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June 17, 2010

DCN: NMED-2010-17

Mr. David Cobrain
Hazardous Waste Bureau
2905 Rodeo Park Dr. E/Bldg 1
Santa Fe, NM 87505

RE: Draft Technical Review Comments on the Phase II Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21, Los Alamos National Laboratory, dated April 2010.

Dear Mr. Cobrain:

Attached please find technical review comments on Los Alamos National Laboratory's (LANL) "Phase II Investigation Report for Delta Prime [DP] Site Aggregate Area at Technical Area 21", dated April 2010.

A lengthy comment was drafted concerning the use of the Dourson and Strata (1983) paper. A little more detail was directed at reviewing this paper, given the controversy generated over it during the administrative hearing for the Technical Area 16 open burn units. While we still do not agree with the use of this paper to solely justify ecological hazard indices above the target level, some bigger issues were uncovered. The paper provides significant discussion on how uncertainty factors should be developed and applied to toxicity data to derive toxicity reference values. If LANL intends to rely on this study, it appears that a significant revision to the EcoRisk database may be warranted to include the methodologies outlined in the Dourson and Strata paper.

Appendix E of the report provided confirmation soil results from the diesel tank 21-57 spill. The data indicate levels of diesel range organics well above state total petroleum hydrocarbon (TPH) levels [following the guidance "Risk-Based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites" (3-2000)]. It is not clear whether any past agreements concerning this site have been made between LANL and the State of New Mexico Environmental Department (NMED), as such NMED may wish to further review the draft comment addressing this potential contamination.

As part of the evaluation of doses, the dose associated with background was subtracted from the calculated site dose. This is consistent with current Department of Energy/Environmental Protection Agency/Nuclear Regulatory Commission policy that defines dose as 15 millirem per year (mrem/yr) above background. As such, no comments were drafted concerning this methodology.

*The contents of this deliverable are confidential and for internal use only.
Comments should not be evaluated as a final work product.*

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If you or any of your staff have questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,

A handwritten signature in black ink that reads "Paige Walton". The signature is written in a cursive, flowing style.

Paige Walton

AQS Senior Scientist and Project Lead

Enclosure

cc: Kathryn Roberts, NMED (electronic)
Joel Workman, AQS (electronic)

**Draft Technical Review Comments on the
Phase II Investigation Report for Delta Prime Site Aggregate Area at Technical Area 21
Los Alamos National Laboratory
April 2010**

1. In the discussion of the determination of exposure point concentrations (EPCs) contained within Appendix H (Section H-3.4), it is noted that the minimum number of detected data required to statistically determine an EPC, with an acceptable level of confidence, is five. It appears that the use of five detected data points follows Los Alamos National Laboratory (LANL) guidance contained in Standard Operating Procedure (SOP)-5250, R0, Attachment 10 dated May 20, 2009. In past discussions concerning this issue, LANL (Dr. Richard Miranda) has indicated that a minimum of eight to 10 samples are needed to statistically estimate an EPC; the use of this minimum number of samples has been agreed to by the State of New Mexico Environmental Department (NMED). Reduction in the number of samples is acceptable, if all parties agree that the number is sufficient to determine a reasonably reliable EPC may be reduced to five; however, NMED would like consistency between sites and consistency with past agreements made concerning the minimum number of samples required to statistically determine the EPC. Address what steps will be taken (to include revision of the above-referenced SOP if needed) to ensure there is consistency with how EPCs will be determined at various sites across LANL.
2. Based on a review of Appendix E, it appears that the nature and extent of contamination resulting from the diesel tank 21-57 spill has been defined. However, the results of the data clearly indicate elevated levels of total petroleum hydrocarbon-diesel range organics (TPH-DRO), at levels above New Mexico screening levels. The report does not address the elevated levels of TPH-DRO nor does the report indicate whether any additional action/investigation will be conducted on this area. It is not clear whether soil removal is needed to address the elevated levels of TPH-DRO or whether monitored natural attenuation (MNA) may suffice as a proposed remedy.
3. For several ecological receptors, the screening assessment indicated hazard quotients (HQs) and hazard indices (HIs) above the target level of 1.0. Per Appendix H, Section H-5.3, "an HI greater than 1.0 is an indication that further assessment may be needed to be sure that exposure to multiple COPECs [constituents of potential ecological concern] at a site will not lead to potential adverse impacts to a given receptor population." Where HIs were above 1.0, additional evaluation was conducted to include use of area use factors, population use factors, and information from a paper by Dourson and Stara (1983). The report indicates that a conclusion of the Dourson and Strata paper is "that the LOAEL [lowest-observed adverse effect level] to NOAEL adjustment [no-observed adverse effect level] indicates that HIs up to 10 may not adversely affect ecological receptors. To maintain conservatism, they [Dourson and Stara] state that HIs less than 3 do not adversely affect ecological receptors." Based upon review of this paper, the paper appears to indicate if a 10-fold uncertainty factor is applied, the ratio of the average subchronic to chronic NOAEL or LOAEL for one-half the data are below 2.0 and approximately 96% of the ratios are below a value of 10. The intent of this analysis does not appear to be whether the ratios are indicative of acceptable risk but

