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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

July 17, 2014

Peter Maggiore
Assistant Manager, Env. Projects Office
Los Alamos Field Office, DOE
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Los Alamos, NM 87544

Jeffrey D. Mousseau
Associate Director, Environmental Programs
Los Alamos National Security, L.L.C.
P.O. Box 1663, MS M991
Los Alamos, NM 87545

RE: APPROVAL WITH MODIFICATIONS
INTERIM MEASURES WORK PLAN FOR SOIL-VAPOR EXTRACTION OF VOLATILE ORGANIC COMPOUNDS FROM MATERIAL DISPOSAL AREA L, TECHNICAL AREA 54
LOS ALAMOS NATIONAL LABORATORY
EPA ID#NM0890010515
HWB-LANL-14-034

Dear Messrs. Maggiore and Mousseau:

The New Mexico Environment Department (NMED) is in receipt of the United States Department of Energy (DOE) and the Los Alamos National Security, L.L.C.'s (collectively, the Permittees) document entitled *Interim Measures Work Plan for Soil-Vapor Extraction of Volatile Organic Compounds from Material Disposal Area L, Technical Area 54* (Plan) dated May 30, 2014 and referenced by LA-UR-14-23104/EP2014-0170. NMED has reviewed the Permittees' Plan and hereby issues this Approval with the following modifications.

1. Lack of Sampling at Borehole 54-24399

The Permittees are required to include borehole 54-24399 in the sampling campaign. The Plan specifies that this interim measure is "recommended as part of the final remedy…to meet a remedial action objective (RAO) of preventing groundwater from being impacted above a regulatory standard by the transport of VOCs to groundwater through soil vapor." In

addition, the Plan claims, "[w]ith maximum concentrations lower in the source regions, vapor transport will reverse direction, and VOCs will diffuse from deeper in the plume back toward the surface." Borehole 54-24399 contains the deepest sampling port (550 feet (ft) below ground surface (bgs)) at the site and is critical to evaluation of the efficacy of the interim measure. In addition, trichloroethene (TCE) has been detected in pore gas at this sampling port in concentrations exceeding the theoretical concentration that, in contact with groundwater, would result in an equilibrium groundwater concentration exceeding the groundwater standard. It is critical for evaluation of this interim measure that borehole 54-24399 be included in the monitoring program. In a subsequent electronic mail message from Stephan Swickley dated June 27, 2014, the Permittees indicated that this well would be sampled.

Sampling protocol for borehole 54-24399 must follow the methodology utilized in the fourth quarter FY2011 periodic monitoring, which utilized a dual packer that sampled from 550-551 ft bgs.

2. Limited Selection of Ports for Baseline and Annual Sampling

The Plan proposes utilizing less than half of the available ports in the interim measure work plan for baseline and annual sampling (86 of 188). Inclusion of all available and operable ports within the wells at MDA L is necessary for the following reasons:

- MDA L soil vapor conditions have not been sampled in approximately three years. A round of sampling including all sampling ports in all wells would provide a fully defined baseline to enable assessment of the treatment effects on the plume.

- The proposed limited selection of wells and ports has very few deep monitoring ports which are crucial to the Permittees' ability to support the theory, referenced above, that "VOCs will diffuse from deeper in the plume back toward the surface."

In the June 30, 2014 telephone conference call between NMED and the Permittees, the Permittees agreed that inclusion of all sampling ports for baseline and annual sampling was appropriate.

3. Reduced Selection of Ports for Quarterly Plume Monitoring

The Plan reduces the number of wells for quarterly plume monitoring from those specified in the March 27, 2014 draft *Proposed Sampling for MDA L Interim Measure – Soil Vapor Extraction (SVE) for VOCs* (Draft) provided to NMED on March 27, 2014 in an email from Kathryn M Roberts. By reducing the radius of influence (ROI) diameter of the extraction wells from 150 ft to 100 ft, the Permittees have eliminated 6 of the 14 wells proposed in the Draft. The Permittees' September 2011 *Corrective Measures Evaluation Report for Material Disposal Area L, Solid Waste Management Unit 54-006, at Technical Area 54, Revision 2* states, "the radius of influence (ROI) of the extraction system extended 140 ft horizontally from the extraction well." The plan did not provide an explanation for the reduction of the

ROI. The Permittees must include all ports in all wells within the 150 ft ROI proposed in the Draft for quarterly plume monitoring.

