



BILL RICHARDSON  
Governor

DIANE DENISH  
Lieutenant Governor

TASU  
NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303  
Phone (505) 476-6000 Fax (505) 476-6030  
[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)



RON CURRY  
Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

January 29, 2010

Michael J. Graham  
Associate Director Environmental Programs  
Los Alamos National Security, L.C.C.  
P.O. Box 1663, MS M991  
Los Alamos, NM 87545

George J. Rael  
Environmental Operations Manager  
Los Alamos Site Office  
Department of Energy  
3747 West Jemez Rd, MS A316  
Los Alamos, NM 87544

**RE: APPROVAL WITH MODIFICATIONS  
MDA G SUPPLEMENTAL SOIL-VAPOR EXTRACTION  
PILOT TEST WORK PLAN, REVISION 1  
LOS ALAMOS NATIONAL LABORATORY  
EPA ID #NM0890010515  
HWB-LANL-08-048**

Dear Messrs. Graham and Rael:

The New Mexico Environment Department (NMED) received the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C.'s (LANS) (collectively, the Permittees) *Work Plan for Supplemental Soil-Vapor Extraction Pilot Test Implementation/Reporting at Material Disposal Area G, Technical Area 54, Revision 1* (Work Plan), dated January 11, 2010 and referenced by LAUR-10-0046/EP2010-0002. NMED has reviewed the Work Plan and hereby issues this Approval with the following modifications.

Comments

1. In the cover letter, the Permittees request a meeting 90 days before the report is due to discuss, "the structure of the report and the remedial action objectives for the MDA G VOC plumes, so that the viability of SVE as an effective component of remediation at MDA G may be evaluated and demonstrated." A meeting is not necessary at this



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time. In accordance with Section XI.A of the March 1, 2005 Order on Consent (Order), the Permittees may submit an outline of the report for NMED's review and approval.

The remedial action objectives of the soil vapor extraction (SVE) system are to protect the environment from current and future contaminant releases at MDA G and to demonstrate the long-term effectiveness of an SVE system to contain and mitigate those plumes. The Permittees must utilize the data collected during the pilot test to design a system that is the most effective and efficient system possible for long-term use at MDA G. The discussion must assess the relationships between the applied vacuum, flow rate, and radius of influence to define the reach of the system (i.e., the SVE system's ability to move air through different stratigraphic units under varying conditions, the conditions and units that are most effective for extracting contaminants, and the ability of the system to effectively capture the lateral extent of such plumes). The data must be presented in a clear, straightforward manner and must be defensible.

2. The Permeability Testing section, page 3, does not contain sufficient detail concerning the methods and procedures to be used for the permeability testing. The Permittees do not provide the vacuum pressures that are proposed to be used during the test, the frequency of measurement of test parameters, how long the test will run, or how the permeability will be calculated. Ironically, the Permittees provided slightly more detail in the October 2009 Work Plan submission, where the Permittees stated that the permeability will be calculated "based on steady-state spherical flow model (Wycoff et al. 1998, 098069)." Because the stratigraphy appears to be primarily planar, NMED is concerned that a spherical flow model may not be appropriate. If the spherical flow model is used, the Permittees must discuss the advantages of its use, how it best fits the data and site conditions, and the assumptions used in the calculations. The Permittees must also discuss in detail the methods and procedures used during the permeability testing.
3. In the Permeability Testing section, page 3, the Permittees state "[t]argeted permeability intervals include the Otowi, Cerro Toledo, Qbt 1 v, and across the contacts for the Qbt 2/Qbt 1 v, Qbt 1 v-u/Qbt 1 v-c, Qbt 1g/Qbtt, and Qbt 1 v-c/Qbt 1g." The Permittees must assess the presence of surge beds and more permeable strata that might affect airflow within and between units. Therefore, the Permittees must also target any surge beds, layers containing fractures, or other relatively higher permeability characteristics during the permeability testing. Such zones must also be targeted when installing the ports in the new monitoring boreholes.
4. In the Schedule section, page 6, the Permittees list the length of time it will take to complete readiness requirements, permeability testing, extraction tests, and preparation of the pilot test report. In NMED's August 20, 2009 letter, *Pilot Test to Evaluate Soil-Vapor Extraction at Material Disposal Area G at Technical Area 54*, NMED directed the Permittees to conduct "step tests at each screened interval. Baseline measurements must be collected prior to the start of each test. Step tests