rather whether the uncertainty factor as applied is appropriate. This paper further discusses the use of uncertainty factors and indicates that use of a default uncertainty factor (10-100) may not be appropriate. In fact the paper indicates that additional uncertainty factors may be appropriate to account for the sensitivity of the adverse effect and interspecies adjustments. Based upon review of the categories of uncertainty, several issues should be addressed: intertaxon extrapolation, study duration extrapolation, and endpoint extrapolation. Thus, it appears that use of the generic uncertainty factor as applied for the Delta Prime (DP) Aggregate Area sites (as well as addressed in EcoRisk) may not be appropriate and additional evaluation and review of uncertainty factors may be warranted. Further, because uncertainty factors consistent with those addressed in the paper were not applied, it is not clear that the assumption that an HI of less than 10 is indicative of acceptable risk. (It is also noted that this study appears to be directed at pesticides and may not be directly applicable to all contaminants).

The Dourson and Strata paper also specifically addresses ratios below a value of 10.0. In reviewing the adjusted ecological HIs provided in Appendix H, there are several sites where the HIs greatly exceed the target level of 1.0 and in fact are significantly above a ratio of 10.0. It is noted that the EPCs for several of these constituents are based on upper confidence levels of the mean (UCL) and not a maximum detected concentration. Therefore it does not appear that a single detection is driving the risk in all cases. A qualitative statement is made in the report that the HIs are acceptable as the concentrations of contaminants driving the risks are similar to either background or levels of contaminants detected in other canyons/areas within LANL where biota studies are on-going. However, data were not provided demonstrating the levels of contamination are statistically similar (e.g., Wilcoxon Rank Sum test) to either background or other areas in the canyon. Further, it is understood that the biota studies are on-going and that data for all COPECs have not been collected (e.g., dioxins/furans). Additional evaluation of risk to ecological receptors where the HI is greater than 1.0 in the adjusted HI calculations is warranted. It is suggested that a bounding analysis using the LOAEL be conducted and/or other lines of evidence provided to demonstrate that the levels of contamination present will not pose unacceptable harm to the environment.

4. In reviewing the exposure parameters used to develop the radionuclide screening action levels (SALs) it was noted that an exposure time of nine hours per day was applied. The report indicated that this was representative of a normal work day at LANL. The screening levels for chemicals (NMED 2009) for the industrial and construction worker are based upon an exposure time of eight hours per day, which may result in under-conservative screening levels for these two receptors. Discuss whether the chemical screening levels are appropriate and protective of the industrial and construction worker scenarios or whether modifications to the exposure times are warranted to more accurately reflect LANL activities. If appropriate, update the Uncertainty Section to address this issue.
5. It is noted that several volatile organic compounds (VOC) were detected at low concentrations across the aggregate area. Since the VOCs were not detected above residential screening levels and LANL does not intend to release the land and/or re-develop the area for residential use, the exclusion of the vapor intrusion scenario is reasonable.

However, as discussed with Dr. Mirenda on past occasions, the evaluation of the vapor intrusion scenario is not limited to the residential scenario. Evaluation the potential exposure through inhalation of indoor air by an indoor worker must also be addressed. Clarify whether the assumptions used to justify exclusion of vapor intrusion for the residential scenario also apply to an industrial worker (i.e., are there any re-develop plans).

6. At solid waste management unit (SWMU) 21-024(b), limited soil removal is proposed. This removal action is driven by elevated levels of plutonium and americium in soil. However, the risk assessment also showed small areas of elevated arsenic contamination, which resulted in excess risk (above the target level of $1E-05$). It is suggested that the areas with elevated arsenic also be removed as part of the removal action.
7. Limited soil removal to address radionuclide contamination is proposed at SWMU 21-026(a)-99. It is also recommended that the soil containing elevated levels of benzo(a)pyrene and dibenz(a,h)anthracene, which are driving the risk assessments (benzo(a)pyrene for industrial and dibenz(a,h)anthracene for residential and construction) above the target risk levels also be removed as part of this action.
8. Due to manganese, the construction worker HI exceeds the target hazard level of 1.0. On page H-35 of the report, the text states that this is due to a single detection of 1,100 milligrams per kilogram (mg/kg). However, in reviewing the data summary figure (Figure 6.7-1), manganese was also detected at sample location 21-603142 from 6.5 to 7.5 feet below ground surface at a concentration of 1,580 mg/kg. Clarify why this datum was not included in the risk assessment for the construction worker and revise the risk calculations as warranted. It appears that including this datum for manganese will result in an even higher HI for the construction worker. Address whether limited soil removal may be warranted to justify “corrective action complete”.
9. Section 6.14.1. Table 6.14-3 is referenced in the fourth paragraph but there is no Table 6.14-3 included in the document. Revise this discrepancy.