

August 2, 2017

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Mr. David Cobrain  
New Mexico Environment Department (NMED)  
Hazardous Waste Bureau  
2905 Rodeo Park Dr. E/Bldg 1  
Santa Fe, NM 87505-6313



RE: Technical Review Comments on the *RCRA Facility Investigation at TU505, DA508, SD022, and AT129*, Cannon Air Force Base (CAFB), New Mexico, September 2016.

Dear Mr. Cobrain:

This letter addresses our risk assessment review of the *RCRA Facility Investigation at TU505, DA508, SD022, and AT129*, dated September 2016 (TU505 RFI).

As indicated in Section 6.2, Conclusions and Recommendations, AQS agrees that CAFB can achieve corrective action complete (CAC) without controls at TU505. However, additional analyses are recommended to re-assess the risks associated with DA508, SD022, and TA129. The risk assessments included in the report are based on 2015 screening levels. The primary risk drivers are arsenic and benzo(a)pyrene (and polycyclic aromatic hydrocarbons, PAHs). Major changes to the screening levels for these constituents have been incorporated in the 2017 screening levels. It is likely that re-evaluation of the risks using the 2017 screening levels may allow the other sites to meet CAC without controls.

If you have any questions, please contact me at (801) 451-2864 or via email at [pwalton@aqsnnet.com](mailto:pwalton@aqsnnet.com).

Thank you,



Paige Walton  
AQS Senior Scientist and Program Manager

cc: Gabriel Acevedo, NMED (electronic)  
Joel Workman, AQS (electronic)

Attachment

**Draft Technical Review Comments on the RCRA Facility Investigation at TU505, DA508,  
SD022, and TA129  
Cannon Air Force Base New Mexico  
September 2016**

**General Comments**

1. The TU505 RFI does not address how chromium speciation is handled in the risk-based screening level analysis. Sampling results represent total chromium (page 5-33 indicates that the chromium concentrations at DA508 are for total chromium); however, the data and analysis results tables in Sections 5 and Appendix E show that sample data for chromium are compared to screening levels for trivalent chromium in some cases and total chromium in others. Comparisons of total chromium data to the screening levels for trivalent chromium are not supported by NMED unless sufficient documentation can be provided to justify the speciation of the chromium is present as trivalent chromium. Since the soil data are for total chromium, the data should be compared to soil screening levels (SSLs) for total chromium. Sections 2.1, Human Health Basis, and 5.1, Use of Chromium Screening Levels, of the NMED Soil Screening Guidance (SSG) present the recommended approach for addressing chromium in screening level risk analyses. Revise the TU505 RFI to explain how chromium speciation is addressed in risk-based screening level evaluations for TU505, DA508, SD022, and TA129. Ensure that the presented approach reflects the recommendations outlined in Sections 2.1 and 5.1 of NMED SSG. In addition, ensure all discussions of excess cancer risk and/or hazard indices (HIs) impacted by any change in the treatment of chromium (e.g., Section 5.7.4, TA129, page 5-55; Section 6.1.4.1, page 6-5) are revised accordingly.
  
2. Section 3.5, Human Health Screening-Level Evaluation Methodology, and other sections of the TU505 RFI indicate that NMED-derived and CAFB-derived SSLs are utilized in the risk-based screening evaluations.

Section 5.2.3.1 indicates that SSLs for some polynuclear aromatic hydrocarbons (PAHs) at SD022 were obtained from the Environmental Protection Agency (USEPA) Regional Screening Levels (RSLs). Through reviewing the data, it is noted that in addition to PAHs, several other constituents were compared to RSLs. It does not appear that the carcinogenic RSLs (which based on risk level of 1E-06) used in the risk-based screening evaluations were converted to a target risk level of 1xE-05. However, only two carcinogens, 4-nitroaniline and butylbenzylphthalate, are impacted by this. Since all the data for these two constituents were non-detect, the fact that the RSLs were not converted to a risk level of 1E-05 does not impact the risk calculations. However, for future reports, if a carcinogenic RSL is applied, the screening value must be modified to reflect the NMED target risk level of 1E-05.

