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**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

September 30, 2011

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**RE: DIRECTION TO MODIFY  
PHASE II INVESTIGATION REPORT FOR  
MIDDLE LOS ALAMOS CANYON AGGREGATE AREA, REVISION 1  
LOS ALAMOS NATIONAL LABORATORY (LANL)  
EPA ID #NM0890010515  
HWB-LANL-11-022**

Dear Messrs. Rael and Graham:

The New Mexico Environment Department (NMED) has received the United States Department of Energy (DOE) and the Los Alamos National Security L.L.C.'s (LANS) (collectively, the Permittees) Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area, Revision 1 (IR), dated August 2011 and referenced by LA-UR-11-3820/EP2011-0219 and the Permittees' "Response to the Notice of Disapproval for the Phase II Investigation Report for Middle Los Alamos Canyon Aggregate Area" (NOD Response). NMED has reviewed the IR and the NOD Response, and hereby issues this Direction to Modify (DTM). The Permittees must incorporate the following modifications into a Response to Comments, a revised Phase II Investigation Report, and a Phase III Investigation Work Plan (Phase III IWP), as directed.

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**MODIFICATIONS:**

- 1) Modify the risk assessments at Middle Los Alamos Canyon Aggregate Area (MLACAA) to include evaluation of the construction worker receptor. Based on the lack of complete information provided and the omission of requested information, the foreseeable reasonable future land use potentially includes construction activities, which requires an evaluation of the construction worker receptor. There also are at least two locations where PCB contamination is present that exceeds the default soil cleanup level that must be addressed in the future.

In addition, current and foreseeable future land use as stated by the Permittees at Middle Los Alamos Canyon Aggregate Area is industrial. The construction worker receptor must be included in all risk assessments where land use is industrial. Intrusive activities, such as excavation, may occur in any industrial area. Even though construction activities are not planned at this time, this should not be interpreted as an indication that construction activities will never occur in the future. Therefore, the construction worker risk scenario must be evaluated.

Detected concentrations of manganese at several of the sites at Los Alamos Canyon Aggregate Area were determined to be statistically different than background and had exposure point concentrations greater than the construction worker soil screening level for manganese. It is likely that concentrations of manganese at these sites would pose unacceptable risks/hazards to construction workers.

Based on the Permittees' response to Comment 1 of the Phase II IR Notice of Disapproval (NOD), evaluation of the construction worker scenario is not planned for future risk assessments where anticipated land use is industrial. All future risk assessments must include the evaluation of a construction worker receptor at sites where anticipated future land use is industrial. This also is required for sites with detected concentrations of constituents such as manganese, barium, and beryllium, where the residential scenario is not protective for a construction worker scenario. NMED cannot issue a Certificate of Completion for sites where the construction worker risk scenario is not addressed.

The Permittees must evaluate the construction worker receptor for all Solid Waste Management Units (SWMUs)/Areas of Concern (AOCs) in the revised Phase II IR.

- 2) Dioxins/furans must be included in the sampling and analysis plan for all sites at MLACAA. The lack of data on concentrations of dioxins/furans at AOCs/SWMUs sampled within MLACAA constitutes a data gap for evaluating the nature and extent of contamination and human and ecological risk.

Dioxin/furan sampling and analyses were completed at less than half of the sites at MLACAA. Two of the technical area (TA)-02 sites contained concentrations of dioxins/furans that resulted in unacceptable risks/hazards for the residential scenario. Because the TA-02 sites are in close proximity to one another, and the site histories and

land uses are similar, it is reasonable to assume that the areas which were not sampled for dioxins/furans also contain concentrations of dioxins/furans that may pose unacceptable risks/hazards. The Permittees must include proposed sampling and analysis for dioxins/furans at all MLACAA sites in the Phase III IWP.

- 3) In response to Comment 5 of the NOD, the Permittees state, "Section H-4.3 in Appendix H is a qualitative discussion of the vapor-intrusion pathway for the sites at TA-02 and is similar to the qualitative discussion of the vapor-intrusion pathway provided in previous reports. The sites at TA-26 and TA-21 have not yet been evaluated for risk because the extent of contamination is not defined. However, the vapor-intrusion pathway will be evaluated for the sites where the residential scenario is the basis of the recommended site decision."

