-5820 was extensively sampled. Several metals detected above background values at this one location indicate that there was a release. The vertical extent of contamination at this PRS has been determined but the extent of lateral contamination has yet to be determined. None of the borings were located downgradient of this location; therefore, the presence of other contaminant concentrations in the subsurface is not known. LANL should delineate the extent of lateral contamination. Additional samples should also be taken from the 2-6 foot depth interval and below.

LANL Response

8. Based on the hydrologic conditions at the PRS, it is unlikely that a significant lateral contaminant transport pathway has ever existed. Because the site has never received liquid discharge and does not represent a ponding area for rainfall, it is likely that the primary hydrologic gradient has always been vertical. In order to generate a significant lateral gradient and flow via interflow, saturated conditions at the soil-tuff interface, or at another hydrogeologic contact are needed. The field notes do not indicate the presence of a surge bed that could easily become saturated, or other high permeability hydrologic pathway within QBT4 at this location. The notes also do not indicate the presence of moist soil or tuff at this location. The existing samples thus bound the contamination in the most likely contaminant transport pathway.

NMED Comment

9. Section 3.5 Conclusions and Recommendations, page 57, paragraph 3:

LANL Statement: *"The data is considered adequate to define the nature and extent of contamination and to determine the need for any further action at the site"*

HRMB Comment: *This conclusion is not accurate. See comment #12.*

LANL Response

9. LANL assumes that the reference to comment #12 should have read comment #8. Please see LANL's RSI Response to comment #8.

NMED Comment

10. Section 4.3.4.1 D&D Activity, page 61, paragraph 2:

LANL Statement: *"One branch headed due south for approximately 150 ft and dead-ended near the road. The other branch continued southeast to a point 145 ft from the shower area where it then forked in two directions. Both of these branches extended southward for approximately 75 ft in parallel."*

HRMB Comment: *It seems likely that these drainlines were connected to structures and did not come to dead ends. LANL should provide additional information on the rest of the drainlines including , but not limited to, any connecting structures or drainlines and any sampling data related to the removal of these structures or drainlines. If no sampling was performed, LANL should collect samples of ;the missing drainlines in order to determine nature and extent of contamination for the entire PRS or provide rationale for not doing so.*

LANL Response

10. Figure 4.3-1 is a fairly accurate description of the layout of the drainlines found at this PRS. This particular drainline was not described in any previous report and was not anticipated in the planning documents. Following discovery of this drainline, the field team completely excavated it including the three branches. The end of each branch was abrupt and definitive. There was no evidence that any of the branches daylighted. There was no indication that any of these branches connected to any other structure. It appears that this structure was a drainfield. All three branches of the drainfield were screening sampled during the VCM activities and a laboratory sample was collected in the western branch (see Figure 4.3-1 of VCM Report).