Examination of the tables provided in Appendix E indicated that the screening level for carbazole at DA508 was the USEPA Region 9 Preliminary Remediation Goal (PRG) from 2004. The derivation of the PRG was based on data contained in the 1997 Health Effects Assessment Summary Tables (HEAST). While HEAST is not currently considered an EPA priority source for toxicity data; use of these data is acceptable to assess uncertainty

associated with potential risk when other toxicity data are not available. The 2004 PRGs are based on out-of-date exposure assumptions. In lieu of using 2004 PRGs, the HEAST data should have been used along with current exposure parameters to calculate a present-day SSL. As part of this review, a SSL was calculated using current methodologies and assumptions. It is noted that there are minimal differences in calculated SSLs versus the applied 2004 PRGs for all three receptors. The site maximum detected concentration was 6.0E-01 mg/kg. Thus, use of either the 2004 PRGs or the calculated SSLs does not impact any conclusions on risk. However, the risks associated with carbazole and the 2004 PRG should be addressed in the uncertainty discussion presented in Section 5.6 of the TU505 RFI.

It is noted that in some cases, the RSL for 2-methylnaphthalene was applied and in other cases, the calculated value for 2-methylnaphthalene (based on the NMED SSG) was applied. Please note that the 2017 NMED Soil Screening Guidance does include values for both 1-methylnaphthalene and 2-methylnaphthalene; the values calculated in this report are consistent with the 2017 NMED SSLs.

3. In looking at the revised residential risk assessments for DA508, SD022, and AT129, the residential cancer risks are slightly above the NMED target level of 1E-05. Benzo(a)pyrene (and PAHs) and arsenic are the primary carcinogenic risk drivers. Upon further evaluation of the sites, use of the 2017 NMED SSLs may reduce the residential risk below the target level allowing the site to meet corrective action complete. The 2017 SSLs incorporate a bioavailability factor for arsenic (residential SSL 7.07E+00 mg/kg) and updated toxicity data for PAHs (residential SSL for benzo(a)pyrene 1.12E+00 mg/kg). It is suggested that the quantitative revised risk assessments (95UCL) be re-evaluated using the 2017 NMED SSLs.

### **Specific Comments**

1. **Section 3.5.1, Preliminary Site Conceptual Exposure Models.** The last paragraph on page 3-3 indicates that volatile compounds are not considered primary contaminants at TU505, DA 508, SD022, and TA129 and as such, volatile emissions and vapor intrusion (VI) are considered incomplete pathways at the four sites. However, no lines of evidence (LOE) are presented to support this assertion. Elimination at the preliminary stage requires LOE demonstrating that the inhalation of volatile compound and VI exposure pathways are incomplete for SD022. Per Section 2.5.2.1 of the NMED SSG, the only way the vapor intrusion pathway may be considered incomplete is if all volatiles are non-detect. In reviewing the data, three volatiles are detected at the site, with toluene being detected in several samples. Following the NMED SSG, since volatiles were detected, LOE must be provided to either justify exclusion of the VI pathway or if sufficient criteria are met, conduct a quantitative evaluation of the pathway (refer to Sections 2.5.2.2 and 2.5.2.3 of the NMED SSG). Revise Section 3.5.1 to include information demonstrating that the inhalation of volatile compound and VI exposure pathways are incomplete at SD022. If such information cannot be provided, retain inhalation of volatile emissions and the VI pathways in the preliminary site conceptual exposure model for SD022 and eliminate them as viable exposure pathways in the final model presented in Section 5.7.3 of the TU505 RFI.

