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Mr. David Cobrain  
NMED - Hazardous Waste Bureau  
2905 Rodeo Park Dr. East  
Building One  
Santa Fe, NM 87505

RE: Draft Technical Review Comments on the Use of Background in Los Alamos National Laboratory's Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary, dated May 2010

Dear Mr. Cobrain:

This letter serves as a deliverable and addresses Los Alamos National Laboratory's (LANL) "Investigation Report for Sites at Technical Area 49 Inside the Nuclear Environmental Site Boundary", dated May 2010. Per email request by Ms. Kathryn Roberts (date June 18, 2010), a review of the use of background and the statistical and geochemical analysis associated with this (presented in Sections 4.1 and 4.2 and Appendices H and I) was requested.

In reviewing this report, background for soil and tuff (Qbt 2,3,4) at LANL has been established. However, the soil and tuff associated with Technical Area 49 (TA-49) is predominantly comprised of soil/tuff associated with Qbt 4. From a review of the background data set contained in LANL's "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (September 1998), only three samples from Qbt 4 were used to develop the background reference values for Qbt 2,3,4. As Qbt 4 appears to have naturally higher levels of several inorganics as compared to Qbt 2 and Qbt 3, LANL is concerned that the previously developed background data set may not be appropriate for use at TA-49 and may result in retaining constituents as being potentially site related when in fact the concentrations may be reflective of background.

LANL compared metals concentrations at TA-49 to background (Qbt 2,3,4) as well as the maximum detected Qbt 4 background concentration. In addition, the geochemical plots (aluminum as a reference metal) indicated higher concentrations for most of the metals (selenium did not show any trends with aluminum). From these geochemical plots, elevated levels of metals could be extrapolated. There is general agreement with the metals identified as being elevated when compared to the scatter plots in Appendix I.

Overall, the statistical analysis and scatter plots as discussed in Sections 4.1 and 4.2 as well as presented in Appendices H and I were found to be technically adequate. However, reliance

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solely on these methods to determine constituents of potential concern (COPCs) for both nature and extent of contamination and for risk assessment purposes may result in uncertainties. A primary concern is that the use of uncertainty in background may be used as a line of evidence to discount inorganics that may drive risk (human health and/or ecological).

The Executive Summary of the report appears to indicate that additional field work will include developing an appropriate background for use at TA-49. If LANL does not agree that use of the background reference values for soil and Qbt 2,3,4 are not appropriate, then additional Qbt 4 background samples should be collected and an appropriate background data set be established. A suggested general comment for this report is as follows:

“Overall, the statistical analysis and scatter plots as discussed in Sections 4.1 and 4.2 as well as presented in Appendices H and I were found to be technically adequate. However, reliance solely on these methods to determine constituents of potential concern (COPCs) for both nature and extent of contamination and for risk assessment purposes may result in uncertainties. A primary concern is that the use of uncertainty in background may be used as a line of evidence to discount inorganics that may drive risk (human health and/or ecological), which is deemed unacceptable. If the use of the background reference values for soil and Qbt 2,3,4 are not appropriate, then additional Qbt 4 background samples should be collected and an appropriate background data set be established for TA-49.”

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 Project Lead

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