Adequate justification must be provided which indicates that a more formal quantitative screening assessment is not required on a site by site basis (not a facility-wide qualitative approach), showing that cumulative risks/hazards from exposure to VOCs and other identified constituents of potential concern (COPCs) detected at each site would not contribute to unacceptable risks/hazards to potential future residents.

- 4) In response to Comment 6 of the NOD, the Permittees state "To provide further clarification, the text has been revised as follows (addition in bold).

"Antimony was not detected but had DLs (0.902 mg/kg to 1.17 mg/kg) above the soil BV (0.83 mg/kg) in four samples and had DLs (1.19 mg/kg to 1.32 mg/kg) above the Qbo BV (0.5 mg/kg) in six samples. Because antimony was not detected above BVs **and all results reported between the BVs and the maximum DL were nondetects**, the vertical extent of antimony is defined."

The statement provided above by the Permittees is not accurate. Each sample result must be evaluated based on its respective detection limit, not the maximum detection limit for all samples analyzed for that constituent. The bolded addition above must be changed to, "**and all results reported between the BV and the individual sample's respective DL were nondetects**". The Permittees must make these changes to the text in the revised Phase II IR.

- 5) In response to Comment 8 of the NOD, the Permittees state, "[t]he data tables provided in the main text of the IR are the analytical results for inorganic chemicals above BVs (detected above the BV, detected with no BV, or not detected but with DLs above the BV), organic chemicals detected, and radionuclides detected or detected above BVs/fallout values (FVs). The summary analytical data tables were prepared in accordance with the Consent Order." The summary analytical data tables were not prepared in accordance with the Consent Order.

Section XI.C.12 (Tables) of the Consent Order states "[d]ata presented in the tables shall include the current data, dates of data collection, analytical methods, detection limits, and

significant data quality exceptions. The summary analytical data tables shall include only detected analytes and data quality exceptions that could potentially mask detections.” Section XI.C.12(4) of the Consent Order states, “[a] table summarizing soil, rock, and/or sediment laboratory analytical data. It shall include the analytical methods, detection limits, and significant data quality exceptions that would influence interpretation of the data.”

Dates of data collection were not included in any of the summary analytical data tables, nor were detected analyte concentrations that fell below the BVs or FVs, analytical methods, or detection limits. The Permittees must include all detected data in the summary analytical data tables, whether or not they are below BVs or FVs. The Permittees must also include all data that has a DL above BVs, as these data qualify as “significant data quality exceptions”. The Permittees must also include dates of data collection in the summary analytical tables. All requirements listed above are specific requirements in the Consent Order and must be included in the revised Phase II IR.

In order to facilitate review of documents and evaluation of the extent of contamination, the Permittees must also provide an electronic appendix of SWMU/AOC specific analytical data tables which include all data for all samples collected at the AOCs and SWMUs, including non-detects. These tables need only be provided electronically and must follow the same format as the summary analytical data tables included in the Report. This data table must be included in the revised Phase II IR and all subsequent submittals where analytical results are presented.

- 6) Table 1 of the Permittees’ NOD Response clearly shows that iron decreased initially in the Qal media and then showed a slight increasing trend in the Qbo. The Permittees provided a response to Comment 9 of the NOD that stated, “[i]n both instances displayed in Table 1 in response to Comment 8, iron decreased with depth; therefore, vertical extent is defined.” The statement is not accurate and is therefore not an adequate response to the Comment. The Permittees’ NOD Response also states that, “Although there are intervals where concentrations increased, the overall concentration trend is that concentrations decreased with depth.” This, again, is not a true or accurate statement. Descriptions of concentration trends must be accurate and must discuss relevant issues related to differences in media types.

The Permittees must propose to continue the investigation of vertical extent of contamination at all locations where this Comment applies. Propose to collect samples at depths below the deepest previous investigation sample collection depths to define the vertical extent of contamination, or provide adequate justification why further investigation is not required, including accurate descriptions of trends and relationships within differing media, in the revised Phase II IR. These locations and constituents include:

<b>SWMU/AOC</b>	<b>COPC</b>
AOC 02-003(a)	Iron
AOC 02-003(b)	Iron
AOC 02-003(c)	Iron

AOC 02-003(d)	Arsenic
AOC 02-004(a)	Iron Manganese
AOC 02-004(b)	Iron
AOC 02-004(f)	Iron Manganese
AOC 02-004(g)	Iron
AOC 02-006(a)	Lead
AOC 02-006(b)	Iron
AOC 02-006(c)	Iron TPH-DRO
AOC 02-006(e)	Iron Manganese
TA-26	Aluminum Barium Cobalt Lead

This requirement is related to Comments 12, 13, 14, 15, 19, 20, 21, 23, 24, 25, 31, 33, 34, 36, 37, 38, 54, 55, 56, and 58 of NMED's May 24, 2011 NOD.

