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Date: February 3, 2006
Refer to: ER2006-0070

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
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SUBJECT: SAMPLING NOTIFICATION

Dear Mr. Young:

Beginning February 16, 2006, the Los Alamos National Laboratory (LANL) Environmental Stewardship Division–Environmental Characterization and Remediation (ENV-ECR) Group will install two vapor extraction wells at Technical Area 54, Material Disposal Area (MDA) L. The ENV-ECR Group will verbally confirm with and/or notify the New Mexico Environment Department–Hazardous Waste Bureau (NMED-HWB) staff of any changes to the schedule.

The vapor extraction wells are being installed for a test of a pilot-scale soil-vapor extraction (SVE) system and electric catalytic oxidation treatment system (ECO) at MDA L. As discussed during the January 25, 2006, meeting between LANL and NMED, the purpose of this sampling is to confirm the partitioning of volatile organic compounds (VOCs) from the vapor phase to tuff and to evaluate field-screening alternatives to the headspace method. LANL will collect collocated samples of core and subsurface vapors for analysis of VOCs when these wells are installed. The planned location of the wells is shown in Figure 1. Both wells will be drilled to the base of unit 1g of the Tshirege Member, avoiding penetration of the Tsankawi Pumice Bed and the Cerro Toledo interval, to eliminate the possibility of short circuiting the vapor extraction interval. The anticipated drilled depth of each well will be 235 ft below ground surface (bgs). The depth is greater the planned extraction interval (65 ft to 215 ft bgs) to allow for the accumulation of slough from the augers as they are extracted from the borehole.

The wells will be cored continuously using hollow-stem auger drilling methods and geologically logged to total depth (TD) following Standard Operating Procedure (SOP) 04.01, and SOP-12.01. The primary screening methods to be used include (1) visual examination, (2) radionuclide screening, and (3) vapor screening for VOCs for health and safety purposes.

Radionuclide screening will target gross alpha, beta, and gamma radiation. Field screening for alpha, beta, and gamma radiation will be conducted within 6 in. from the core material. All

instrument background checks, background ranges, and calibration procedures will be documented daily in field logbooks.

Vapor screening of the subsurface core and breathing zone for VOCs will be conducted using a photoionozation detector (PID) with an 11.7 eV lamp. The PID will be calibrated each day to the manufacturer's standard for instrument operation (all daily calibration results will be documented in the field logbooks).

Tuff samples will be collected at 30-ft intervals, beginning at a depth of 65 ft (the depth of the nearest adjacent disposal unit) and continuing to TD of the borehole. Additional samples will be collected from intervals where contamination is suspected because the field-screening results are elevated and/or visual inspection identifies fractures or staining. Tuff samples will be collected following SOP-06.26 and analyzed for VOCs using Environmental Protection Agency (EPA) Method 8260.

Quality assurance/quality control (QA/QC) for tuff samples will include field duplicate samples to evaluate the reproducibility of the sampling technique. These samples will be collected following SOP-01.05.

Subsurface vapor screening samples will be collocated with tuff samples collected on the 30-ft interval during drilling operations. Screening samples will be collected using a single packer to isolate intervals at the end of the drill string. A purge volume equal to two times the borehole volume below the packer plus two times the air-line volume will be removed before each sample is collected. Screening of subsurface pore gas will utilize a PID, Brüel & Kjaer (B&K) multigas analyzer, and a combustible gas indicator.

A second set of subsurface vapor screening measurements will be collected once drilling activities are completed. Screening measurements will be collected from the same 30-ft intervals screened during drilling with the single packer, over the available depths of the borehole, using a straddle packer. This second set of screening measurements will allow for comparison of methodologies between the straddle packer and the single packer used for field screening during drilling operations.

During the second set of subsurface screening measurements, samples will be collected with SUMMA canisters compare with collocated core samples and to characterize sorption of VOCs onto core in the presence of the vapor-phase plume. Subsurface pore-gas samples will be collected in SUMMA canisters following SOP-06.31 and submitted for VOC analysis using EPA Method TO-15.

QA/QC samples for VOCs in pore-gas will consist of an equipment blank and field duplicate for each sampling round. After sampling and purge decontamination, the equipment blank will be collected by pulling zero gas (99.9% ultrahigh-purity nitrogen) through the packer sampling apparatus. This sample will be used to evaluate the decontamination procedures. The field-duplicate sample will be used to evaluate the reproducibility of the sampling technique. The QA/QC samples will be collected according to SOP-01.05 once during each sampling event.

