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HSWA LANUL 5/11/11/6
6-003(g)
7A-06

MEMORANDUM

TO: John Young
John Kieling

FROM: Kirby Olson *KO*

RE: Risk Assessment Review for PRS 06-003(g) at Los Alamos National Lab

DATE: April 13, 2001

I've reviewed the ecological risk assessment for PRS 06-003 (g) in the RFI report. However, I wasn't able to assess this individual PRS because all the data presented in the RFI report tables and calculations refer to the entire 'Western Aggregate' of sites. While these sites should be aggregated for ecological risk assessment because of their small size and close proximity, the presentation of only aggregate comparisons to benchmarks means that I can't quickly determine which portions of the site cause the exceedences of the ecological benchmarks. Table 3.4-5 gives a HQ for the lowest ESL (based on the maximum detection throughout the aggregate). Table F-2.2-2 shows whether the max value for the aggregate exceeds the ESL for each receptor, and Figures 3.3.-2 and 3.3.-3 show the distribution of detects above background, but there is nothing showing me the distribution of the values exceeding benchmarks for each receptor- these may or may not coincide with PRS 06-003 (g).

To adequately assess ecological risk at the Western Aggregate, we need to know the HQ values and spatial distribution of all the samples exceeding an HQ of one for each contaminant and each receptor; information which is not presented in this document. This information would tell us if there are discrete areas with contaminants at levels that might require action (i.e., "hot spots") and where those areas are located. Ecological risk decisions depend not only on the magnitude of the HQ values, but the distribution of location and number of receptor types impacted.

The HI (sum of the HQs) for the Western Aggregate is 228 when the maximum detection values are used, but the HI is 14 when the 95% UCL of the mean for the contaminants are used in the calculations. The magnitude of this difference would seem to indicate a nonhomogenous distribution of contaminants. In Table F-1.0-13 the arithmetic mean for each contaminant is



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reasonably close to the 95% UCL as calculated for a lognormal distribution. This could indicate

that the data has a fairly close distribution, and that the number of high detections is low (again hinting at the potential for “hot spots”). The size and distribution of the contamination should be evaluated before releasing the sites in the Western Aggregate. Also, the RFI document compares the HI from the background UTL to the contaminant 95% UCL and finds that they are similar in magnitude. This is a comparison of risk from the *maximum* background to the risk from the *mean* contaminant concentration; this isn't a valid comparison.

Information in the text indicates that PRS 06-003 (g) may be an area of concern. The description of the area indicates that it is barren of vegetation (even though the rest of the site is heavily vegetated) and has a sooty appearance. The ecological checklist for the Western Aggregate in Appendix F also indicates that more pathways to receptors may exist at PRS 06-003 (g) than at the other PRSs in the Western Aggregate. The lack of vegetation could be from soil compaction or some other non-contaminant related process, but it could also be from contamination. The argument in the text that the soil is barren because the fire killed the soil microorganisms seems unlikely since the rest of the site has topsoil and vegetation; 28 years is plenty of time for soil microorganisms to recruit in from the surrounding vegetation.

I think all the sites in the Western Aggregate should be examined in more detail for ecological risk prior to NFAing these sites; the HQs for the maximum concentration versus each receptor greatly exceed one for multiple constituents for multiple receptors. There is potential that contamination of significant ecological concern remains at the site in an unknown distribution.

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