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

RE: Los Alamos National Laboratory, Technical Review of the Risk Assessment for the *MDA V Supplemental Investigation Report*, dated February 2008.

Dear Mr. Cobrain:

As requested in an email dated February 21, 2008 from Kathryn Roberts, I reviewed the above-referenced document focusing on the human health and ecological risk assessments contained within Appendix H. The attached contains the technical comments noted during this review.

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

Sincerely,

Paige Walton

Paige Walton
Senior Scientist, AQS

Enclosure

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

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Technical Review Comments Los Alamos National Laboratory
Material Disposal Area (MDA) V Supplemental Investigation Report
Dated February 2008

1. Table 6.4-1, pages 37 and 38. The second column of this table contains detected concentration in the soil column from zero to ten feet below ground surface from the 2006-2007 post-excavation sampling effort. The first column of the table summarizes the range of detections for the 2006-2007 post-excavation sampling effort. It is unclear why analytical data is listed in the second column (meaning there was a detected concentration) but the range of detections in the first column will indicate a non-detect. It appears that if there is only a single detection, the range would reflect that single datum. Clarify this issue.

2. Appendix D, Section D-2.1, VOCs in Pore Gas Samples, page D.2. The text includes a discussion of volatile organic compounds (VOCs) detected in subsurface samples and indicates that these VOCs were included in the risk assessment (Appendix H) and evaluated via the vapor intrusion pathway for inhalation in indoor air. In reviewing Appendix H, the inclusion of the inhalation of indoor air was not addressed. While Appendix H does include a comparison of maximum detected site concentrations for post-excavation samples to residential screening data, it should be noted that neither the New Mexico Soil Screening Values nor the Region 6 Media-Specific Screening Levels incorporate the vapor intrusion pathway and subsequently inhalation of indoor air in the derivation of the screening data. This pathway should be evaluated using the post-excavation pore-gas and subsurface soil data using an appropriate model, such as the Johnson and Ettinger model, and the risks added to those calculated using the residential screening data. Revise the risk assessment to include as assessment of inhalation of indoor air and to update cumulative risk/hazard as warranted.

   In addition, as discussed in the Subsurface Vapor Monitoring Plan (Appendix D), quarterly monitoring will be conducted to determine concentration trends for shallow pore gas and the nature and extent of contamination in this medium. The risk assessment in Appendix H concludes that Material Disposal Area (MDA) V meets the criteria for unrestricted (residential) release. However, it is unclear how this determination can be made when continued monitoring for VOCs in subsurface is still needed to fully characterize MDA V and will be needed to assess the vapor intrusion pathway. Discus how the results of this continued monitoring will be evaluated with respect to the risk assessment. In addition, address whether any site controls, such as limiting the construction of any building in this area will be placed on the post-excavation area of MDA V until it can be determined that the vapor intrusion pathway will not cause undue risk via inhalation of indoor air.

3. Appendix H, Section H-3.2, Transport Pathways, page H-4 and Section H-3.3, Environmental Fate and Transport, pages H-5 through H-7. These sections provide a detailed discussion of chemical-specific transport parameters in an effort to verify that residual contamination at MDA V is not of a sufficient concentration to migrate to groundwater. The text indicates that saturation is the primary driver for migration to groundwater. While the focus on the justification for exclusion of the migration to groundwater pathway is based on saturation, it should be noted that other factors, such as speciation and pH are important. However, it is not clear why comparison of site data to the soil-to-groundwater screening values (SSLs) based upon a dilution attenuation factor (DAF) of 20 was not applied. As part of this review, the New Mexico and Region 6 SSLs were

compared to the site maximum detected concentrations. Based upon the discussion presented in this section, as well as the independent comparison to the SSLs, we concur with the conclusions presented in this section that it is unlikely for contaminants to migrate to groundwater. Note that for future reports, comparison to the SSLs is preferred.

4. Appendix H, Section H-3.3, Environmental Fate and Transport, pages H-5 and H-6. It is noted that soil-water partition coefficients (Kd) were selected based upon a default pH of 6.8. However, as noted on paged H-6, the range of pH for the area of elevated radioactivity was 7.3 to 8.9 with the average pH being greater than 7.5. Given the relatively high pH for MDA V, it is not clear why Kd values were not selected for a default pH of 8.0 as this might provide for a more realistic evaluation of fate and transport. In reviewing the differences in Kd data, it does not appear that using Kds based upon a pH would change the conclusions of the report; however, we recommend discussing the rationale behind using Kds based on a pH of 6.8. Also clarify clarification is recommended on whether removal of soil with elevated radioactivity resulted in soil with lower pH (closer to 6.8).

5. Appendix H, Section H-4.1, Screening Evaluation, page H-8. As previously noted, neither the New Mexico Screening Levels nor the Region 6 Media Specific Screening Levels include inhalation of indoor air via the vapor intrusion pathway. Revise the screening analysis to include assessment of this pathway and a review the cumulative risks and conclusions as warranted.

6. Appendix H, Table H-3.3-1, page H-23. The Kd for chromium is noted as being representative of trivalent chromium. However, the screening level for chromium (see Table H-4.1-1) is based upon total chromium (trivalent and hexavalent). As noted in the Technical Background Document (listed reference EPA 2006 092513), any presence of hexavalent chromium will lower the Kd and if a mixture is assumed or if the speciation of chromium is unknown, the Kd for hexavalent chrome should be used. Given that the SSL for total chromium was applied, it appears that there is some uncertainty for the speciation of chromium. Discuss the appropriateness for using this Kd for trivalent chromium.

7. Appendix H, Table H-3.3-2, page H-24. The table indicates that a Kd is not available for tritium. While it is typically assumed that tritium would exist as tritiated water, the listed source for the radionuclide Kds (EPA 1996 064708) does provide a Kd datum for tritium of 9.9. Discuss why this Kd value was not applied.