Drilling Work Plan for Material Disposal Area B Volatile Organic Compound Sampling

Background and Objectives	In its approval with modifications of the investigation/remediation report for Material Disposal Area (MDA) B, dated July 8, 2014, the New Mexico Environment Department (NMED) directed Los Alamos National Laboratory (LANL or the Laboratory) to submit a work plan proposing sampling and analysis appropriate for demonstrating that volatile organic compounds (VOCs) are below residential soil screening levels at the site (LANL 2013, 243675; NMED 2014, 525003). The Laboratory proposes to install a series of 22 boreholes at MDA B to collect undisturbed samples for VOC analysis at depths between 6 to 12 in. below the clean fill/tuff (Qbt 3) interface of the former excavated trenches. Figure 1 shows the proposed locations of the boreholes with estimated depths to the top of undisturbed tuff. The boreholes will be spaced 100 ft apart along the former excavated trenches. Actual borehole locations will be surveyed at completion of drilling.
Drilling and Sampling Methodology	The drilling method will utilize an auger rig, advancing 4 1/4-in.–inside diameter hollow-stem augers with center bit plug to a depth of approximately 1 ft above the estimated fill/tuff interface. The sampling method will consist of drive sampling utilizing a split-spoon sampler lined with brass sleeves. The split spoon will be driven at intervals of 24 in., or until refusal, into undisturbed tuff in accordance with Standard Operating Procedure (SOP) 06.26, Core Barrel Sampling for Subsurface Earth Materials. The sleeve representing the target sample depth will be selected, capped on each end, and retained for VOC analysis. In the event that this method results in poor sampling recovery, an alternative approach will be used involving a lined split-barrel sampler simultaneously advanced with the lead auger from the fill/tuff interface to greater than 1 ft into undisturbed tuff. Upon its retrieval at the surface, the sleeve representing the prescribed sample target depth will be selected, capped on each end, and retained for VOC analysis. Field documentation will include borehole logs for each borehole drilled using the hollow-stem auger method. All field documentation will be completed in accordance with the current version of SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials.
Quality Control Sampling Approach	Quality assurance/quality control samples will include field duplicate samples and trip blanks, collected following SOP-5059, Field Quality Control Samples, and will comply with a frequency of 10% of total samples collected for field duplicates. Field duplicates will be obtained from brass sleeves split at the analytical laboratory. Trip blanks will be supplied by the Laboratory's Sample Management Office and will remain with the analytical samples when they are collected for VOC analysis. U.S. Environmental Protection Agency Method 8260 is the standard analytical method used for analyzing VOCs in environmental media.
Investigation-Derived Waste Management	Investigation-derived waste (IDW) will be managed in accordance with EP-DIR-SOP-10021, Characterization and Management of Environmental Program Waste. This SOP incorporates the requirements of applicable EPA and NMED regulations, U.S. Department of Energy orders, and Laboratory requirements. The primary waste streams will include decontamination water and contact waste. Drill cuttings generated from drilling through clean fill material will be used to backfill the borehole. Cuttings will be placed in the borehole from where they were generated and tamped in place to minimize settling. Decontamination water will be containerized and placed in an on-site accumulation area appropriate to the type of waste and directly sampled. Contact waste will be containerized and placed in an appropriate on-site accumulation area and characterized using acceptable knowledge of the media with which it came in contact.

Schedule	Drilling of the boreholes is scheduled for August and September 2014, and the results will be reported on or by October 31, 2014.

REFERENCE

The following list includes all documents cited in this plan. Parenthetical information following each reference provides the author(s), publication date, and ER ID. This information is also included in text citations. ER IDs are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), June 2013. "Investigation/Remediation Report for Material Disposal Area B, Solid Waste Management Unit 21-015, Revision 2," Los Alamos National Laboratory document LA-UR-13-24556, Los Alamos, New Mexico. (LANL 2013, 243675)

NMED (New Mexico Environment Department), July 8, 2014. "Investigation/Remediation Report for Material Disposal Area B, Solid Waste Management Unit 21-015, Revision 2, Approval with Modifications," New Mexico Environment Department letter to P. Maggiore (DOE-NA-LA) and J.D. Mousseau (LANL) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2014, 525003)