- 7) Interpretation of data must not be discussed in the sections presenting analytical results. Section XI.C of the Order (Investigation Report) states, "In general, interpretation of data shall be presented only in the background, conclusions and recommendations sections of the reports. The other text sections of the reports shall be reserved for presentation of facts and data without interpretation or qualification."

Section XI.C.9 of the Order (Site Contamination) states, "A section shall provide a description of sampling intervals and methods for detection of surface and subsurface contamination in soils, rock, sediments, groundwater, and surface water, and as vapor-phase contamination. Only factual information shall be included in this section. Interpretation of the data shall be reserved for the summary and conclusions sections of the report."

The Permittees' response to Comment 11 of the NOD states, "[h]owever, in its notice of disapproval for the Investigation Report for North Ancho Canyon Aggregate Area, dated November 4, 2009, NMED directed the Laboratory to include COPC identification and nature and extent evaluations in the main text of IRs to facilitate review of the documents (NMED 2009, 108143). In its response to this direction, the Laboratory noted that the data evaluations formerly presented in the data review appendix would be presented in the "Site Contamination" section of the IR main text (LANL 2009, 108179)." The first statement quoted above is accurate in that NMED requires interpretation of data and conclusions based on data to be included in the main text of the Investigation Report rather than in an appendix. The second statement refers to a letter sent by LANL requesting concurrence with their misinterpretation of the request.

The Permittees neglected to include NMED's response to their letter requesting concurrence, which did not concur with the statement above and specifically stated, "[f]or clarification, portions of the Data Review Appendix that describe the analytical results and make comparisons to background and screening levels must be included in the "Site Contamination" section of the report. Portions of the Data Review Appendix that discuss data interpretations and conclusions must be included in the "Conclusions" and "Recommendations" sections of the report."

The Permittees must move interpretive and qualitative statements from all Site Contamination Sections of the revised Phase II IR to the appropriate sections and provide supporting information for any conclusions. This requirement applies to all future reports. This Comment also applies to issues discussed in Comments 27, 39 and 50 of the NOD.

- 8) Section 3.2.4.1, Borehole Drilling and Subsurface Sampling, of the IR states, "[s]amples were collected using stainless-steel core barrel samplers in accordance with SOP-06.26, Core Barrel Sampling for Subsurface Earth Materials."

Under Section 8.3.2, Sleeve-Contained Core Samples, of SOP-06.26, a Note states, "[u]se this procedure when cored materials are known or suspected to contain VOCs." A second Note under the same section states, "[w]hen the sample is suspected to contain VOCs, seal the ends of each sleeve with a Teflon disc or tape and a plastic cap." This generally corresponds to the requirements for use of split barrel samplers lined with brass sleeves included in Consent Order Section IX.B.2.b.ii.

Based on Sample Collection Log/Field Chain of Custody forms provided in the IR, the Permittees did not collect or submit VOC samples in accordance with SOP-06.26 and, therefore, the samples submitted for VOC analysis are not valid and should not have been utilized for site characterization.

The Permittees must describe in detail the methods used for collection of samples for analysis so NMED can determine if the VOC data provided in the IR is acceptable. The Permittees must provide an explanation as to why samples were not collected in accordance with SOP-06.26 and the approved Work Plan.

- 9) In response to Comment 15 of the Phase II IR NOD, the Permittees state, "After reviewing the sample descriptions on the sample collection logs for locations 02-600218 and 02-612412, the original media codes for samples RE02-07-6892 (Qct) and RE02-07-933 (Qct) at location 02-600218 and sample RE02-10-21992 (Qal) at location 02-612412 have been corrected to soil, soil, and Qct, respectively."

