Response to the Second Notice of Disapproval for the Investigation Report for DP Site Aggregate Area Delayed Sites and DP East Building Footprints at TA-21, Los Alamos National Laboratory (LANL), EPA ID No: NM0890010515, HWB-LANL-11-097, Dated March 29, 2012

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories, as presented in the notice of disapproval. Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment.

GENERAL COMMENTS

NMED Comment

1. NMED's Comment #2, Borehole Logs

Original NMED Comment #2: *Section 8.4, Subsurface Sampling, of the* Investigation Work Plan for Delta Prime Site Aggregate Area Delayed Sites, Revision 1 *(IWP) states, "[s]ubsurface samples will be collected using a drill rig with a hollow-stem auger advanced with a split spoon sampler or by hand augering. Field documentation will include detailed borehole logs to document the matrix material in detail; fractures and matrix samples will be assigned unique identifiers."*

Section B-5.2, Borehole Logging, of the IR states, "[t]he required sampling depths at all locations were reached by hand augers or a power auger attachment. A drill rig with a hollow-stem auger was not used to collect subsurface samples. Therefore, there were no boreholes to log."

The last sentence of the quoted statements above is not accurate. Whether augering with a hollow-stem auger or a hand auger, a borehole is created. The approved IWP provided by the Permittees states that detailed borehole logs would be provided for all sampling locations for either hollow-stem augering or hand augering. The borehole logs were not provided. The IR is incomplete without detailed boring logs. In addition, the Permittees·neglected identifying fracture and matrix samples, as required by the approved work plan. The Permittees must provide detailed boring logs for all boreholes advanced more than five feet below ground surface in the revised IR.

Permittees' March 21, 2012 Response*: In all previous investigation reports, detailed boring logs have been provided only when boreholes were advanced using a drill rig. Borehole logs have not been prepared for hand-or power-augered holes because the depths of these holes are relatively shallow and the degree of disturbance caused by hand or power augering makes accurate determination of stratigraphic changes impossible. For hand-or power-augered sampling locations, details of each sample collected are provided on the sample collection logs, including identification of the soil matrix and whether any fractures were encountered. A reference to the sample collection logs for detailed sample information has been added to the text in section B-5.2. The statement "Therefore, there were no boreholes to log" has been deleted from the text in Appendix B.*

NMED Comment*: The Permittees did not supply boring logs as requested in Comment #2. Although the approved work plan specified that borehole logs would be provided for all boreholes, NMED is asking only for logs for borings advanced to depths greater than 5-ft bgs. The approved work plan for this site specifically stated that "detailed borelogs" would be provided for all boreholes, not just those drilled with a drill rig. The assertion that "[i]n all previous investigation reports, detailed boring logs*

have been provided only when boreholes were advanced using a drill rig" is not relevant since the Permittees proposed to log all borings in the approved work plan. The Permittees must fulfill the requirements of the approved work plan or clearly state that the approved work plan was not followed.

LANL Response

1. The Laboratory acknowledges that the work plan stated the Laboratory would provide detailed logs for borings advanced to depths greater than 5 ft below ground surface (bgs). However, the method used to achieve the depths necessary to meet the sampling objective involved the use of a powered hand auger fitted with a center bit. This method was necessary because hand augering often met refusal. However, the powered hand auger does not enable detailed logging because the augering process produces only fine material at the surface, making detailed observations of stratigraphy impracticable. This approach also did not compromise the objective of the borehole sampling because the target sample intervals were predetermined to be at depth. Much of the information that would be expected in a borehole log was included in the sample collection logs (SCLs) contained in Appendix C. For the samples collected from borings greater than 5 ft bgs, the lithology was recorded in the SCLs. The report has been revised to include a deviation with the rationale that detailed borehole logs were not prepared during the field investigation and includes a separate compilation of SCLs and a summary table that compiles the lithology of each sample collected from borings greater than 5-ft bgs.