4. Use of the Brüel and Kaejer (B&K) Analyzer

The Permittees were directed to discontinue the use of the B&K analyzer for field screening of volatile organic compounds (VOCs) at Material Disposal Areas G, H, and L in a July 30, 2010 letter from NMED. A subsequent letter, dated November 8, 2010, denied the use of the B&K analyzer following a September 29, 2010 letter from the Permittees requesting that NMED reconsider its decision. In addition, in the Draft, the Permittees stated that continuous monitoring would be conducted at each extraction well, as well as bi-monthly screening of each monitoring well, with MultiRAE IR Multi-Gas Monitors. The intent to use the MultiRAE instruments was confirmed in a conference call with Kathryn Roberts and Stephani Swickley on March 29, 2014. In addition to 1,1,1-trichloroethane (TCA) and TCE, the March 27, 2014 draft plan proposed monitoring and field screening including percent carbon dioxide, percent oxygen, total VOC concentration, and one other VOC constituent that exceeded the Permittees' Tier 2 screening level. The Plan did not provide an explanation for the change in proposed sampling methods or equipment.

The above-referenced electronic mail and telephone conference call revealed that the MultiRAE instrument was too difficult for the Permittees to use in the field. The Permittees stated that the B&K analyzer was the only analyzer available that was suitable for measuring TCA in the field. This is not accurate, as there are portable gas chromatography instruments coupled with various detectors (e.g., flame ionization detector or mass spectroscopy detector) that can more accurately analyze soil vapor for TCA than the B&K and is also capable of detecting more than the two constituents the Permittees proposed for monitoring.

The Permittees stated on the call that usage of the B&K would be either coupled with SUMMA canister sampling for laboratory analysis or used as a stand-alone instrument for daily operational estimates of treated mass. While coupled use with the SUMMA sampling is not an issue, stand-alone usage does present a problem for NMED. The B&K will only be used to analyze for TCA and TCE, which are only two of many VOCs present at MDA L. An estimate of total VOC mass treated by the interim measure cannot be based on only two constituents. Based on these issues and past performance of the B&K, which showed problems in both accuracy and precision and prompted NMED to direct the Permittees to discontinue use of the B&K at MDAs G, H, and L, NMED will not accept B&K data alone for compliance purposes or for mass estimation of treated VOCs.

The Permittees must either use an appropriate instrument for field screening of vapor-phase VOCs or must provide frequent SUMMA canister sampling and laboratory analysis. The Plan states, "SUMMA canister sampling frequency will decrease with time, probably starting at weekly and decreasing to monthly." If an appropriate field screening instrument other than the B&K is not used, the Permittees should increase the frequency to multiple daily samples at startup, decreasing to daily after two days, and decreasing to weekly after concentrations appear to stabilize, likely more than three weeks after startup.

5. Vacuum Pressure Monitoring

The Plan does not propose monitoring of vacuum pressure in observation wells. Vacuum pressure data from observation wells during long-term operation of the SVE system would provide information important to proper design of the final remedy for MDA L. Include vacuum pressure monitoring of all sampling ports included in both the annual and quarterly monitoring programs.

6. Air Permit

Provide copies of all correspondence with NMED's Air Quality Bureau regarding the review and approval of a No Permit Required (NPR) determination for this interim measure.

The Permittees must provide details of baseline and annual sampling locations and ports, quarterly plume monitoring locations and ports, sampling methods, selected field screening equipment, vacuum pressure monitoring, and the NPR determination to NMED in an Interim Measures Work Plan addendum prior to initiation of the interim measure or any other related field work.

Should you have any questions, please contact Ben Wear of my staff at (505) 476-6041.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: T. Blaine, NMED EHD
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File: Reading and LANL 2014 – TA-54, MDA L