



BILL RICHARDSON
GOVERNOR

State of New Mexico
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

TA 03



RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

June 15, 2005

David Gregory, Federal Project Director
Los Alamos Site Office
Department of Energy
528 35th Street, Mail Stop A316
Los Alamos, NM 87544

G. Pete Nanos, Director
Los Alamos National Laboratory
P.O. Box 1663, Mail Stop A100
Los Alamos, NM 87545

RE: NOTICE OF DISAPPROVAL
WORK PLAN FOR SANDIA CANYON AND CAÑADA DEL BUEY
LOS ALAMOS NATIONAL LABORATORY (LANL), NM0890010515
HWB-LANL-99-031

Dear Messrs. Gregory and Nanos:

The New Mexico Environment Department (NMED) is in receipt of the *Draft Response to Request for Supplemental Information (RSI), Work Plan for Sandia Canyon and Cañada del Buey* (Work Plan), referenced by LA-UR-03-6222/ER2003-0542 and dated August 29, 2003. NMED has reviewed this document and issues this notice of disapproval (NOD). The University of California and the Department of Energy (collectively, the "Permittees") must respond to the comments outlined in this letter within 45 days of receipt of this letter. The Permittees must either provide responses to the comments or provide replacement pages for the Work Plan. All submittals must be in the form of two paper copies and one electronic copy in accordance with section XI.A of the Consent Order. The numbers below refer to NMED's comment numbers in the original RSI.

General Comments

1. The Permittees' response did not address NMED's comment. The Permittees state that "[g]roundwater samples will be collected from perched zones during drilling." However,



5779

considering the unpredictable and discontinuous nature of perched zones, the Permittees must use opportunities such as those in this investigation to characterize and monitor possible contamination through the installation of monitoring wells whenever such zones are encountered. If perched groundwater is encountered during drilling, NMED may require the submittal of a monitoring well design plan and the installation of monitoring wells that target perched saturated zones.

2. The Permittees' response did not address NMED's comment. The list of potential release sites in Appendix B of this work plan does not include all of the SWMUs and AOCs in the watershed. The following SWMUs/AOCs should have been included on the table:
 - 03-037
 - 04-003(b)
 - 53-006(f)
 - 53-007(a)
 - 53-012(e)
 - 61-007
 - C-03-012

The Permittees must update this table and the text to reflect the additional information (e.g., site descriptions, COPCs,) for these sites.

3. The Permittees state that Appendices D and E "provide all of the well construction and geologic information requested by NMED." LANL did not provide the requested information for all of the wells listed in the RSI. The tables only include wells in the Cañada del Buey watershed. None of the tables include Sandia Canyon wells. Table D-3 presents well construction information for "selected" wells in Cañada del Buey. The Permittees must submit all of the information as requested in the RSI.
4. The Permittees did not address NMED's comment. The Permittees state that "[s]ummaries of all available data as of 1999, the due date for the plan, are presented in Chapters 2 and 3." It appears that the Permittees have only provided analytical results for some PRSs. The following are some examples of analytical results not presented in Chapter 2:
 - PRS 3-012(b,c) lists the COPCs but not their concentrations;
 - PRS 3-056(c) does not report the detected VOCs and their concentrations;
 - TA-60 Fuel Yard lists samples analyzed for TPH and VOCs but the analytical results are not presented;
 - PRS 61-002 does not report the SVOC and VOC analytical results;
 - PRSs 53-002(a,b) list data but do not include analytical results for all constituents sampled;

- PRS 20-002(d) reports radionuclides but does not present their concentrations;
- PRSs 4-004 and 4-003(a) indicate that samples were collected and analyzed for SVOCs, HE, VOCs, and metals; the analytical results are not provided;
- PRS 51-001 describes that sampling was conducted, no analytical results were provided;
- PRSs 54-007(c, d, and e): sampling was conducted but no analytical results were provided;
- PRS 46-004(a₂) and PRS 46-004(g), PAHs were detected at concentrations above SALs but not listed as COPCs.

