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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 Potrillo and Fence Canyons, Los Alamos National Laboratory, December 2010

Dear Mr. Cobrain:

Attached please find draft technical review comments on the risk assessments associated with the "Investigation Report for Potrillo and Fence Canyons," Los Alamos National Laboratory, dated December 2010.

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

Paige Walton
AQS Senior Scientist and Program Manager

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

Draft Technical Review Comments on the Investigation Report for Potrillo and Fence Canyons, Los Alamos National Laboratory, December 2010

General Comments

1. It does not appear that dioxins/furans were included in the analytical suites for sediment samples collected at Portrillo and Fence Canyons, as indicated in Tables C-6.0-1 and C-6.0-2. Due to the nature of activities conducted at technical area (TA)-15 and TA-36 (i.e., the detonation of open-air explosives and historical use of burn pits at TA-36), chemical releases of dioxins/furans are expected to have occurred at solid waste management units (SWMUs) and areas of concern (AOCs) within TA-15 and TA-36. As such, one of the objectives of this investigation should be to determine if dioxins/furans have migrated into Portrillo and Fence Canyons. The lack of data on concentrations of dioxins/furans at reaches sampled within Portrillo and Fence Canyons constitutes a data gap for the nature and extent of contamination investigations, and the human and ecological risk assessments. Amend the investigation report at Portrillo and Fence Canyons to include analytical data for dioxins/furans in canyon sediments.

2. Method 8321A, modified, was used for the analysis of high explosives (HE). In reviewing the method, it can be modified for analysis of explosives; however, the list of constituents for which the method is applicable does not contain the HE discussed in the report nor other commonly expected explosives. Typically, Method 8330 is the default method for explosives (Method 8330 was run on surface water samples in addition to Method 8321A). It is noted that the only detection for sediments is TATB. Based on the history of the SWMUs and AOCs, and in particular TAs 15 and 36, it would seem likely that other explosives and indicators of explosives, for example 2,4,6-trinitrotoluene, nitrobenzene, 2,4/2,6-dinitrobenzene, 1,3,5-trinitrobenzene, HMX, RDX, and tetryl, would be present. Clarify what explosives Method 8321A modified tested for in the analysis of the sediment samples. Also clarify whether there are data gap(s) with respect to explosives potentially present in sediments.

Specific Comments

1. Section 6.2.1. This section explains that inorganics with nondetected results greater than their corresponding background values (BVs) are identified as constituents of potential concern (COPCs). While some of the nondetected results greater than their corresponding BVs were identified as COPCs in sediment at Portrillo and Fence Canyons, Tables 8.1-1 and 8.2-1indicate that at many reaches, antimony, cadmium, and selenium were not identified as COPCs, despite having nondetected results greater than their corresponding BVs. The inclusion of COPCs with nondetected results greater than BVs is inconsistent. It is acknowledged that the results are non-detects, and detection limits of antimony, cadmium, and selenium are well below the residential soil screening levels. However, some of the detection limits are greater than the minimum ecological screening levels and would have been included on Table 8.1-1. The risk assessment should be consistent in the inclusion of COPCs with detection limits greater than BVs.

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2. Table 6.2-2. The residential soil screening level (SSL) for butylbenzene(tert-) is taken from USEPA (2007) Region 6 as indicated in the footnote. The USEPA (2007) Region 6 SSL tables are outdated and have been replaced by the Regional Screening Levels (RSLs). It is noted that use of the Region 6 SSL for butylbenzene(tert-) noted in Tables 6.2-2 and 8.2-1 does not change the overall conclusion of the assessment; however, in the future, ensure the most current screening levels are applied in the risk assessments.

3. Table 8.1-3. Ecological Screening Levels (ESLs) for the American kestrel (top carnivore) are not listed for benzo(a)anthracene and pyrene on Table 8.1-3. The LANL (2010) ECORISK (v2.5) database indicates that ESLs for the American kestrel (top carnivore) are available for benzo(a)anthracene (64 mg/kg) and pyrene (460 mg/kg). Modify Table 8.1-3 to include ESLs for the American kestrel (top carnivore) for benzo(a)anthracene and pyrene.