2. Section 3.5.1, Preliminary Site Conceptual Exposure Models. The third paragraph on page 3-4 states that the soil-to-groundwater pathway is incomplete and not evaluated at TU505, DA 508, SD022, and TA129. Page 3-4 also presents LOE supporting the assertion that the soil-to-groundwater pathway is incomplete at TU505, DA508, SD022, and TA129. However, a comparison of site maximum detections to the NMED SSLs based on a dilution attenuation factor (DAF) of 20 was provided in some of the data summary tables and a discussion of results that exceeded the DAF values (SD022 and TA129) is provided in Sections 5.2.3.2 and 5.2.4. Historical uses at these sites (TU505, SWMU 129, and SD022 in particulate) indicate that liquid source(s) were or are present that could have resulted in downward migration of contaminants. The text should be revised to reference Section 5 of the report, as these additional LOE are needed to demonstrate that the soil-to-groundwater pathway is incomplete at TU505. Further, the text should include a discussion that vertical extent of contamination has been defined and whether data indicate decreasing concentrations with depth and the physical/chemical properties of the COPCs (e.g., arsenic). Revise Section 3.5.1 to state that the soil-to-groundwater pathway was screened for DA508, SD022, and TA129. For TU505, revise Section 3.5.1 to provide additional information that supports the assertion that the soil-to-groundwater pathway is incomplete for the site.
3. Section 3.5.3, Soil Exposure Intervals. Section 3.5.3 indicates that no surface (0 to 1 foot) data were available for TU505; therefore, the industrial/commercial worker exposure interval for TU505 was defined as 0 to 5 feet bgs [below ground surface]. As noted in Section 3.5.3 of the TU505 RFI, the NMED SSG recommends an exposure interval of 0 to 1 foot bgs for industrial/commercial workers. Thus, use of data from the 0 to 5 ft bgs interval for this receptor introduces uncertainty into the risk analysis. Section 3.5.3 should identify the approach taken by CAFB as a source of uncertainty and indicate that the uncertainty will be addressed in the uncertainty analysis for the risk screening. Revise Section 3.5.3 to identify the use of data from the 0 to 5 feet bgs interval as a source of uncertainty in the analysis of TU505 and include a reference to Section 5.6, Uncertainties, for more details on the use of this exposure depth interval for industrial/commercial workers.
4. Section 3.5.5, Comparison with Background. Section 3.5.5 outlines three steps used by CAFB to compare measured site concentrations of inorganics to background values for the base. Step 1, comparison of maximum concentrations to background upper tolerance limits (UTLs) agrees with the first step presented in the NMED SSG for comparison of site concentrations to background levels. For chemicals that have maximum concentrations that exceed their applicable background value, the SSG recommends two-sample hypothesis testing that compares the distribution of the site data to the distribution of the background data to determine if the two data sets are statistically different (Step 2 in the SSG). According to the text, a two-sample hypothesis test was used in the TU505 RFI for arsenic (Step 3 in the text). For all other metals, the range of detected site concentrations was compared to the range of detected background concentrations. If the range of site concentrations fell within the range of detected background concentrations, the detected site concentrations were considered indicative of background conditions. However, Step 2 from the NMED SSG states: "A simple comparison to the range of background is not acceptable." Additional LOE is required to justify the use of a comparison of site and background ranges to determine if measured site concentrations are indicative of background conditions or a

release to the environment. Revise Section 3.5.5 to present LOE that support the comparison of the range of detected site concentrations to the range of background values as a means of determining if the site concentrations are indicative of background conditions. The LOE should demonstrate that the variability in site and background conditions that is accounted for by the two-hypothesis test does not exist at the sites addressed in the TU505 RFI and a simple comparison of the range of measured site concentrations to the range of background concentrations is a scientifically sound and technically defensible approach. If such LOE cannot be provided, the measured site concentrations for inorganics should be compared to background values as recommended in Section 2.7.3, Identification of COPCs, of the NMED SSG and the risk-based screening analysis updated accordingly.

