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January 20, 2010

DCN: NMED-2010-03

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

RE: Draft Evaluation of the *Sandia Canyon Investigation Report*, Los Alamos National Laboratory, dated October 2009.

Dear Mr. Cobrain:

This letter addresses the evaluation of Los Alamos National Laboratory's (LANL) *Sandia Canyon Investigation Report* (October 2009). A review of the document was requested on January 19 with comments due by January 21. Due to the quick turn around time, a detailed technical review of the document, and in particular, the risk assessments could not be conducted. Comments were drafted concerning big picture items that immediately were recognizable as potentially being an issue needing revision. Please note that there may be additional issues with both risk assessment input and methodology upon a more in-depth review.

It is also understood that NMED views the characterization of the canyon as incomplete and that additional investigative work will be required. It is agreed that review of the risk assessments based on an incomplete dataset is not warranted at this time. As such, a comment indicating that the review of the risk assessments is pending completion of the nature and extent of characterization for the canyon and associated reaches may be warranted.

The following issues were noted during the cursory review.

1. In discussion of the ecological/biota assessments, it is noted that for non-detects, a simple substitution method using a value of zero was applied. While use of simple substitution for non-detects has been acceptable in the past, current studies have shown that simple substitution results in several errors. As such, EPA does not recommend the use of simple substitution but rather recommends the use of regression on order statistics (ROS) to extrapolate non-detects. Maximum likelihood estimation (MLE) test and the Kaplan Meyer test, both ROS methods, have been found to be more accurate for determining statistics for data with non-detects. Estimations of exposure point concentrations must be revised to incorporate ROS methods for handling non-detects in datasets. It is noted that appropriate methods for handling non-detects were applied in Appendix E for the risk assessments, therefore, this issue only applies to assessment of the biota data. Additional guidance on this issue may be found in the following:

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- Environmental Protection Agency's (EPA), ProUCL Version 4.00.02 User Guide, EPA/600/R-07/038, April 2007.
- EPA ProUCL Version 4.00.04
- Dennis R. Helsel, More than Obvious: Better Methods for Interpreting Non-detect Data, *Environmental Science and Technology*, October 15, 2005.

2. Avian toxicity to dioxins/furans was not included in the assessments (see Table E-1.2-1). In past discussions with LANL, the exclusion of avian toxicity reference values (TRVs) was because the values were based on studies that used subcutaneous (intraperitoneal) injections (i.p.) (reference also to study posted in Sample, *et.al* 1996: Toxicological Benchmarks for Wildlife: 1996 Revision). The document, "Great Lakes Water Quality Initiative Criteria Documents for the Protection of Wildlife: DDT, Mercury, 2,3,7,8-TCDD, PCBs" (EPA 820-B-95-008, March 1995), specifically states in the discussion of avian chronic and subchronic toxicity for 2,3,7,8-TCDD (Chapter 3) that "...it generally is acknowledged that i.p. and oral routes of exposure are similar because in both instances the chemical is absorbed by the liver, thereby permitting first-pass metabolism. Use of the i.p. dose levels assumes that 2,3,7,8-TCDD bioavailability and absorption form the gastrointestinal tract and the abdominal cavity are not significantly different (USEPA 1993)." The report does indicate that there is potential for both over- and under-estimation of absorption that would be assumed through ingestion, which should be discussed in the uncertainty analysis of the risk assessment. Given the above, the no-observed adverse effect level (NOAEL) of 1.4E-02 µg/kg/day using the ring-necked pheasant by Nosek et al 1992 (as cited in the above referenced document) and as cited by Sample et al 1996), it is appropriate to use i.p. data for deriving a TRV for avian receptors. Use of any uncertainty factors that may be applied to derive a final TRV should be discussed in the risk assessment. Revise the assessment to include an evaluation of potential risk to avian receptors accordingly.

3. Section 8.2.6.3 of the report indicates that Region 6 Medium Specific Screening Levels (MSSLs) from 2007 and Region 9 Preliminary Remediation Goals (PRGs) from 2004 were applied in the risk assessment. It is not clear why screening levels from these two databases would be applied in the risk assessment. Both the Regional Screening Levels (2009) and the NMED Screening Levels (2009) should be used and should address all contaminants of concern. In the event that a screening level is not available in one of these two tables, a site-specific screening level should be calculated using the methodology outlined in the NMED Soil Screening Guidance. Significant changes to how exposure is determined (e.g., inhalation) have been incorporated into the guidance since the MMSL and PRG documents. Clarify this issue and revise accordingly.

4. The primary current and future receptor for the human health risk assessment was identified as a recreationalist. The residential scenario was conducted for background purposes only. As noted in Section 1.4 of the report, portions of the canyon down-canyon from Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) are used by the Pueblo de San Ildefonso for various traditional uses. As noted in evaluations for other areas at LANL that have been found to impact Pueblo land, it has been determined that one of the native uses for the areas include hunting. In reviewing

the constituents of potential concern (COPCs) carried forward in the risk assessments, several of the COCs show a tendency to bioaccumulate. As such, risks to the people of the Pueblo de San Ildefonso via ingestion of potentially contaminated game via a subsistence hunting scenario should have been identified as a current and reasonably foreseeable future land use in the canyons and should have been evaluated. Please revise the assessments to include an evaluation of the subsistence hunting scenario.

5. Updates to the NMED screening levels for the polycyclic aromatic hydrocarbons (PAHs) were made in December 2009. Please note these updates for future assessments and any revisions to this report.

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,

Paige Walton

Paige Walton
AQS Senior Scientist and Project Lead

cc: Joel Workman, AQS (electronic)