4. Section 5.4. A typographical error appears to be present in the list of sources used for the stormwater comparison values. The bulleted list indicates that values from Sections 20.6.4 and 20.4.6 of the New Mexico Administrative Code (NMAC) were used for stormwater comparison values. Values from the NMAC Title 20, Chapter 6, Part 4 (Standards for Intrastate and Interstate Surface Waters) are used as stormwater comparison values. Verify that the list of sources should include only Section 20.6.4 of the NMAC.

5. Table F-2. The human health persistent stormwater comparison value for thallium (6.3 µg/L) presented on Table F-2 is inconsistent with the NMAC surface water standard (0.47 µg/L) listed in Section 20.6.4.900 (J) presented on the following website: http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.htm. Clarify this inconsistency and update Table F-2 to include the correct stormwater comparison value for thallium. Determine if the detected concentrations of thallium in stormwater at Portrillo and Fence Canyons exceed the NMAC surface water standard of 0.47 µg/L.

6. Section 8.1.4 and Tables 8.1-1, 8.1-2, and 8.1-3. The rationale for utilizing a hazard quotient (HQ) of 3.0 as a criterion to determine whether COPCs should be retained for further evaluation in the screening level ecological risk assessment is unclear and not justified. LANL's (2004) *Screening Level Ecological Risk Assessment Methods Revision 2* states that an HQ of 0.3 should be used as a criterion for determining ecological COPCs. In addition, NMED's (2008) *Guidance for Screening Level Ecological Risk Assessments* states that an HQ of 0.3 for individual chemicals or a hazard index of one should be used for determining whether ecological COPCs should be evaluated further in the ecological risk assessment. It is acknowledged that previous assessments where site-specific biota studies were conducted, such as Los Alamos and Pueblo Canyons (LANL 2004, 087390, p. 8-2); Mortandad Canyon (LANL 2006, 094161, p. 96); Pajarito Canyon (LANL 2009, 106939, p. 64); and Sandia Canyon (LANL 2009, 107453, p. 77) utilized a HQ of 3.0 for determining ecological COPCs. Since a site-specific biota study has not been conducted at Portrillo and Fence canyons, revise the ecological risk assessment for consistency with guidance. A hazard index (HI) of one (1) should be used as the threshold value for determining whether ecological COPCs should be further evaluated in the ecological risk assessment.

7. Section 8.1.5. Concentrations of ecological COPCs were compared with concentrations of COPCs from previous biota studies in other canyons at LANL where associated effects

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information indicated no unacceptable ecological risks. While this comparison may potentially provide relevant information for Portrillo and Fence Canyons, it should not take the place of a site-specific biota study or a refined ecological risk assessment using the methods outlined in LANL (2004) and NMED (2008). Refinement of the ecological risk assessment may include the use of area use factors, population area use factors, and/or use of lowest-observed adverse effect levels (LOAELs). Comparisons with previous biota studies at other LANL sites could be included as additional evidence in a weight of evidence analysis, for example, at Portrillo and Fence Canyons. Revise the ecological risk assessment accordingly.

8. Table 8.1-9. Average concentrations of di-n-butylphthalate in reaches F-1 and FS-1 were compared with ESLs as well as to concentrations of di-n-butylphthalate evaluated in previous biota studies. The use of average values as exposure point concentrations for comparisons with screening levels is not an acceptable method for risk assessments and inconsistent with both NMED and LANL guidance. Because there are insufficient numbers of detections of di-n-butylphthalate to calculate exposure point concentrations, the maximum detected concentration should be used as exposure point concentration. Discussion using an average concentration may be used in the uncertainty analysis; however, refinement of an ecological risk assessment should follow guidance and include the use of area use factors, population area use factors, and/or LOAELs. Revise the ecological risk assessment accordingly.

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