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May 31, 2012

DCN: NMED-2012-14

Mr. David Cobrain  
New Mexico Environment Department  
Hazardous Waste Bureau  
2905 Rodeo Park Dr. East  
Building One  
Santa Fe, NM 87505

RE: Draft Technical Review Comments on the *Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14*, Los Alamos National Laboratory, January 2012

Dear Mr. Cobrain:

Attached please find draft technical review comments on the risk assessments associated with the "*Investigation Report for Cañon de Valle Aggregate Area, Technical Area 14*", Los Alamos National Laboratory, dated January 2012. As noted in an email dated February 23, 2012, Mr. Dan Comeau requested a review of the human and ecological risk assessment portion of the investigation report.

It does not appear that dioxins/furans were included in the analytical suites for soil and tuff samples collected at Area of Concern (AOC) C-14-001, as indicated in Table 6.14-1. Due to the nature of activities conducted at AOC C-14-001 (i.e., the burning of the former wooden magazine structure), chemical releases of dioxins/furans are expected to have occurred. As such, one of the objectives of this investigation should be to determine the nature and extent of dioxin/furan contamination. The lack of dioxin/furan data in soil and tuff constitutes a data gap for the nature and extent of contamination investigation, and for the human and ecological risk assessments. It is not clear whether dioxins/furans were required in the Work Plan; however, NMED may wish to consider requiring an amendment to the investigation report to include analytical data for dioxins/furans in soil and tuff at AOC C-14-001.

This investigation report was completed in January 2012, and NMED's soil screening levels (SSLs) were updated in February 2012 based on current toxicity information. If updated SSLs were to be utilized in the risk assessments conducted at Technical Area (TA)-14, the noncancer hazard indices would be greater than currently presented, primarily due to updated SSLs for hexavalent chromium, cyanide, manganese, and thallium. In some exposure scenarios where the current hazard index is less than one, use of updated SSLs would result in an exceedance of the NMED target level of one. In other instances where the hazard index already exceeds the NMED target level of one, use of the updated SSLs would result in even greater hazard indices. Since the document was developed prior to release of the new SSLs, a comment was not drafted,

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however, NMED may wish to consider requesting that LANL revise their risk assessments to include updated SSLs.

In Section 5.3 of this investigation report, LANL indicates that concentrations of inorganic constituents in weathered Qbt 4 at TA-14 are not statistically different from background concentrations in soil. The provided box plots show that concentrations of inorganic constituents at TA-14 sites are elevated compared to Qbt 2,3,4 background, but are slightly lower than soil background. As noted in LANL's "Background Study Report for Bandelier Tuff Unit 4 (Sept. 2011)", the additional background data collected from Qbt4 was found to be slightly lower than the previously established background concentrations for tuff. A problem with the additional background study for Qbt4 was that weathered tuff was not included in the sampling and determination of a Qbt4 background level. This appears to be becoming a general concern, similar to the issues at TA-49, where metals concentrations were slightly elevated and it was concluded that it was due to weathered tuff. NMED may wish to consider additional sampling or other methods to assess a range of background metals associated with weathered Qbt4.

Potential unacceptable hazards do exist for the construction worker at SWMU 14-003 due to single detection of manganese. The detected concentration, while slightly higher than the background reference value, is not elevated compared the Qbt max background. Sections 6.10.5 and H-4.3.2 discuss the uncertainty associated with the risk due to manganese, and based upon the lines of evidence provided in these sections, it reasonable that the risk to the construction worker at SWMU 14-003 is overestimated for manganese and would not be representative of actual risk. As such, a comment has not been drafted on this issue.

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

Thank you,



Paige Walton  
AQS Senior Scientist and Program Manager

Enclosure

cc: Dan Comeau, NMED (electronic)  
Neelam Dhawan, NMED (electronic)  
Joel Workman, AQS (electronic)  
Sunny McBride, AQS (electronic)

**Draft Technical Review Comments on the Investigation Report for Cañon de Valle  
Aggregate Area, Technical Area 14, Los Alamos National Laboratory, dated January 2012**

- 1- Section H.3-3. The acronym for exposure point concentrations (EPCs) is incorrect. Modify Section H.3-3 to display the correct acronym for EPCs.
- 2- Table H-5.3-3. The hazard quotient listed for HMX is incorrect in the minimum ecological screening level (ESL) comparison for solid waste management unit (SWMU) 14-003. HMX should be eliminated as a constituent of potential ecological concern (COPEC) since the hazard quotient would be less than 0.3. It is noted that the correct values were presented in subsequent calculations and this inconsistency does not affect the results. Nevertheless, modify Table H-5.3-3 to display the correct hazard quotient and show that HMX was eliminated as a COPEC at SWMU 14-003.
- 3- Section H-5.4.4. Several inorganics were eliminated as COPECs based on a comparison of exposure point concentrations (EPCs) with background concentrations, as shown on Tables H-5.4-1 and H-5.4-2. This is not an appropriate screening tool to be used to eliminate COPECs from further evaluation in the ecological risk assessments for the following reasons:

- Site-to-background comparisons were already conducted and resulted in the lists of COPCs to be retained for analysis in the risk assessments;
- It is not appropriate to compare 95% upper confidence limits (UCLs) with individual background concentration terms. In cases where statistical tests concluded that site concentrations of COPCs were elevated compared to background, EPCs based on 95% UCLs would be greater than 95% UCLs that could be calculated for the background data set. Therefore, it is incorrect to assume that exposure to EPCs (based on 95% UCLs) for inorganic COPCs would be the same as exposure to background levels.
- Refinement of inorganic COPECs should include application of area use factors and use of soil screening levels based on lowest observed adverse effects levels (LOAELs).

Remove the discussion comparing EPCs with background concentrations from the ecological risk assessments. Retain all inorganics that were eliminated as COPECs based on a comparison of EPCs with background concentrations. Modify the ecological risk assessments to utilize the accepted methods for refining COPECs, such as the application of area use factors and use of ecological screening levels based on LOAELs.

- 4- Attachment H-2. The toxicity data for methylene chloride used in the Johnson and Ettinger model for the vapor intrusion pathway are not current. For example, the inhalation unit risk factor of  $4.7E-7$  ( $\mu\text{g}/\text{m}^3$ )<sup>-1</sup> and the reference concentration of  $3.0$   $\mu\text{g}/\text{m}^3$  used in the model are not consistent with the inhalation unit risk factor of  $1.0E-8$  ( $\mu\text{g}/\text{m}^3$ )<sup>-1</sup> and the reference concentration of  $600$   $\mu\text{g}/\text{m}^3$  currently listed in US EPA's integrated risk information system (IRIS). It is noted that the values used result in a more conservative soil screening level and this inconsistency does not affect the conclusions of the risk assessment at SWMU 14-003. However, in the future ensure that current toxicity data are used in the Johnson and Ettinger model. No response is required.