5. Section 5.4.1, TU505. The discussion in the first paragraph of Section 5.4.1 indicates that soil data for the interval of 0 to 5 feet below ground surface (ft bgs) was used to evaluate exposures for site workers. Section 3.4.3 of the NMED SSG recommends an exposure interval of 0 to 1 ft bgs for industrial/commercial workers; thus, use of the 0 to 5 ft bgs should be identified and addressed as a source of uncertainty in the risk-based screening analysis. Section 5.4.1 should be revised to identify the use of the 0 to 5 ft bgs interval as a source of uncertainty and to include a reference to Section 5.6, Uncertainties, for additional details.
6. Section 5.4.1.2, Quantitative Risk Screening Evaluation. The first sentence on page 5-5 states that the cancer risk for all evaluated receptors is below  $1 \times 10^{-6}$ . However, the table entitled Flightline Generator USTs Site (TU505) Screening-Level-Cumulative Risks and Hazard Indices for Soil, at the top of page 5-5 shows a cumulative site-specific screening excess cancer risk of  $5 \times 10^{-6}$  for residents. The first sentence on page 5-5 should be revised to indicate that risks are below  $1 \times 10^{-5}$  for all evaluated receptors and below  $1 \times 10^{-6}$  for construction workers and site workers.
7. Section 5.4.2.3, Comparison of Site Data to Screening Criteria. Section 5.4.2.3 refers to Table E-16 of Appendix E for the screening comparison for the 0 to 10 ft bgs exposure interval DA508. An examination of Table E-16 indicates that the 2004 USEPA PRG (based on toxicity derived from HEAST) for carbazole is used as the screening level at DA508. Revise the text to include a discussion of uncertainty associated with the use of the HEAST-based 2004 PRG in the screening evaluation for DA508. In addition, a reference to Section 5.6, Uncertainties, should be provided for additional details regarding the use of this historic PRG in the risk-based screening analysis.
8. Section 5.4.2.6, Evaluation of Petroleum Hydrocarbons. The first paragraph of Section 5.4.2.6 indicates that the maximum detected concentrations of TPH-DRO, TPH-GRO, and TPH-ORO generated a hazard index (HI) of 0.2 for residential receptors. Examination of Table E-21 in Appendix E indicates that the HI for residential receptors and the 0 to 10 ft bgs exposure interval is 0.3. Revise the first paragraph of Section 5.4.2.6 to indicate that an HI of 0.3 was determined for residential receptors.

9. Section 5.4.2.7, Refined Quantitative Risk Screening Evaluation for Soil. The discussion on page 5-11 refers the reader to Tables E-22 and F-23 of Appendix E. The reference should be to Tables E-22 and E-23. Revise the text to refer to Table E-23 rather than Table F-23.
10. Section 5.4.2.7, Refined Quantitative Risk Screening Evaluation for Soil. An examination of Tables E-22 and E-23 of Appendix E indicated that chromium concentrations were compared to SSLs for trivalent chromium. As noted in Sections 2.1 and 5.1 of the NMED SSG, total chromium concentrations should be compared to SSLs for total chromium. Page 5-33 indicates the chromium concentrations at DA508 are for total chromium. Section 5.4.2.7 should be revised to state that the soil concentrations at DA508 are measurements of total chromium. Tables E-22 and E-23 should be revised to compare the site chromium concentrations to SSLs for total chromium. The refined risk-based screening evaluation for DA508 should be revised accordingly and the appropriate sections of the TU505 RFI updated. Note that the SSLs for total chromium have a carcinogenic endpoint for residents and site workers while the SSLs for trivalent chromium have a noncarcinogenic endpoint. It is expected that while the risk and HI numbers will change, the conclusions drawn from the refined screening analysis will not change as a result of the requested revisions.
11. Section 5.4.3.3, Quantitative Risk Screening Evaluation. The fourth paragraph on page 5-16 indicates that a target organ/critical effect analysis was performed as part of the quantitative risk screening evaluation for residents at SD022. The text indicates that each metal addressed in the analysis impacts a different organ system; thus, soil at SD022 is unlikely to pose an unacceptable noncarcinogenic risk to residents. However, a table summarizing this analysis is not provided in either the main text or Appendix E of the TU505 RFI. It is recommended that Appendix E be revised to include a table summarizing the target organ/critical effects analysis. Section 5.4.3.3 should also be revised to include a reference to the new table.
12. Section 5.4.3.5, Evaluation of Petroleum Hydrocarbons. The first paragraph of Section 5.4.3.5 states that the TPH-DRO SSLs were used in the screening evaluation of TPH-GRO at SD022. This approach was used because NMED has not established SSLs for TPH-GRO. However, Section 5.4.3.5 does not address the use of TPH-DRO SSLs as surrogates for TPH-GRO SSLs. Additional information is needed to provide an understanding of how well the TPH-DRO SSLs represent the actual concentrations at which TPH-GRO could produce impacts to human health. Revise the TU505 RFI to include a discussion that supports the use of TPH-DRO SSLs as suitable surrogates for TPH-GRO SSLs. This information could be provided in Section 5.4.3.5 or Section 5.4.3.5 could flag the use of surrogates as a source of uncertainty in the analysis and refer to Section 5.6, Uncertainties, for additional details.
13. Section 5.4.3.6, Refined Quantitative Risk Screening Evaluation for Soil. Page 5-18 includes a bulleted list of chemicals and 95% upper confidence limits (95UCL) calculated using ProUCL. Attachment 4 [actually Attachment E.4] of Appendix E is referenced as the location of the ProUCL input and output data. After examination of Attachment E.4, it appears that zinc should be added to the bulleted list. Revise Section 5.4.3.6 to include zinc in the bulleted list of chemicals along with its calculated 95UCL of 60.05 milligrams per kilogram (mg/kg).