must be performed at each depth interval with specified increased vacuum pressures for equal time periods. The step tests must include a four hour test at each extraction rate at each interval. There are seven intervals to be tested. The applied levels must be 15 inches of water and incrementally increase to 30, 50, 70, 90, and 120 inches of water or other extraction vacuum levels approved by NMED." The Permittees apparently interpreted this to mean each test will take one week to conduct. NMED's intent was that the entire test would take no more than five weeks (8-10 hour days, 5 days a week) to complete. This reduces the Permittees' proposed schedule by half. Additionally, NMED does not require the two weeks of rebound monitoring. Data related to the VOC plume is not essential for the design or cost related information necessary for the Corrective Measures Evaluation (CME) Report.

A preliminary design for the SVE system is necessary to adequately evaluate SVE as a remedial alternative and, if SVE is a viable option, then to provide the necessary design, monitoring and cost information for NMED to complete its review of the CME Report for MDA G. The Permittees must follow a schedule that will allow for the submittal of the SVE Report by May 30, 2010, regardless of their failure to submit a work plan that followed the direction in NMED's August 20, 2009 letter.

### Specific Comments

#### 1. Extraction Borehole Design, page 2:

**Permittees' Statement:** "The existing deep-extraction borehole will be abandoned prior to the permeability testing and the extraction tests, in accordance with section X.D of the Consent Order."

**NMED Comment:** The Permittees must provide justification for not considering the deep extraction borehole as a monitoring point for the Otowi member. The Permittees shall not abandon this borehole without prior approval from NMED.

#### 2. Data Evaluation, page 5

**Permittees' Statement:** "Data generated during the supplemental SVE pilot test will be used to address SVE effectiveness and ultimate design questions. Extraction data (e.g., vacuum pressure responses and airflow rates) and discrete permeability data will be used to conduct an enhanced numerical analysis that evaluates the relationship between applied vacuum, airflow rate, and ROI. The analysis will be used to make predictions of the ROI for the different stratigraphic units at MDA G under different operational conditions (e.g., vacuum and operational timeframe). Results of this analysis will be used to evaluate preliminary conceptual design options for an SVE system at MDA G."

**NMED Comment:** Numerical models are useful for data management and interpretation. However, the Permittees must use the data collected in the field (e.g., a vacuum extraction pressure of 70 in-H<sub>2</sub>O resulted in pressure changes at ports x, y,

and z in a, b, c stratigraphic units 50, 100, and 150 feet from the extraction well) to interpret results, evaluate the relationship between applied vacuum, airflow rate and ROI, and to propose a preliminary design for the SVE system (or recommend that SVE is not a viable remedy or engineering control for the vapor plumes at MDA G). The numerical model may be used as evidence to reinforce the field data and evaluation of the long-term effectiveness of the SVE system.

### 3. Status Updates, page 5

**Permittees' Statement:** Electronic status updates will be provided to NMED at the conclusion of each test. The update will include field-data measurements, deviations from the work plan, and field observations that may affect test results. The update will be provided within 2 wk of completion of each test at a given extraction interval."

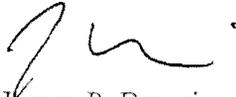
**NMED Comment:** The purpose of the field updates is to allow NMED to assess the pilot test as it is being conducted; a two week lag in receiving the data undermines this goal. The Permittees must provide the field updates, which may be informal emails, to NMED within three days of completion of each test. NMED is primarily interested in field measurements and not laboratory results in the status updates.

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The Permittees must submit the Soil-Vapor Extraction Investigation Report for MDA G to NMED no later than May 30, 2010. All submittals (including maps) must be in the form of two paper copies and one electronic copy in accordance with Section XI.A of the Order.

Please contact Kristen Van Horn at (505) 476-6046. should you have any questions.

Sincerely,



James P. Bearzi  
Chief  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
K. Roberts, NMED HWB  
S. Yanicak, NMED DOE OB, MS M894  
T. Skibitski, NMED DOE OB  
L. King, EPA 6PD-N  
J. Rice, MS M991

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