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Mr. David Cobrain
New Mexico Environment Department
Hazardous Waste Bureau
2905 Rodeo Park Dr. E, Bldg 1
Santa Fe, NM 87505

RE: Draft Technical Review of "Bandalier Tuff Unit 4 Background Study Report," Los Alamos National Laboratory, Dated September 2011

Dear Mr. Cobrain:

This letter addresses the draft technical review of the "Bandalier Tuff Unit 4 Background Study Report," Los Alamos National Laboratory (LANL), dated September 2011. Specific comments on this report as summarized below.

1. The metals data for the background study are representative of leachable element concentrations, and the analytical methods used in the current study appear consistent with the methods used in the original LANL background study report. The results for the metals are provided in Table 4.1-1 and the discussion of these data in Section 4.1.1 of the report indicates that the Qbt 4 data are essentially the same and the previously established background. It is not clear how this determination was made. It appears that an "eyeballing" of the data was conducted and since the Qbt 4 data were not significantly above the established background levels, it was assumed that the Qbt 4 was representative of the existing background data. However, in looking at the data in both Tables 4.1-1 (metals) and 4.1-5 (radionuclides), the Qbt 4 data appear to actually be lower than the established background (with the exception of the data in Tables 4.1-2 and 4.1-6). Clarify how it was determined that the new Qbt 4 data are actually reflective of the established background data. For example, were statistical comparisons between the data sets conducted to make this determination?
2. In Section 5.0, there is mention of previously collected data that was analyzed using XRF and that these data indicated higher concentrations than the established background. As part of the Qbt 4 study, samples at the bottom of the borings were taken and analyzed using XRF. Was a comparison conducted between the two XRF datasets? How do the Qbt 4 XRF data compare to the past data referred to in this Section?

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3. It is not clear how the conclusion was made that the results from XRF confirm that the Qbt 4 data are representative of the existing background data. What were the data compared to in deriving this conclusion?
4. The report indicates that following the Work Plan, specified samples would be collected from only un-weathered tuff.
 - a. In reviewing the Work Plan (December 2010), there is no mention that samples will be biased to un-weathered tuff nor does the Work Plan specify any range of sampling of various stages of weatherization either will or will not be sampled. Why was a determination made to only sample un-weathered material?
 - b. If weathered tuff was encountered frequently at TA-49 and the sample results at this area are possibly elevated due to the weathering and breakdown of the tuff, why did the Qbt 4 sampling effort not consider collecting samples representative of all the various stages of weathering of the tuff or at least take samples reflective of the conditions at TA-49?
 - c. As noted in the conclusion, the background data set should bound concentrations reflective of weathered tuff. Since the Qbt 4 data are not different from the existing background data, how will this bounding be determined?
5. Given that the results of the Qbt 4 study are inconclusive for evaluating the elevated levels of inorganics at TA-49, what is the path forward for this site? Use of geochemical analyses?

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
AQS Senior Scientist and Program Manager

CC: Neelam Dhawan, NEMD (electronic)
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