Melrose 06

State of New Mexico
ENVIRONMENT DEPARTMENT
Hazardous Waste Bureau
2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Telephone (505) 428-2500
Fax (505) 428-2567
www.nmenv.state.nm.us

BILL RICHARDSON
GOVERNOR

RON CURRY
SECRETARY

DERRITH WATCHMAN-MOORE
DEPUTY SECRETARY

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

February 01, 2006

Colonel John D. Posner
Commander 27th Fighter Wing
100 D.L. Ingram Boulevard
Cannon Air Force Base, New Mexico 88103-5214

SUBJECT: NOTICE OF DEFECIENCY
FINAL RCRA FACILITY INVESTIGATION REPORT ADDENDUM FOR MELROSE BOMBING RANGE
CANNON AIR FORCE BASE, NEW MEXICO
EPA ID NO. NM5572124456-1

Dear Colonel Posner:

The New Mexico Environment Department (NMED) has reviewed the *Final RCRA Facility Investigation Report Addendum for Melrose Bombing Range* (Addendum) dated February 2003 along with the *Phase I RCRA Facility Investigation for Melrose Air Force Range Draft* Volumes I and II (Drafts) dated October 1999. NMED has determined that Cannon Air Force Base (CAFB) Drafts and Addendum are technically deficient. The following issues must be addressed:

General Comments:

Comment 1
In the NMED letter dated March 26, 1999 to Cannon Air Force Base (CAFB), CAFB was asked to submit a letter explaining of why 182 feet was the maximum drilling depth. NMED's letter also asked if drilling to a greater depth should have been attempted in an effort to reach the

underlying regional aquifer. NMED cannot evaluate groundwater contamination without CAFB's response to this crucial issue.

Comment 2
Risks to plant receptors from exposure to inorganic constituents greatly exceeded (up to three orders of magnitude) the target hazard index of one (1) at each site evaluated in the report: Solid Waste Management Units (SWMUs) 114, 115, and 117, and Areas of Concern (AOCs) 1 (SWMU 130), 2 (SWMU 131), 3 (SWMU 132), and 4 (SWMU 133). However, it does not appear that a comparison of the toxicity reference value (TRV) to the background data set was conducted. As quoted in "Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision" (R.A. Efroymson, et al.), "If the chemical concentrations reported in field soils that support vigorous and diverse plant communities exceed one or more of the benchmarks presented in the report or if a benchmark is exceeded by background soil concentrations, it is generally safe to assume that the benchmark is a poor measure of risk to the plant community at that site." In reviewing the TRVs against background, the background data exceed all TRVs with the exception of mercury. It appears that while the phytotoxicity TRVs were extrapolated from the NMED guidance, the TRVs are not appropriate for use at Melrose. While many guidance summarize toxicity data, the most recent toxicity data should always be applied, and more than one source for these data should be consulted. Review of other sources, for phytotoxicity data should have been conducted. When reviewing the other sources, TRVs above background concentrations were available for the following inorganics: arsenic, barium, beryllium, cadmium, cobalt, lead, mercury, and nickel. In lieu of requiring re-calculations of all the phytotoxicity assessments, and in order to assess a more realistic picture of what risks to plants are at the various sites, the TRVs from EcoRisk were applied to the SWMUs and the resulting hazard indices (approximate) were determined as follows:

TABLE 1: Risk to Plants via Surface Soil

SWMU	Hazard Index	AOC/SWMU	Hazard Index
114	<1.0	AOC 1/SWMU 130	0.39
115	2.1	AOC 2/SWMU 131	<1.0
117	3.22	AOC 3/SWMU 132	1.81
		AOC 4/SWMU 133	0.07

TABLE 2: Risk to Plants via Subsurface Soil

SWMU	Hazard Index	AOC/SWMU	Hazard Index
114	7.2	AOC 1/SWMU 130	<1.0
115	1.82	AOC 2/SWMU 131	1.05
117	12.0	AOC 3/SWMU 132	1.13
		AOC 4/SWMU 133	0.33

Based upon this analysis, the concentrations of chemicals in surface and subsurface soil do not appear to result in unacceptable risks to plants at any of the sites evaluated in the report. No response to this comment is required; however, CAFB must alter their approach in all future ecological Risk evaluations.