The results of this sampling effort will be presented in Revision 1 of the MDA L investigation report or an addendum, depending on receipt of data.

If you have any questions or concerns, please call John Hopkins at (505) 667-9551 (johnhopkins@lanl.gov).

Sincerely,

Gabriela Lopez Escobedo, Program Manager
Environmental Remediation & Surveillance
Los Alamos National Laboratory

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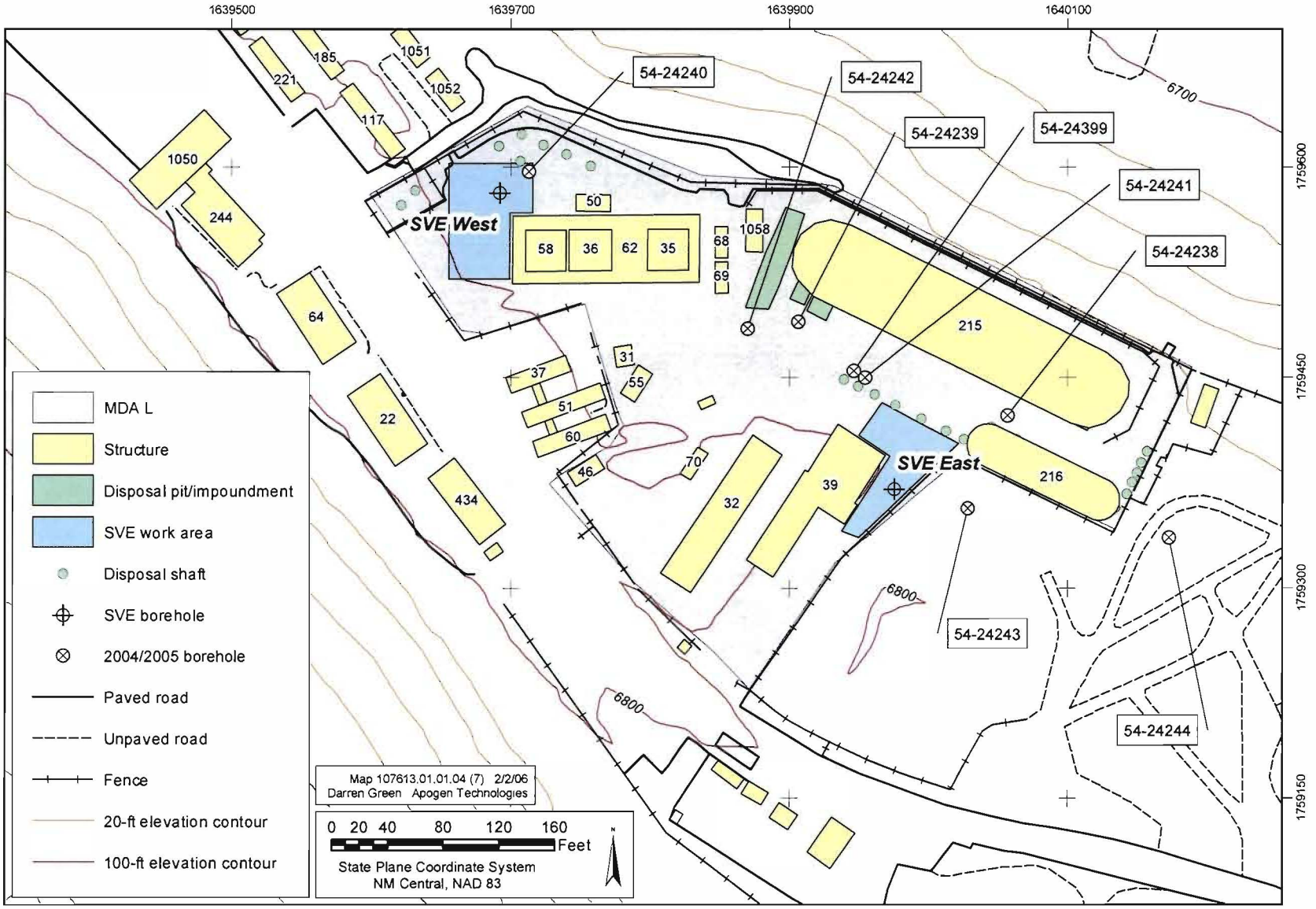

Figure 1. Locations of SVE boreholes