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9/25/06

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 27TH FIGHTER WING (ACC)
CANNON AIR FORCE BASE NEW MEXICO

Colonel Scott D. West
Commander
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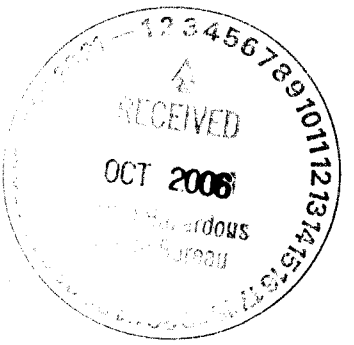
Cannon AFB NM 88103-5214



Mr. James Bearzi
Chief Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive, East Building 1
Santa Fe NM 87505-6303

Dear Mr. Bearzi,

Cannon Air Force Base (CAFB) hereby submits the attached response to General Comment 1 and 2 and the Specific Comments to the Notice of Deficiency, Final Resource Conservation and Recovery Act Facility Investigation Report Addendum for Melrose Bombing Range (MBR), Cannon AFB, NM, EPA ID No. NM5572124456-1.

CAFB also requests an indefinite deferral of the Work Plan(s) outlined in Specific Comments 1 and 2 since MBR is an active range and any Work Plan prepared today would soon be out dated due to continued use of the range. Please address any questions or comments to my Restoration Project Manager Mr. Peter P. Zamie, at 505-784-1092.

Sincerely

PETER P. ZAMIE, P.E.
Chief, Environmental Flight

Attachment:
Response to NMED's Specific Comments

cc:
NMED HWB Bureau (S.L. Vonteddu) w/o Atch
EPA Region VI (B. Sturdivant) w/ Atch

1st Ind, 27 CES/CC

Concur/~~Nonconcur~~.

Stephen D. Wood

STEPHEN D. WOOD, Lt Col, USAF
Commander, 27th Civil Engineer Squadron

2d Ind, 27 MSG/CC, _____, Ltr to Mr. James Bearzi

Concur/~~Nonconcur.~~

Margaret B Poore

MARGARET B. POORE, Colonel, USAF
Commander, 27th Mission Support Group

SEP 2 5 2006

3d Ind, 27 FW/CC

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Scott D West

SCOTT D. WEST, Colonel, USAF
Commander, 27th Fighter Wing

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General Comments			
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.	Based on hydrologic studies[1] of the region the depth of the regional Ogallala aquifer during the 1995 RFI field investigation was estimated at 100–125 feet (ft) below ground surface (bgs). Wells were originally to be installed at SWMU 117 and AOC 3 to depths of 125 feet based on the first observance of groundwater. Minor amounts of water were observed in at depths less than 100 ft although the total depth drilled at each site was 182 ft bgs. The Ogallala aquifer was determined not to be present in this area of the installation. Only the localized shallow aquifer used for irrigation was encountered during drilling and wells were installed at these two sites at depths ranging from 42–50 ft bgs. Lack of precipitation in eastern New Mexico during the past 10 years accounts for the decline in water levels of the regional Ogallala and local aquifers. The minor amounts of contaminants detected at depth in soil at SWMU 117 and AOC 3 are anomalous and show no apparent vertical or lateral trends indicating a release at either site.
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	Comment noted. For clarification, toxicity values available in NMED guidance (March 2000) were used to estimate risks to plants. As indicated in Section B2.5 (Description of Risk), there is uncertainty with these toxicity values and elevated ESQs that were observed at background metal concentrations. Consistent with NMED guidance, ESQs for metals were presented based on background concentrations and site concentrations so that the concerns about the TRVs could be illustrated (Section B2.5).

[1] Hart, D.H. and D.P. McAda. 1985. Geohydrology of the High Plains Aquifer in Southeastern New Mexico. Hydrologic Investigations Atlas HA-679. U. S. Geological Survey.