The borehole log provided for location 02-600218 indicates that samples RE02-07-6892 and RE02-07-933 are within the Qct. No borehole log was provided for location 02-612412; the IR is not complete if it is missing boring logs. No evidence was provided to show that changes to the media codes are accurate; therefore, NMED will assume that the

original designations are accurate until evidence to the contrary is provided. It could be interpreted that the Permittees have changed the media codes of specific samples in order to fit preconceived conclusions. Also, sample RE02-07-6892 was not tested for arsenic and is not relevant to the comment.

The borehole log for location 02-600218 does indicate that sample RE02-07-933 is not SOIL, as listed in the table, but QAL. Also see Comment 10 below regarding overlapping intervals. The lithology descriptions provided on the borehole log also overlap, showing the QAL as being from 0.5-2.0 and the QCT from 0.5-5.3.

The Permittees must either provide evidence in the revised IR to support the change of media codes or use the original sample designations and reverse the changes made to Tables 6.5-1, 6.5-2, and 6.5-4, text in Sections 6.5.4.3 and 6.5.4.4, Plates 3 and 5, Figures G-4.0-1 through G-4.0-7, and Table G-4. This applies to Comments 16, 17, and 18 of the NOD, as well, which also requires reversal of changes to Section 6.5.4.4. The Permittees must provide the logs for every borehole, as required by the Consent Order, in the revised Phase II IR. The Permittees must review all boring logs for accuracy and provide revisions as necessary in the revised Phase II IR. See Comment 10 regarding other boring log inconsistencies.

- 10) In many of the summary analytical data tables in the IR, the Permittees report overlapping sampling intervals in the same boreholes. In reviewing some of these samples, NMED has found numerous inconsistencies in reported information, including sample collection dates that do not coincide, borehole drilling dates that do not coincide with the sample collection dates, and descriptions of media for the same locations and intervals that do not agree. A sampling of these issues is provided below.

In Table 6.4-1, at location 02-600196, sample RE02-07-6177 indicates a depth interval of 0-0.5 ft and sample RE02-07-806 indicates a depth interval of 0-4.5 ft. According to the data tables in Appendix F, the sample collection date for the 0-0.5 ft sample was 08/28/07, while the deeper 0-4.5 ft sample collection date was 08/04/07. In reviewing the boring log for this location, the boring date is listed as 08/17/07.

<b>AOC 02-003(c)</b>				
<b>Sample ID</b>	<b>Location ID</b>	<b>Depth, ft</b>	<b>Collection Date</b>	<b>Boring Date</b>
RE02-07-6177	02-600196	0-0.5	8/28/2007	8/17/2007
RE02-07-806	02-600196	0-4.5	8/4/2007	8/17/2007

The Permittees must provide an explanation as to why these sample intervals overlap, how the deeper sample from the same borehole was collected 24 days before the shallow sample, how the deeper sample in the borehole was collected 13 days before the borehole was drilled, and why the dates related to this information do not agree. Provide this explanation in the response letter and in the revised Phase II IR.

In Table 6.5-1, similar issues abound.

<b>AOC 02-003(d)</b>				
<b>Sample ID</b>	<b>Location ID</b>	<b>Depth, ft</b>	<b>Collection Date</b>	<b>Boring Date</b>
RE02-07-6891	02-600218	0-0.5	9/27/2007	9/6/2007
RE02-07-932	02-600218	0-1.3	9/6/2007	9/6/2007
RE02-07-6892	02-600218	2-2.5	9/27/2007	9/6/2007
RE02-07-933	02-600218	2-4	9/6/2007	9/6/2007
RE02-07-6893	02-600218	4.5-5	9/27/2007	9/6/2007
RE02-07-934	02-600218	4-5.25	9/6/2007	9/6/2007

The Permittees must provide an explanation for these overlapping sample intervals and inconsistent dates or provide corrected tables in the revised Phase II IR.

Also, there are conflicting media descriptors in many of the tables. For example, in Table 6.12-1, sample RE02-07-1994 with a depth interval listed as 4.5-7.5 ft is shown as QAL. Sample RE02-10-21799, from the same location and with a depth interval of 6-6.2 ft, is shown as SOIL. Provide an explanation as to why the second sample, whose interval is completely encompassed by the first, is described as a different media type.