At a minimum, the Permittees must provide a summary of any available results of constituents detected at concentrations above LANL background or detection limits at each PRS without eliminating any COPCs at this time.

5. The Permittees did not address NMED's comment. The following paragraph was taken from the Permittees' *Core Document for Canyons Investigation*:

A geomorphic study completed in 1991 (Graf 1994, 55536) provides a historic perspective for evaluating the contributions of plutonium from Los Alamos Canyon to the Rio Grande. The study used historic aerial photography and hydrologic data to evaluate the movement and deposition of sediment over time. Several conclusions were made regarding the regional balance of deposited plutonium in the sediment from 1948 to 1985, accounting for both worldwide fallout and the Laboratory contribution from Los Alamos Canyon to the northern Rio Grande." (page 2-25)

The Permittees state that aerial photographs are useful tools in evaluating historic changes to the topographic features of the canyon bottom. The Permittees do not need to provide a "complete set" of aerial photographs, but must provide those that contain relevant information useful to this investigation. The Permittees shall provide a brief discussion of the changes observed, areas of sediment accumulation, and areas that have been impacted or disturbed because of construction.

6. a. The Permittees may believe that the information provided in the background section of the work plan is "sufficiently comprehensive, complete, and site-specific for the purposes of this plan", but NMED does not agree, as stated clearly in its RSI. As described in NMED's general comments #2, 3, 4, 5 and specific comment #7, the information provided is incomplete. The Permittees must provide the requested information and revise the text as appropriate.

- c. See specific comment #9i. The Permittees must revise the text accordingly.
- d. NMED approves the Permittees' request to submit in the form of a memorandum brief periodic monitoring reports for data that would not otherwise be reported in the periodic monitoring reports required under the Consent Order. Such memos would not constitute the submittal of data in lieu of inclusion in the investigation report. The Permittees shall not construe the submittal of such memos as approval of work performed. The Permittees are reminded that NMED must approve any key-suite or limited-suite sampling proposed by the Permittees prior to implementation.

Specific Comments

1. a. In its response, the Permittees explain that, because there is no background data set for surface water and groundwater, COPCs for these media will have to be determined using comparisons to data from applicable baseline sample locations or applicable standards such as NMWQCC and EPA MCLs. The Permittees will use not baseline surface water sampling locations for determining COPCs unless NMED has approved of these locations beforehand. The Permittees must use the data set contained in the Groundwater Background Investigation Report for comparison of site data.

The weight-of-evidence approach, as explained in the Permittees' response, is only applicable to statistical data (not judgmental samples as is collected by the Permittees), and can be applied after complete delineation of site contamination has been determined and all phases of the investigation have been completed. Eliminating COPCs detected above background or detection limits may only be performed after all phases of the investigation are completed. The Permittees may limit the analytical suite for subsequent consecutive investigation phases based only on the concentration of the constituent (below background or not detected) but not the other criteria listed by the Permittees in their RSI response.

7. The Permittees must provide a report summarizing all of the sediment and surface water investigations performed to date in upper Sandia Canyon as part of the investigation report for this work plan. The Permittees propose installing an alluvial groundwater well in the lower part of the wetland. NMED approves of this change to the work plan.
8. As the Permittees state, according to the statistical theory, the uncertainty generally decreases as the number of samples increases. The Permittees also state that this uncertainty should decrease through phases of the sediment investigation because more sediment samples will be collected. However, the latter statement is incorrect. The collection of more samples through different phases does not mean the collection of statistically independent samples and, therefore, decreasing uncertainty. For example,

there is a difference between 30 samples collected in one sampling event, and 30 samples collected in three different phases of an investigation. In the first case, the samples (if allocated properly) are statistically independent and may represent the true population. In the second case, the samples have to be proven to be statistically independent e.g., using random allocation, no time or seasonal trends) if no special criteria were applied to allocate them in the consecutive phases. If the location of the samples in the second and third phases were chosen based on the results from the previous phase, then these samples cannot be considered statistically independent and cannot be grouped to represent the same population. Changes in analytical methods and detection limits would also influence data. In the phased approach, the uncertainty of the data would not decrease just for having multiple phases (and, therefore, increasing the total number of samples collected). Evaluation of the uncertainty must be performed on individual bases by set forward criteria and valid statistical calculations.