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		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	

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		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.	
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 noted. For clarification, NMED ecological risk assessment guidance (March 2000) was used as was available at the time of report preparation (February 2003). The EPA report on cobalt (August 2003) was not available until after the RFI Report Addendum was submitted to NMED.
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-	Comment noted. For clarification, toxicity values provided in NMED Guidance (March 2000) were used to prepare the assessment. Toxicity values from Oak Ridge (Sample et al. 1996) were used as a secondary source only in the event that no values were available in the NMED guidance document. Guidance on the identification of appropriate surrogate values was not available from NMED at the time of the preparation of the report (February 2003). Therefore, surrogates were selected only for those few chemicals that have readily apparent surrogates that are technically appropriate and widely used in the industry.

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		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.	

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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.	The map presented in the February 2003 report is currently out of date as a surface cleanup of the site was conducted in early 2002. All debris indicated on the map has been removed and the features on the map reflect conditions during the 1995 RFI field investigation. Invasive sampling could not be conducted in areas of geophysical anomalies based on the potential for unexploded ordnance in this active area of the range. At this time there are no indications in the data collected to date from AOC1 and the physical conditions of the site to warrant the collection of additional samples at the site. This site is in the active part of the bombing range and could incur impacts during bombing operations. The site map for AOC 1 is attached to this document. The revised map reflects current conditions of the site.

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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.	The pattern of vegetation observed at AOC 2 appears to be due to natural conditions as this variety of plant grows in similar patches across the site and in the region. There currently is no sign of soil contamination in the area shown in the photograph. There are currently no areas of stressed vegetation in AOC 2 and vegetation present in the area is naturally sparse. The tanks present at the site are not associated with AOC 2, but are used for current fuel storage and dispensing. At this time there are no indications in the data collected to date from AOC2 and the physical conditions of the site to warrant the collection of additional samples at the site. The sparse and stressed vegetation is a natural condition of the area where there is little precipitation and poor soil. The site map for AOC 2 is attached to this document. The revised map reflects current conditions of the site.
3.		The screening assessment included aluminum as a constituent of concern where detected above background. In many instances,	The EPA reference (July 2000) on aluminum came out after the publication of NMED guidance (March 2000). However, the

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		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-	relationship of pH and aluminum toxicity in a number of places in the document is discussed (e.g., B2.3.3, B2.5, B2.6, and B3), and it is emphasized that aluminum is not expected to pose risks because the soil pH at the site is greater than 5.5. Ecological risk was evaluated using the appropriate guidance available at the time from NMED (March 2000) and this guidance does not specifically address essential nutrients. However, the essentiality of iron and its low bioavailability is discussed in a number of places in the document (e.g., B2.3.3, B2.5, B2.6, and B3), and it is emphasized that these factors reduce the likelihood that iron would result in significant risks at the site.

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		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.	
4.	Appendix B, page B-1	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	The pattern of vegetation observed at AOC 2 appears to be due to natural conditions as this variety of plant grows in similar patches across the site and in the region. There currently is no sign of soil contamination in the area shown in the photograph. The vegetation at the site is similar in type and density as in other areas observed at Melrose and within the region. Any lack of vegetation in low-traffic areas at Melrose can be attributed to a lack of precipitation and poor (low-nutrient) soil. There are currently no areas of stressed vegetation in AOC 2 and vegetation present in the area is naturally sparse. The maps were

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		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.	revised to reflect current conditions and are attached to this document.
5.	Section 5.2.2.1, Comparison to Background Level Concentration, 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.	The text in the RFI Report Addendum (February 2003) indicates that the background values represent upper tolerance limits (UTL) for each metal. As presented in Section 4.1.2 of the RFI Report (October 1996), the 95% UTL was calculated for each metal to represent background values. The background vales presented in the 1996 RFI report were used for the evaluation of ecological risk at each site.
6.	Appendix B, Table B-52 Toxicity Information and Toxicity Reference Values for Upper Trophic Level Endpoints.	Typically, the most conservative TRV is used in the screening analysis, unless justification as to inappropriateness of the datum can be supplied. As such, a few comments were noted with the TRVs listed in the table as follows: Deer Mouse/Least Shrew: • Acetone - discuss why the NOAEL of 100 mg/kg/day based on the 90-day study for the rat from Sample et al. 1996 was not applied. • Bis(2-ethylhexyl)phthalate - discuss why the NOAEL of 80 mg/kg/day based on the 2-year diet study on rats as cited in EPA 1980 was not applied. • Methyl ethyl ketone - discuss why the NOAEL of 1,777 mg/kg/day based on the 13-week gavage test on rats as	NMED guidance (March 2000) was used as the first source for all TRVs for birds and mammals. In those cases where a TRV was not available in NMED, the Oak Ridge Toxicological Benchmark document by Sample et al. 1996 was used, and the benchmark values for mouse and shrew were selected. Deer Mouse/Least Shrew • Acetone – The TRV from the NMED Mammalian TRV table was used, which is from the same study as Sample et al., but the NMED value is more conservative because it applies an uncertainty factor of 0.1. • Bis(2-ethylhexyl)phthalate – The "Duration" in our table should read "2 years" not "105 days". • Methyl Ethyl Ketone – No value was available in the