Comment 3
Cobalt was a constituent of concern at several sites addressed in the report. However, the text indicated that a phytotoxicity value was not available for cobalt. Please note that for future reports, a phytotoxicity datum for cobalt can be obtained from United States Environmental Protection Agency (USEPA), August 2003 August, Ecological Soil Screening Levels for Cobalt, Interim Final, Office of Solid Waste and Emergency Response, Washington, D.C. As the date on the EPA report is after the drafting of the Melrose document, the report does not require modification to incorporate this value. No response to this comment is required.

Comment 4
Section 5.3.1, Effects Assessment, page 5-7. The report indicates that an avian TRV was not available for 2-methylnaphthalene. However, the paper, "Eisler, R. 1987. *Polycyclic aromatic hydrocarbon hazards to fish, wildlife, and invertebrates: A synoptic review.* U.S. Fish and Wildlife Service Biological Report 85/1.11. Laurel, Maryland," provides a lowest observed adverse effect level (LOAEL) of 5.53E+02 mg/kg/day for polycyclic aromatic hydrocarbons (PAHs) that is based upon a seven-month study on mallards. Applying an uncertainty factor of 0.1 (based upon Appendix B, page B-23), the resulting no observed adverse effect level (NOAEL) would be 55.3 mg/kg/day. SWMU 117 was the only site where 2-methylnaphthalene was carried forward as a constituent of concern, with a maximum detected concentration of 0.45 mg/kg. If the above NOAEL were applied to the estimation of risk to the mourning dove for SWMU 117 (Table B-69, Appendix B), the resulting hazard quotient for 2-methylnaphthalene would be 1.3E-04, which would have no impact on the overall hazard index. In addition, if an intertaxon uncertainty factor of 0.2 were also applied to the LOAEL, the resulting hazard quotient would still result in insignificant risk. Therefore, the exclusion of 2-methylnaphthalene in the estimation of avian risk at SWMU 117 does not impact the overall conclusion of the report. This assessment has been provided in lieu of requiring a revision to the risk calculations. No response to this comment is required.

Specific Comments:

Comment 1
NMED is concerned that AOC 1 has not been adequately characterized with respect to surface soil.

AOC 1 consists of approximately 23 acres; however, only six surface soil and shallow subsurface soil samples were collected at the site. In addition, it does not appear that any biased sampling was conducted. Based on the review of Figure 2-5, mounded areas, depressions, drums, and other obvious remnants of past activities were observed at the site. The sampling did not address any of these areas. Discuss why sampling in and/or around the mounds, depressions, and drums was not conducted. Also discuss the impact of this lack of characterization on the ecological risk assessment.

Recommendations: NMED requires submittal of a work plan for further investigation at AOC 1. The work plan shall include soil field screening, visual inspection of debris, and collection of soil samples from the mounds, depression, miscellaneous debris areas, and around the locations of the discarded truck vehicle parts. At a minimum, two samples from the depression, one at each of the truck vehicle parts locations, one sample at the miscellaneous debris area, and four samples in the vicinity of the activities area (as marked in the Figure 2.5 of this letter) shall be collected. Samples collected from the depression shall be analyzed for RCRA metals, volatile organic compounds (VOCs) (SW-846 EPA 8260), diesel range organics(DRO) and explosives. All other samples shall be analyzed for DRO, RCRA metals and explosives. The work plan shall also include descriptions of mounds and depression, including sampling location maps and pictures. Samples from the mounds shall be collected only if the mounds are identified as containing debris. A map of the recommended sampling locations is attached.

Comment 2
NMED is concerned that AOC 2 has not been adequately characterized with respect to surface and near-surface soils.

Only four surface soil and shallow subsurface soil samples were collected and analyzed to characterize site conditions at AOC 2. Upon reviewing Figure 2-6, there are three tanks and several areas of sparse or no vegetation at the site; however, it does not appear that any sampling of soil in and around these areas was conducted. Typically areas of dead or disturbed vegetation are indicative of past activities and potential waste disposal sites. This appears to be a major data gap.

Recommendations: NMED requires submittal of a work plan for further investigation at AOC 2. The investigation shall include soil field screening and visual inspection of debris. An

Investigation report shall identify the type of fuel stored in the three tanks and, if unknown, analysis to identify the fuel types shall be completed and documented. The report must also include photographs of the tanks, including the area beneath and around the tanks and documentation of any leaks/staining. If there is evidence of a leak, the stained soil shall be sampled and analyzed for the compounds consistent with those stored in the tanks. Test pits approximately 6 to 10 feet deep shall be excavated at AOC 2 at the locations of the sparse or absent vegetation to check for waste. Two samples from the east sparse vegetation area, one from each from the other three sparse vegetation areas, two from the area where vegetation is absent, and one sample from the truck loading area near the fuel tanks shall be collected. All soil samples collected from these areas shall be analyzed for RCRA metals, VOCs (EPA 8260), semi volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), dioxins and furans. A map of the recommended sample locations (test pits) is provided in Figure 2-6 of this letter.