<b>AOC 02-004(f)</b>			
<b>Sample ID</b>	<b>Location ID</b>	<b>Depth, ft</b>	<b>Media</b>
RE02-07-1994	02-600470	4.5-7.5	QAL
RE02-10-21799	02-600470	6-6.2	SOIL

Table 6.20-13 shows samples 0402-95-0038 and 0402-95-0396, both at location 02-01146, as collected from the same depth interval of 7.5-8.5 ft, yet they are shown as SOIL and SED, respectively. Samples obtained approximately five feet away within similar depth intervals were shown as SOIL and QAL. The Permittees must provide an explanation for these inconsistencies and provide corrected tables in the revised Phase II IR.

<b>AOC 02-009(c)</b>			
<b>Sample ID</b>	<b>Location ID</b>	<b>Depth, ft</b>	<b>Media</b>
0402-95-0038	02-01146	7.5-8.5	SOIL
0402-95-0396	02-01146	7.5-8.5	SED

Boring logs for boreholes drilled during the Phase II Investigation report 100% core recovery for every interval in every borehole. In contrast, boring logs from the Phase I Investigation do not report 100% core recovery for every interval in any boring. Provide a



detailed explanation of the changes in sampling methods that afforded the ability to consistently achieve 100% sample recovery in every interval of every borehole. NMED will require use of this method across the Laboratory. If the recovery data is inaccurate, correct the stated recoveries as necessary.

Other inconsistencies were found during review of borehole logs from the Phase I investigation. For example, the borehole log for location 02-600437 indicates a 0% HAS core recovery from 0.5 ft to 9 ft bgs. The borehole log and Table 6.26-29 indicate that a sample was collected from 7.5 ft to 8.8 ft at this location. A similar issue is also found on the borehole log for location 02-600436. The borehole log indicates that there was 0% recovery from 0.5 ft to 8.5 ft, yet a sample was collected from 7.5 ft to 13.5 ft. The Permittees must provide an explanation as to how samples were collected from intervals where no core was recovered. The Permittees must provide corrected boring logs, as necessary, in the revised Phase II IR.

Many boring logs are missing from the IR. NMED is unable to fully evaluate the IR and the Permittees' responses to the NOD without complete information. The Permittees must include the log for every borehole in the revised Phase II IR. The Permittees must review all data for accuracy, including tables, figures, and boring logs and make corrections as necessary in the revised Phase II IR.

- 11) The Permittees must propose further sampling to characterize the lithology and evaluate the vertical extent of barium, chromium, and zinc at AOC 02-003(d) in both the revised Phase II IR and the Phase III IWP.
- 12) The tables provided in the Permittees' NOD Response and the borehole logs list a media designator of ALLH for many sample media types, while the summary analytical data tables within the IR report these samples as SOIL. Revise the IR to use either ALLH or SOIL as the media descriptor. Revise all text, tables, figures, and borehole logs to provide consistency in media descriptions in the revised Phase II IR.
- 13) The Permittees' response to Comment 26 of the NOD states, "[p]olychlorinated biphenyl (PCB) contamination in the area of location 02-600561 does not exceed recreational SSLs and does not pose a potential unacceptable risk to a recreational user. Furthermore, the site is very steep and rocky, does not have any trail access nearby, and is not likely to ever be used recreationally. Given that the extent of PCB contamination in the area around location 02-600561 has been defined and does not pose a potential unacceptable risk under the current and foreseeable future land use, the most appropriate approach is to ensure there is no potential for migration downslope. Very little downslope erosion has occurred as evidenced by the heavy groundcover at the site. This is also supported by the analytical results, which indicate PCBs at less than 1 mg/kg immediately downslope of location 02-600561."

First, Section VIII.B.1.a (Soil Polychlorinated Biphenyls Cleanup Levels) specifically states, "PCBs are hazardous constituents (20.4.1.200 NMAC incorporating 40 C.F.R. §

261, Appendix VIII). Soil cleanup levels for PCBs are discussed in the Department's Position Paper *Risk-based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites* (March 2000). The soil cleanup level for PCBs is either a default concentration of 1 milligram per kilogram (mg/kg) or a risk-based PCB concentration level established through performing a health risk assessment in accordance with the Department's Position Paper referenced above." PCB concentrations at this location are above the default soil cleanup level of 1 mg/kg established in the Consent Order.