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		cited in Sample et al. 1996 was not applied. • Phenanthrene - discuss why benzo(a)pyrene was not used as a surrogate and discuss why the LOAEL of 40 mg/kg/day based on the oral gavage study on mice as cited in Sample et al. 1996 was not applied. • Manganese - discuss why the NOAEL of 88 mg/kg/day based on the 224-day study for the rat from Sample et al. 1996 was not applied. Mourning Dove/Red-tailed Hawk: • Acetone - discuss why the NOEAL of 5,040 mg/kg/day based on the study for Japanese quail listed in the Hill and Camardese 1986 paper was not applied.	NMED table, so the body-scaled TRVs by Cox et al. (1975) and in Sample et al. (1996)[1] for the mouse and shrew were used. The study selected has a duration of more than 1 year, which is considered more appropriate than a study of only 13 weeks. • Phenanthrene – Phenanthrene has 3 aromatic rings and is a low molecular weight PAH, whereas benzo(a)anthracene has 4 aromatic rings and benzo(a)pyrene has 5 aromatic rings are they are high molecular weight PAHs. High molecular weight PAHs are generally considered more toxic to terrestrial animals than are low molecular weight PAHs. Thus, it was assumed that benzo(a)anthracene was a sufficiently conservative surrogate for phenanthrene. • Manganese – TRVs for manganese were not included in NMED guidance (2000). Values from Laskey et al. (1982), Sample et al. (1996), and selected the body-scaled TRVs for the mouse and shrew were used. Mourning Dove/Red-tailed Hawk • Acetone – Values from the Hill and Camardese (1986) study referenced in NMED guidance (2000) included a TRV of 52 mg/kg (52,000 μg/kg).
7.	Section 5.5, SLERA Summary, page 5-11	The report indicates that the elevated screening quotients for chromium may be due to an unrepresentative site background concentration. The report states that while the background concentration for soil at Melrose was 16 mg/kg, regional chromium concentrations near Clovis are 30 mg/kg and for the Western states, 56 mg/kg. First, while the report only provided this information as part of the uncertainties associated with the assessment, comparison against regional background values is not acceptable methodology for screening out a contaminant of	Comment noted. Recommended evaluations of background and site data will be conducted for future evaluations of sites at Melrose Bombing Range.

[1] Cox, G.E., D.E. Bailey, and K. Morgareidge. 1975. Toxicity studies in rats with 2-butanol including growth reproduction and teratological observations. Food and Drug Research Laboratories, Inc., Waverly, NY. Report No. 91MRR1673.

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		concern. It appears that either an inadequate number of background samples were collected or that the samples were not collected from similar soil type/soil horizons to soil within the SWMUs. However, if the site maximum concentration exceeds background, a site attribution analysis is typically conducted. It is recommended that if sufficient samples are available, a statistical comparison between the site and background data sets be conducted. A nonparametric test (e.g., Wilcoxon Rank Sum Test) is often applied. In addition, box and whisker and/or histograms could be plotted to compare the data distributions. NMED suggests that in future investigation, additional site attribution analyses be conducted in such cases to determine whether the detections at the SWMUs/AOCs are in fact representative of background or attributable to site activities.	