9. a. The Permittees agree to sample pre-1943 sediment deposits or other geologic units in wet reaches to evaluate the potential migration of contaminants by infiltrating water and/or by groundwater migration. The Permittees must clarify which reaches are considered wet. According to Figure A-1, there is only one reach in Sandia Canyon that contains perennial surface water. The Permittees must sample pre-1943 sediment deposits in all reaches.
- f. At other sites at the Facility, the Permittees have eliminated COPCs that should not have been eliminated. In one instance (see *Response to Notice of Disapproval, Los Alamos and Pueblo Canyons Investigation Report, dated April 29, 2005*), the Permittees misapplied EPA guidance and eliminated a COPC that should not have been eliminated. Therefore, the Permittees must receive NMED approval prior to determining limited-suite or key-suite contaminant analyses for all media and during any phase of this investigation.
- h. The Permittees proposed changing the minimum reach length from 100-200 meters to 200-250 meters. NMED approves this change. The Permittees are reminded that watersheds can not be eliminated based on initial analytical results unless approved by NMED.
- i. The Permittees did not address this comment and NMED does not agree that “the present text is sufficient for the purposes of this work plan.” The Permittees will likely have different data quality requirements for field screening samples (if any is conducted) than for the off-site analytical laboratory samples. The DQOs should include some minimum QA/QC samples to be analyzed both in the field and in the lab. During the validation procedures, the results should meet QA criteria in order to be considered valid. In addition, if some DQO objectives are not met during the sampling, corrective actions

should follow, and they too must be addressed in this work plan. The Permittees must revise the text accordingly.

k. The Permittees discuss "potential human health risk" before extent of contamination has been determined. The Permittees' response states that certain "single analytes" may contribute more than 50% of the potential human health risk as demonstrated by the investigations in other canyons. This is interesting but is not relevant at this time. Following the initial sampling and prior to selected limited-suite and key-suite contaminants, the Permittees may propose to focus additional sampling on those "single analytes" and provide the basis for selecting the analytes (concentrations, sources, frequency of detection, etc.).

l. NMED agrees with all approaches that the Permittees described in its response to this comment. NMED also agrees with and approves of statistical (stratified) and judgmental sampling designs and the quoted EPA reference. NMED also notes that most of the Permittees' sampling designs are judgmental where the "number of samples will be determined by the technical team." However, NMED requires that the Permittees clearly state the type of sampling design to be implemented for each reach, the (approximate) number of samples that it will collect, and the basis for such sampling design. In addition, NMED will apply the quoted EPA guidance (as quoted by the Permittees). The Permittees may not use the collected data for "drawing conclusions about the target population", including risk assessment where a statistical sample set is necessary to evaluate the posed risk by the contaminants.

m. NMED does not review or approve the Permittees standard operating procedures and the Permittees failed to provide a reference to the cited RCRA sampling guidance. The Permittees have the discretion to request that homogenization methods be used in the field instead of the laboratory. If the Permittees' request a deviation from this requirement, the Permittees must provide a description of the proposed method. The Permittees must ensure that the method used results in adequate homogenization that yields nonvariable, representative samples.

The Permittees state in their *Core Document for Canyon Investigations (Core Document)* that heavy metals and radionuclides discharged from the Laboratory in liquid effluent preferentially adsorb to finer-grained sediment particles. In those cases where liquid effluents are the only source of contamination, sieving of samples may be appropriate. The Permittees must ensure that samples collected for volatile compounds analysis or wet samples are not sieved because chemical and physical losses may occur. The Core Document goes on to state that "[in] some cases, however, such as locations where fragments of shrapnel or depleted uranium are (or have been) dispersed from firing sites, higher concentrations of contaminants as larger, heavy particles may be present in active channel deposits." In these cases, sieving of samples is not appropriate because the large

fractions may contain the bulk of the contaminant concentrations. The Permittees' claim that "any biasing imparted by sieving would be on the high side and result in a conservative estimation of potential risk" is not always accurate. The Permittees have requested that routine field sieving of samples to remove gravel and organic matter be approved by NMED as part of this work plan. NMED does not approve this request at any sampling location downgradient or immediately upgradient of any firing sites within Sandia Canyon. The NMED approves this request for all other sampling locations within Sandia Canyon and Cañada del Buey. This approval applies only to this investigation and is not meant to apply to other sites or work plans.