Second, while one of the downslope sample locations (location 02-612377) is slightly below the cleanup level, the sampling locations immediately downslope of location 02-600561 include locations 02-612378 and 02-612390. Samples obtained from these locations contained PCB concentrations that exceed the 1 mg/kg default soil cleanup level.

Third, the lateral extent of PCB contamination both east and west of location 02-600561 has not been defined. Samples obtained from the step-out sample locations 02-613622 (east) and 02-613290 (west) both contained PCB concentrations exceeding the soil cleanup level of 1 mg/kg. The Permittees must propose additional step-out sampling locations to define the lateral extent of PCB contamination in the Phase III IWP. In addition, the Permittees must propose PCB sampling locations down-drainage of location 02-600561 in the Phase III IWP.

The Permittees will be required to remove all soils that exceed the default cleanup level of 1 mg/kg PCBs or to build a containment structure that will prevent the migration of PCB contamination. Removal of soils from PCB-contaminated sites with more difficult access problems was accomplished in the past year in the nearby LA-SMA-2 drainage.

- 14) The Permittee's response to Comment 45 of the NOD states, "[b]ecause of the nature of the SWMUs and AOCs within the TA-02 core area, which overlap significantly, the 50-ft boreholes sampled during the Phase II investigation were intended to define the vertical extent of contamination for the TA-02 core area as a whole [excluding SWMUs 02-005 and 02-006(a)].

"In addition, using data from 25 ft away is not inconsistent with the approach taken (and approved in the work plan) to determine lateral and vertical extent for other sites within the TA-02 core area. Therefore, no additional sampling locations are needed to characterize the vertical extent of contamination at SWMU 02-008(a)."

The vertical extent of TAL metals, nitrate, SVOCs, VOCs, cesium-137, plutonium-239/240, uranium-235, and tritium has not been defined at SWMU 02-008(a). Detected concentrations from locations 25 ft away are not appropriate to define the vertical extent of contamination at this location. This borehole location was not approved in the Phase II IWP to define the vertical extent of contamination at SWMU 02-008(a). The Permittees must state that the vertical extent of TAL metals, nitrate, SVOCs, VOCs, cesium-137, plutonium-239/240, uranium-235, and tritium at SWMU 02-008(a) is not defined in the

revised Phase II IR and propose sampling to define the vertical extent of these contaminants in the Phase III IWP.

- 15) The Permittees' response to Comment 49 of the NOD states, "Location 02-612446 is located to the south of location 02-600385 (Figure 6.26-2). Aroclor-1254 and Aroclor-1260 were detected at location 02-612446, and concentrations increased slightly with depth at this location (Table 6.26-3). However, within the excavation footprints, the concentrations of the confirmation samples were compared with the sample concentrations before excavation to determine vertical extent. In comparison to preexcavation concentrations at location 02-600385, the Aroclor-1254 and Aroclor-1260 concentrations decreased both vertically and laterally to the south. Details of the sample concentrations have been provided in section 6.26.4.4 at AOC 02-011(a)(i). No revision to the text is necessary.

"Location 02-612447 is located to the east of location 02-600386 (Figure 6.26-2). Aroclor-1254 and Aroclor-1260 were detected once each at location 02-612447 (Table 6.26-3), and the concentrations were less than the preexcavated concentrations at location 02-600386. Therefore, Aroclor-1254 and Aroclor-1260 concentrations decreased both vertically and laterally to the east. Details of the sample concentrations have been provided in section 6.26.4.4 at AOC 02-011(a)(i). No revision to the text is necessary.

"Only the Aroclor-1260 concentration in sample RE02-11-320 (3.39 mg/kg) at location 02-613289, the northern step-out location within the excavation for location 02-600385, exceeded the default soil cleanup level of 1 mg/kg (Table 6.26-3). All other confirmation sample concentrations within the excavation for location 02-600386 were below 1 mg/kg (Table 6.26-3). Following additional removal activities at AOC 02-011(a), a risk assessment will be conducted to ensure that the site does not pose a potential unacceptable risk under the current and foreseeable land-use scenario (recreational).

"Location 02-613289 (step-out location north of location 02-600385) is approximately 15 ft west of location 02-600386. Because a large concrete trough prevented extent sampling immediately west of location 02-600386 (Figure 2), location 02-613289 was used to define the extent of contamination to the west. Figure 2 of this response shows the concrete trough and has been added to the revised IR (as Figure 6.26-3). The text for AOC 02-011(a)(i) in section 6.26.4.4 has been revised using location 02-613289 as the step-out location west of location 02-600386. The conclusion has been revised to state that the lateral and vertical extent of Aroclor-1260 are not defined to the west of location 02-600386."