Comment 3

The screening assessment included aluminum as a constituent of concern where detected above background. In many instances, the risks associated with exposure to aluminum drove the hazard index above a value of one (1). The report does discusses many of the uncertainties associated with including aluminum in the assessment. As stated in the United States Environmental Protection Agency's (USEPA) Ecological Soil Screening Level Workgroup (July 10, 2000), "Potential ecological risks associated with aluminum in soils are identified based on the measured soil pH. Aluminum is identified as a chemical of concern only for those soils with a soil pH of less than 5.5." Given that the pH at the site range between 6.6 and 7.3, aluminum would not be considered bioavailable to ecological receptors. Therefore, aluminum should not have been carried forward into the screening assessment and, the risks associated with aluminum are not sound and should not be considered when evaluating overall risk. In addition, the rationale concerning iron and the fact that iron is an essential nutrient is also valid. Iron is also typically not evaluated in ecological risk assessments. When aluminum and iron are dropped from the assessment, the risks associated with exposure at each SWMU are considerably less, although there are still some concerns with some of the inorganics. In particular, the inorganics listed in Table 3 are still a concern in the screening assessment:

TABLE 3

SWMU/AOC	Surface Soil	Subsurface Soil
114	None	Arsenic, barium, chromium
115	Lead, copper	Chromium, lead
117	Lead	Barium
AOC 1 (SWMU 130)	Lead	None
AOC 2 (SWMU 131)	None	Chromium
AOC 3 (SWMU 132)	Arsenic, chromium, lead	Lead
AOC 4 (SWMU 133)	Lead	None

When conducting risk assessments, if the results from the screening analysis indicate elevated risks, a more-refined analysis is conducted. Typically, a hazard quotient of greater than ten (10) would trigger the more-refined analysis. Since many of the above-listed constituents drive the risks and have individual hazard quotients greater than 10, a more refined analysis is warranted to ensure that exposure to site contaminants will not pose unacceptable risks to ecological receptors. NMED does not require CAFB to submit a refined analysis at this point; however these shall be considered in the future reports.

The screening assessment applied conservative assumptions, such as the maximum detected site concentrations, 100% availability of contaminants, and that the receptors only forage on the sites. Given these assumptions, it is not unexpected that risks above the target hazard index of one (1) were calculated. However, as noted above, a more-refined ecological assessment is warranted for the parameters listed in Table 3. The more refined analysis should include the use of the upper 95% confidence level (95% UCL), average ingestion/food consumption rates, incorporation of area use factors, and use of less conservative toxicity data, such as lowest observed adverse effect levels (LOAELs). NMED requests that CAFB provide a more- refined (or second Tier) ecological assessment for those constituents that resulted in hazard quotients above ten (10). Note that the exclusion of aluminum and iron from the assessment is acceptable.

Comment 4
Attachment 1 in Appendix B of the RFI Report includes a photograph of a circular vegetation pattern at AOC 2 (photograph No. 19); however, the report does not address this anomaly. Typically, these types of vegetation patterns develop when chemicals have been disposed of, either by burial or waste spilled directly onto the ground. These patterns have also been observed above septic systems and leaking tanks. It is not clear from the maps of AOC 2 and the photographs where the circular pattern is located, nor is it clear if any soil sampling was conducted in this area. It appears that this may represent a data gap. Please discuss whether any biased sampling in and around the circular patterns was conducted. If sampling was conducted, provide the results of the analysis and/or provide the sample number for cross-reference in the report. If sampling was not conducted, then sampling must be proposed in the required work plan. In addition, a revised AOC 2 description shall be submitted as replacement, which contains a discussion of this area and the potential cause of the patterned vegetation.

Comment 5
Section 5.2.2.1, Comparison to Background Level Concentrations, page 5-6. The text indicates that an UCL was calculated for background and used in determining whether metals detected in soil at the sites were naturally occurring or attributable to site activities. The text does not indicate whether the UCL is 95% or 90%. Please clarify what type of UCL was used and what methodology (i.e., distribution test and statistical test) was applied in deriving the UCL.