- n. NMED may require sampling beyond subreach S-5 East depending on the analytical results presented in the investigation report or based on other information.
10. c. The Permittees propose collecting surface water samples from 5 identified additional sites in Sandia Canyon during this investigation. NMED approves this change to the work plan.
11. a. See specific comment #7.
h. The Permittees must sample all alluvial and regional groundwater monitoring wells in accordance with the approved schedule in the Interim Facility-Wide Groundwater Monitoring Plan.
12. The Permittees must provide a biological SAP as part of the response to this NOD.
13. The Permittees state that TA-51 was not included in Table 7.2.1-1 as a potential source of contamination in Cañada del Buey because no COPCs have been identified in that TA. The Permittees must explain if this conclusion is based on sampling data or on acceptable knowledge. Only sampling data would reasonably rule out constituents for a particular site. Likewise, the same comment applies to thorium at TA-54.
14. a. NMED does not agree with the Permittees' reason for not sampling reach CDB-3 West. This reach receives runoff from two major drainages (G-10 and G-11) from MDA G. As shown in Figure 5-1 of the *RFI Report for Channel Sediment Pathways from MDAs G, H, J, and L, TA-54*, plutonium-238 and plutonium-239 were detected in these drainages above their respective background values. Also, as shown in Table A-2 of this report, several metals (cadmium, mercury, and selenium) had detection limits greater than current background levels in these two drainages. CDB-3 West is the only identified reach in Cañada del Buey where contaminant input from MDA G could be detected (relative to the upstream reach CDBS-1 East) without the chance of dilution further downstream in reach CDB-3 East. The Permittees must sample this reach as part of this investigation.

NMED agrees to the Permittees proposal to add another reach east of reach CDB-2 Central if NMED determines that remediation is necessary in this area.

16. b. As stated in the RSI, NMED does not believe the source and boundaries of the alluvial saturation in Cañada del Buey have been determined. The Permittees must install three alluvial wells upgradient of CDBO-6 to investigate the source of alluvial saturation. At a minimum, the borings must be advanced to the depth of the vapor-phase notch. The Permittees must install four alluvial wells between CDBO-6 and CDBO-7 to identify the boundaries of alluvial saturation. The Permittees must submit the proposed well locations to NMED for approval prior to well installation.

d. See specific comment #16b.

17. See specific comment #12.

Additional Comments for the Permittees to Address

1. NMED requires that the Permittees analyze for perchlorate in each medium investigated in the canyons. Recent sampling in both canyons indicates the presence of perchlorate in surface and groundwater.
2. The Permittees shall describe all occasions when unforeseen spills or releases of contaminants (wastewater, spills) have occurred in both canyons that may have contributed to contamination in the canyons.

Should you have any questions, please feel free to contact Darlene Goering of my staff at (505) 428-2542.

Sincerely,



James P. Bearzi
Chief
Hazardous Waste Bureau

JB:dxg

cc: D. Goering, NMED HWB

Messrs. Gregory and Nant
Sandia Canyon and Cañada del Buey Work Plan NOD
June 15, 2005
Page 9

M. Leavitt, NMED SWQB
B. Olson, NMED GWQB
D. Pepe, NMED DOE OB
S. Yanicak, NMED DOE OB, MS J993
L. King, EPA 6PD-N
J. Ordaz, DOE OLASO, MS A316
K. Hargis, LANL RRES/DO, MS M591
N. Quintana, LANL RRES-RS, MS M992
D. McInroy, LANL RRES-RS, MS M992
file: Reading and LANL '05