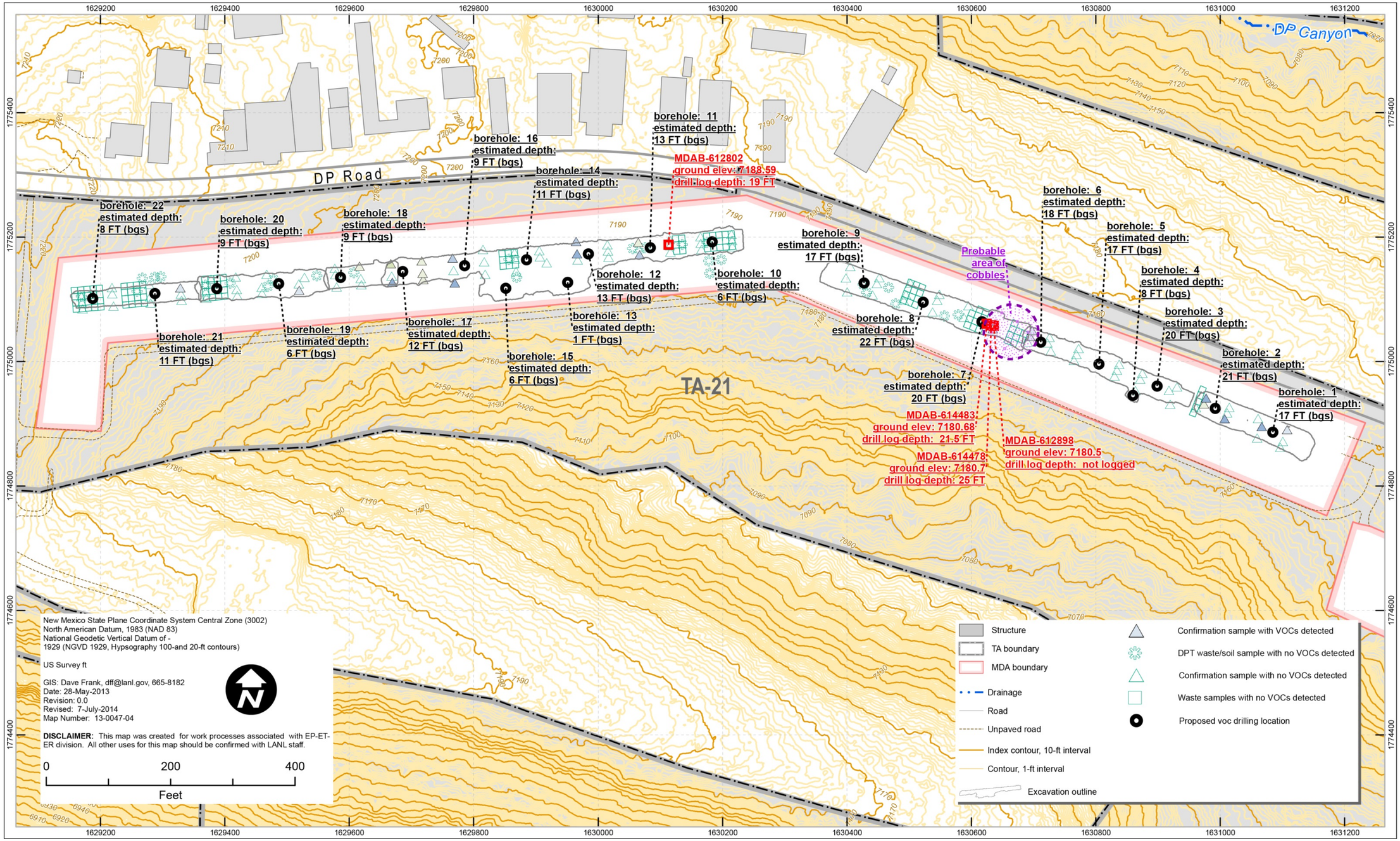

Figure 1 Figure 1: Proposed location for MDA B boreholes