   Note that the two deepest locations (at Building 21-155) require deeper samples to determine the extent of contamination. A drill rig, using either a hollow-stem auger (with split spoon sampler) or a core barrel sampler will be proposed for boring installation, and detailed borehole logs will be prepared for the next phase of investigation.

NMED Comment

2. NMED's Comment #7, Section B-S.3, Subsurface Tuff Sampling Methods, page B-2

Original Permittees' Statements Quoted in NOD: *"Subsurface samples were collected in accordance with approved subcontractor procedures technically equivalent to SOP-06.10, Hand Auger and Thin-Wall Tube Sampler, or SOP-06.26, Core Barrel Sampling for Subsurface Earth Materials."*

"Samples for VOC analysis were immediately transferred from the sample collection device to the sample container to minimize the loss of subsurface VOCs during the sample collection process. Containers for VOC samples were filled as completely as possible, leaving no or minimal headspace, and sealed with a Teflon-lined cap."

Original NMED Comment #7: *Core barrel sampling was not utilized on this project; therefore, specifying that samples were collected in accordance with SOP-06.26 in the quoted statements above is not accurate. The Permittees must remove the reference to SOP-06.26 or provide an explanation for its inclusion.*

References to SOPs are inadequate for description of sampling activities in the IR. Section IX.A of the Order specifically requires descriptions of the methods and procedures proposed for use or used during site investigations and remediation activities. In addition, Section XI.C.9.a of the Order states the requirements for description of soil, rock and sediment sampling in an Investigation Report. The Permittees must describe in detail the methods used for collection of samples for analysis. Detailed description must include specifications of the "sample collection device" referenced in the quotation

above, specifications of the hand auger and/or thin-walled tube sampler utilized, specifications of the power auger attachment, and the specific methodology (step by step) followed when using these devices. The Permittees must also provide a detailed description of how sampling was conducted in the 20-ft deep isotope separation pit below building 21-155, as well as how 21-22 ft deep samples were collected using a power auger attachment and/or a hand auger.

Permittees' March 21, 2012 Response: *The reference to Standard Operating Procedure (SOP) 06.26 has been removed from section B-5.3. The use of the power auger allowed the hand auger to reach the specified depths of approximately 20 to 30 ft below ground surface (bgs). The power auger was used to drill down to within 0.5 ft of the depth at which the sample was collected. Subsequently, a hand auger was used to collect the sample material at the designated sampling depth in a manner equivalent to SOP-06.1 0, Hand Auger and Thin-Wall Tube Sampler. This information has been added to section B-S.3. In addition, for consistency, "sample collection device" has been changed to "auger bucket" throughout Appendix B.*

NMED Comment: *The Permittees did not provide the information requested in this comment. No specifications for the hand auger and/or thin-walled tube sampler were provided. Specifications for the power auger/power auger attachment were not provided, in addition to the step-by-step methodology followed when using these devices. A detailed description of how sampling at 20 to 30 ft depths with a power auger was performed was also not provided. The Permittees must provide these details in the revised IR.*

LANL Response

2. Section B-5.1 of the report has been modified as follows:

   Deeper subsurface samples (20–30 ft bgs) and samples in locations where a hand auger met refusal were drilled with a mechanical auger. Two different mechanical augers were used for the investigation. For depths between 5 and 10 ft bgs, a 5.5 horsepower (hp) Little Beaver Portable Mechanical Earth Drill with 3-ft-long, 4-in.-diameter auger flights was used. For depths greater than 10 ft bgs, a truck-mounted 10.5 hp Mobile Drill Minuteman with 3-ft-long, 4-in.-diameter auger flights was used. In both cases, the mechanical auger was used to advance the hole to 6 in. above the top of the planned sample collection depth using 4-in.-diameter augers fitted with a center bit. A 4-in.-diameter stainless-steel hand auger was then used to remove any slough from the bottom of the hole. A tape measure was used to verify the depth of the hole. The hole was then advanced to collection depth using the same 4-in.-diameter hand auger. Before the sample was collected, the depth was verified again, the hand auger bucket was decontaminated, and the sample was collected.