14. Section 5.4.3.6, Refined Quantitative Risk Screening Evaluation for Soil. An examination of Table E-35 of Appendix E indicated that chromium concentrations were compared to SSL for total chromium. However, the footnote (marked as \*) at the bottom of the table indicates that chromium is treated as trivalent chromium. As noted in Sections 2.1 and 5.1 of the NMED SSG, total chromium concentrations should be compared to SSLs for total chromium. Note that the SSLs for total chromium is listed as having a noncarcinogenic endpoint in Table E-35. Total chromium has a carcinogenic endpoint for residents (the SSL for trivalent chromium has a noncarcinogenic endpoint). Section 5.4.3.6 and Table E-35 should be revised to state that the soil concentrations at SD022 are measurements of total chromium. Tables E-35 should also be revised to compare the site chromium concentrations to the SSL for total chromium with a carcinogenic endpoint and not a noncarcinogenic endpoint. The refined risk-based screening evaluation for SD022 and the appropriate sections of the TU505 RFI should be updated accordingly. It is expected that while the risk and HI numbers will change, the conclusions drawn from the refined screening analysis will not change as a result of the requested revisions.
15. Section 5.4.3.6, Refined Quantitative Risk Screening Evaluation for Soil. An examination of Table E-36 of Appendix E indicated that chromium concentrations were compared to SSLs for trivalent chromium. As noted in Sections 2.1 and 5.1 of the NMED SSG, total chromium concentrations should be compared to SSLs for total chromium. Section 5.4.3.6 should be revised to indicate whether the soil concentrations at SD022 are measurements of total or trivalent chromium. If the sampling results were analyzed for total chromium, Table E-36 should be revised to compare the site chromium concentrations to SSLs for total chromium. The refined risk-based screening evaluation for SD022 should be revised accordingly and the appropriate sections of the TU505 RFI updated. Note that the SSLs for total chromium have a noncarcinogenic for construction workers; thus, carcinogenic risk would not be affected by this change in the screening evaluation. While the HI numbers will change, the conclusions drawn from the refined screening analysis should not change as a result of the requested revisions.
16. Section 5.4.3.6, Refined Quantitative Risk Screening Evaluation for Soil. The fourth paragraph on page 5-19 indicates that a target organ/critical effect analysis was performed as part of the refined quantitative risk screening evaluation for soils at SD022. The text indicates that aluminum and manganese impact different organ systems; thus, soil at SD022 is unlikely to pose an unacceptable noncarcinogenic risk to residents. However, a table summarizing this analysis is not provided in the main text or Appendix E of the TU505 RFI. In reviewing target organs, the nervous system is most sensitive to aluminum (ATSDR, <http://www.atsdr.cdc.gov/toxprofiles/index.asp>) and the USEPA's IRIS ([www.epa.gov/IRIS](http://www.epa.gov/IRIS)) database lists the nervous system as the target organ for manganese. Addition discussion and references are required to justify the statement of the differing target organs. Further, Appendix E must be revised to include a table summarizing this target organ/critical effects analysis. Section 5.4.3.3 should also be revised to include a reference to the new table.
17. Section 5.4.4.3, Quantitative Risk Screening Evaluation. The last paragraph on page 5-21 states that the lateral and vertical extent of arsenic contamination has been defined at TA129.