First, a decrease in concentration is not the only factor involved in defining extent. The Permittees are required to define the boundaries of the contamination relative to the default cleanup level of 1 mg/kg. This has not been completed to the north and south of location 02-600385 or to the east and west of location 02-600386.

Second, location 02-613289 is not the only location that exceeded the default cleanup level of 1 mg/kg. Table 6.26-3 indicates that PCB concentrations detected at locations 02-

612446 and 02-612447 exceeded the default cleanup level. The default cleanup level applies to the cumulative amount of PCBs at a location, not individual aroclors.

If the Permittees choose to utilize location 02-613289 as the step-out location west of location 02-600386 and north of location 02-600385, then all material between those locations must be removed because the evidence suggests that all media between these locations contains PCBs at concentrations above the default cleanup value of 1 mg/kg.

The Permittees must propose further sampling to define the extent of PCB contamination at AOC 02-011(a) in the Phase III Investigation Work Plan. The Permittees will be required to remove all soils that contain PCB concentrations greater than the default cleanup level of 1 mg/kg.

- 16) The Permittees' response to Comment 52 of the NOD states, "Only a surface sample (0–0.5 ft bgs) was collected at location 02-01247 in July 2000. However, two samples (0–0.5 ft and 2–2.5 ft bgs) were collected at location 02-600574 in 2007, approximately 12 ft to the west of location 02-01247. Arsenic was detected at concentrations of 2.26 mg/kg from 0–0.5 ft bgs and 1.68 mg/kg from 2–2.5 ft bgs (both below the soil BV of 8.17 mg/kg) at location 02-600574 (see analytical results in Appendix F). These concentrations are lower than the concentration detected from the surface sample at location 02-01247 (8.7 mg/kg). Therefore, vertical extent of arsenic was defined during the Phase I investigation.

"AOC 02-011(d) was the outfall that discharged effluent from the Omega West Reactor equipment building [AOC 02-004(f)]. The line that ran from the equipment building is part of AOC 02-004(f), and subsurface sampling was conducted along the line as part of the investigation at AOC 02-004(f) (section 6.12)."

Location 02-600574 is outside of the industrial waste line corridor specific to location 02-01247 and cannot be used to define vertical extent of contamination at location 02-01247. While sampling was conducted along the waste line as part of the investigation at AOC-004(f), no samples collected in the vicinity of location 02-01247 were analyzed for TAL metals or, specifically, arsenic. The Permittees must state that vertical extent of arsenic at location 02-01247 is not defined in the revised Phase II IR and propose to collect additional samples at location 02-01247 in order to define the vertical extent of arsenic contamination in the Phase III IWP.

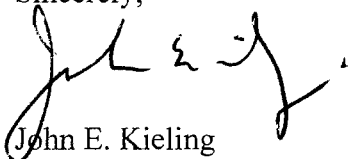
- 17) The Permittees must include arsenic in the risk assessments for AOCs 02-006(b), 02-006(e), and 02-011(d). The arsenic concentrations at these AOCs are statistically different from background and cannot be eliminated from the risk assessments. The Permittees must revise the risk assessments to include arsenic for these AOCs in the revised IR.

Messrs. Rael and Graham  
September 30, 2011  
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The Permittees must make all modifications herein and submit a response to the DTM and a revised IR by **November 30, 2011**. The revised IR must be accompanied by a response letter and table cross-referencing the numbered comments in this letter and identifying where changes have been made to the IR. Any additional work proposed for the next phase of investigation (Phase III) must be listed in the Recommendations Section of the revised IR. 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. In addition, the Permittees must submit a redline-strikeout version that includes all changes and edits to the Investigation Work Plan (electronic copy) with the response to this DTM.

Please contact Ben Wear at (505) 476-6041 should you have any questions.

Sincerely,



John E. Kieling  
Acting Chief  
Hazardous Waste Bureau

cc:

D. Cobrain, NMED HWB  
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B. Wear, NMED HWB  
S. Yanicak, NMED DOE OB, MS J993  
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File: LANL '11, Middle Los Alamos Canyon