The discussion includes information illustrating that the depth of contamination has been defined but does not provide information related to the lateral extent of arsenic contamination. Revise the last paragraph on page 5-21 to include information illustrating that the lateral extent of arsenic contamination has been defined at TA129. This issue can be addressed by providing a reference to a discussion of the lateral extent of arsenic contamination that is located elsewhere within the TA505 RFI.

18. Section 5.4.4.5, Evaluation of Petroleum Hydrocarbons. The third paragraph of Section 5.4.4.5 references Table E-47 in Appendix E. It appears that the text should actually reference Table E-46. Review the reference to Table E-47 to ensure the appropriate table is referenced. If necessary, revise Section 5.4.4.5 to reference Table E-46.
19. Section 5.4.4.6, Refined Quantitative Risk Screening Evaluation for Soil. The discussion on page 5-23 indicates that the results of the refined risk-based screening for TA129 are provided in Table E-47 of Appendix E. An examination of Table E indicated that chromium concentrations were compared to SSLs for trivalent chromium. As noted in Sections 2.1 and 5.1 of the NMED SSG, total chromium concentrations should be compared to SSLs for total chromium. Section 5.4.4.6 should be revised to state whether the soil chromium concentrations at TA129 are measurements of total or trivalent chromium. If the soil sampling results are for total chromium, Table E-47 should be revised to compare the site chromium concentrations to the SSL for total chromium and the refined risk-based screening evaluation for TA129 should be revised accordingly. All impacted discussions in the TU505 RFI should be updated accordingly. Note that the SSL for total chromium has a carcinogenic endpoint for residents. It is expected that the risk and HI numbers for the refined risk evaluation will change if the site chromium concentrations are compared to the SSL for total chromium. Significantly, the cumulative site-specific screening excess cancer risk is expected to rise from  $1 \times 10^{-5}$  to  $2 \times 10^{-5}$ .
20. Section 5.5.2.2, Tier 1 SLERA – DA508. The text indicates that the results of the Tier 1 ecological risk screening for the 0 to 10 ft bgs exposure interval at DA508 are presented in Table F-3, Comparison of Soil Concentrations (0-10 ft) with Ecological Screening Levels DA508. In discussing the results of the Tier 1 ecological risk evaluation for DA508, the first full paragraph on page 5-33 states: “The Total HI exceeds one for deer mice (20), horned larks (28) and vegetation (39), indicating that further evaluation of these receptors is warranted.” It is believed that the parenthetical numerical values refer to the calculated total HIs for the three ecological receptors. Table F-3; however, shows total HIs of 8.1, 31, and 7.5 for the deer mouse, horned lark, and plants, respectively. If the parenthetical numerical values on page 5-33 represent the total HI for each receptor type, the values should be changed to agree with the Table F-3 values. Otherwise, the discussion should be revised to indicate what the parenthetical values represent.
21. Section 5.5.3.2, Tier 1 SLERA – SD022. Page 5-40 states that background values for sediment at SD022 are not available. As such, CAFB assumed that all metals determined to be representative of background concentrations in soil (antimony, barium, mercury, silver, thallium) were also representative of background concentrations for sediment. No additional information is presented to support this assumption. This approach introduces uncertainty



into the analysis as the actual background concentrations for sediment are unknown. The discussion at the top of page 5-40 should be revised to identify CAFB's approach as a source of uncertainty in the analysis. The discussion should also reference the uncertainty analysis for the Tier 1 evaluation (page 5-41) for additional details regarding the potential impact of the approach on ecological risk estimates at SD022.

22. Section 5.5.3.2, Tier 1 SLERA – SD022. The first full paragraph on page 5-41 states that screening results for six sediment samples collected in SD022 are provided in Table F-19, Comparison of Sediment Concentrations with Ecological Screening Levels SD-022 - Stormwater and Retention Pond. The text indicates that the highest screening level hazard quotient (SLHQ) for sediment invertebrates was obtained for volatile organic compounds (VOCs) with a value of 7.1. Examination of Table F-19 shows that a SLHQ of 7.1 was obtained for exposure to toluene. Exposure to all VOCs resulted in a HI of 7.8. Revise the first full paragraph for accuracy and consistency with Table F-19.
23. Section 5.5.3.2, Tier 1 SLERA – SD022 and Section 5.5.3.3, Tier 2 SLERA – SD022. Both discussions of Effects Assessment (page 5-40 for the Tier 1 evaluation, page 5-43 for the Tier 2 evaluation) present four sources of toxicity reference values (TRVs) for sediment invertebrate populations. While the information on pages 5-40 and 5-43 identify the sources for no-observed adverse effect level (NOAEL)-based and lowest observed adverse effect level (LOAEL)-based TRVs, respectively, neither discussion explains why three of the identified sources (MacDonald, et al., the Los Alamos National Laboratory EcoRisk Database, NOAA Screening Quick Reference Tables) are preferred for SD022 over other potential sources. Revise the discussions on pages 5-40 and 5-43 to explain why these three sources were chosen for evaluating ecological risk at SD022.
24. Section 5.5.3.3, Tier 2 SLERA – SD022. The Tier 2 Uncertainty Analysis for SD022 is presented on page 5-44, page 5-45, and the top of page 5-46. The fifth paragraph of Section 5.5.3.3, page 5-42, states that uncertainties associated with the use of the maximum detected concentration as the exposure point concentration (EPC) for the aquatic component of the SD022 Tier 2 analysis would be addressed in the uncertainty discussion. Such a discussion was not found on pages 5-44 through 5-46. The Uncertainty Analysis on pages 5-44 through 5-46 should be revised to indicate use of the maximum detected concentration, rather than the 95% upper confidence limit (95UCL), as the EPC results in an overestimation of ecological risk at SD022.
25. Section 5.5.3.3, Tier 2 SLERA – SD022. The third and fourth paragraphs on page 5-45 refer to a document authored by Heath *et al.* The first reference in the third paragraph cites the year of publication as 1969; all other references to Heath *et al.* indicate publication in 1996. An examination of Section 7, References, indicates Heath *et al.* was published in 1969. Review the references to Heath *et al.* in paragraphs 3 and 4 on page 5-45. Ensure all references cite the correct year of publication.
26. Section 5.5.4.2, Tier 1 SLERA – TA129. The fourth paragraph on page 5-47 indicates that the screening summary for the Tier 1 evaluation at TA129 is presented in Table F-11, Comparison of Soil Concentrations (0-10 ft) with Ecological Screening Levels TA129. The

fifth paragraph indicates that a SLHQ of 1.2 was calculated for cadmium. However, examination of Table F-11 indicates a SLHQ of 0.3 was obtained for the Horned Lark at TA129. A SLHQ of 1.2 was calculated for exposure of the Horned Lark to chromium. Review the text and Table F-11 and revise the text as necessary for accuracy and consistency with the table.

27. Section 5.6, Uncertainties. The uncertainty discussion (page 5-49 to page 5-50) does not address the use of soil data from the 0 to 5 feet bgs exposure interval for estimating risk to commercial/industrial workers at TU505. As noted above, Section 3.4.3 of SSG recommends an exposure interval of 0 to 1 foot bgs for industrial/commercial workers. Section 5.6 should be revised to indicate that use of the 0 to 5 feet bgs exposure interval is a conservative (tends to overestimate risk) approach for TU505. The uncertainty discussion should also reference the location of the soil sampling data that confirms the conservative nature of the approach.
28. Table E-35, Human Health Quantitative Screening Evaluation Results for SD022, Residential Scenario - 95% UCL. Table 3-5 shows a total estimated cancer risk of 0E+00. The table should be revised to list the actual total estimated cancer risk for the residential scenario of the refined quantitative risk screening evaluation for SD022.
29. Table F-6, Calculation and Selection of Exposure Point Concentrations in Soil 0-5 ft DA508. Table F-6 lists maximum detected concentrations, UCLs, and EPCs for the chemicals addressed in the Tier 2 SLERA for DA508. However, the table does not indicate the units for any of these concentrations. Revise Table F-6 to include the units for maximum concentrations, UCLs, and EPCs. Ensure that all tables presenting similar information (Tables F-7, F-12, F-13, F-20, and F-21) are also revised to indicate the units for the listed concentrations.