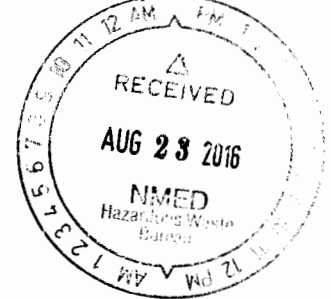




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August 19, 2016

DCN: NMED-2016-17

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

RE: Evaluation of the *Final Interim Measures Work Plan Areas of Concern and Solid Waste Management Areas in the Kickout Area*, Fort Wingate Depot Activity, McKinley County, New Mexico, July 5, 2016.

Dear Mr. Cobrain:

Attached please find draft technical comments on the *Final Interim Measures [IM] Work Plan [WP] Areas of Concern and Solid Waste Management Areas in the Kickout Area [KOA]*, Fort Wingate Depot Activity (FWDA), McKinley County, New Mexico, dated July 5, 2016 (KOA IM WP). The main text of the work plan document was subjected to a thorough technical review. Information provided in the appendices supporting the main text was reviewed as it related to the design of the field investigation and satisfactory accomplishment of the investigation objectives.

The KOA IM WP will not include a comprehensive assessment of cumulative risk for receptors potentially exposed to residual contamination in the KOA. Rather, the risk analysis for the removal action will address direct contact only (dermal contact, incidental ingestion, and inhalation of re-suspended dust). Other aspects of cumulative risk (groundwater pathways, protection of groundwater, residential exposure via ingestion of beef) as well as ecological risk are to be assessed under separate scopes of work. AQS has included a general comment to remind FWDA that an assessment of cumulative risk to human receptors stemming from residual risk in the Kickout Area is still required and that it is recommended and preferred that the cumulative assessments be provided as part of the IM Report.

There are many cases in the KOA IM WP where FWDA has referenced an external document for information relevant to the IM. None of these documents are included as appendices to the KOA IM WP and the referenced information in these documents is not presented or summarized in the text. In fact, the *Final Work Plan, Munitions and Explosives of Concern Removal and Surface Clearance, Kickout Area*, dated February 2015 (Final Work Plan) is the only referenced document listed in Section 11.0, References, of the EOA IM WP. Thus, the current version of the KOA IM WP does not function as a stand-alone description of or reference source for the IM. In addition, it does not appear that the majority of the referenced information has or will be conveyed to project personnel through site-specific training. Because project details should be

included in the project work plan rather than referenced to external documents, AQS has drafted a general comment instructing FWDA to list all referenced documents in Section 11.0 of the EOA IM WP; to demonstrate that the information in the referenced documents applicable to the IM project is conveyed to on-site project staff and that the referenced information along with the final approved version of the EOA IM WP will be available to IM personnel at a single location throughout the IM project. In addition, the comment requires that referenced information and/or the referenced documents be included in the EOA IM WP for documents that have not been submitted to NMED for review and approval. These changes should result in a single collection of project information that can function like a stand-alone document without requiring an extensive revision of the EOA IM WP.

While extensively reviewed as part of this evaluation, a full technical review of Appendix A (Uniform Federal Policy for Quality Assurance Project Plan) was not performed. NMED may wish to conduct such a review before the commencement of field activities within the Kickout Area. However, the information contained in Appendix A provides adequate support for the discussions in the main text and in many cases, provides additional information and/or additional details on the performance of field activities, laboratory analysis of the collected samples, QA/QC for the sampling effort, and evaluation, validation, and usability of the resulting data.

If you have any questions, please contact me at (801) 451-2864 or via email at paigewalton@msn.com.

Thank you,



Paige Walton
AQS Senior Scientist and Program Manager

cc:

Ben Wear, NMED (electronic)
Joel Workman, AQS (electronic)
Mike Smith, AQS (electronic)

**Draft Technical Comments on the
Final Interim Measures Work Plan Areas of Concern and Solid Waste Management
Areas in the Kickout Area
Fort Wingate Depot Activity (FWDA), McKinley County, New Mexico
July 5, 2016**

General Comments

1. The discussion in Section 3.1.5, Exposure Pathways on pages 3-4 and 3-5 indicates that only direct contact pathways (dermal contact, incidental ingestion, and inhalation of volatilized constituents adsorbed to wind-blown dust particles) will be addressed in the KOA IM WP. Exposures to constituents in groundwater, the potential migration of constituents in subsurface soil to groundwater (protection of groundwater), residential exposure via ingestion of beef, and risk to ecological receptors will be addressed “under separate scopes of work.” This approach is supported by the presentation of information in Figure 3-1, Conceptual Site Model – Schematic Wire Diagram, in which all information not addressed by the KOA IM WP is presented in gray. Section 3.3.2, Hierarchy for Determination of Cleanup Levels, also states that groundwater protection, residential exposure via ingestion of beef, and consideration of ecological receptors will be addressed under separate scopes of work. A comprehensive human health risk assessment report addressing all exposure pathways, including protection of groundwater, is still required and must be submitted to NMED; it is recommended that the cumulative assessment be provided with the KOA IM Report as assessment of the adequacy of removals cannot be determined until the risk assessments are complete. Further, approval of IM will not be granted until the risk assessments are complete and it can be demonstrated that there are no adverse risks to human health, the environment, and/or potential for degradation of groundwater due to residual levels of contamination. The comprehensive report is needed to demonstrate the level of cumulative risk to receptors due to contamination at the AOCs and SWMUs associated with the Kickout Area. It is understood that this approach is based upon recently submitted papers by FWDA to the NMED addressing specific scenarios. One paper recently submitted by FWDA addressing the beef ingestion pathway indicated that the beef pathway was incomplete and/or an insignificant pathway for the FWDA and as such did not require analyses on a site-specific basis. FWDA also submitted a similar paper on facility-wide ecological risk assessments, indicating the site-specific ecological assessments were not required. NMED does not agree with either of the approaches/conclusions and has requested FWDA evaluate all receptors and pathways on a site-specific basis. NMED has clearly indicated to FWDA that the beef ingestion pathway and ecological risks must be evaluated on a site-specific basis.

For the Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) addressed in this work plan, AOCs 91 and 92 and SWMUs 14, 15, and 74 are of sufficient acreage to require evaluation of the beef ingestion pathway. Residual contamination in soil must be compared to the preliminary remediation goals for beef ingestion and risks/hazards included in the cumulative assessment. In addition, if any soil is removed and screened for re-use at the sites, the soil must be evaluated to ensure any residual levels of contamination meet cumulative risk for all pathways (including beef ingestion if appropriate).

The report should provide an estimate of cumulative risk to receptors before any remedial actions (e.g., the interim measure addressed in the KOA IM WP) as well as an estimate of the cumulative risk to receptors due to residual contamination after completion of all remedial actions performed under the separate scopes of work. It is also recommended that the ecological risk assessment (conducted in accordance with the NMED Soil Screening Guidance) be included in the comprehensive report. Revise Section 3.0 of the KOA IM WP to indicate that a comprehensive risk assessment report that addresses cumulative risk stemming from exposures at the AOCs and SWMUs in the Kickout Area and based on the CSM presented in Figure 3-1 will be prepared and submitted to NMED once the separate scopes of work noted in Section 3.1.5 are completed.

Further, evaluation of the soil-to-groundwater screening levels (SSL) is important in assessing whether sufficient contamination has been removed. For explosives in particular, the SSL will often drive removals due to high mobility of explosives and resulting SSLs more conservative than the residential levels. It is recommended that evaluation of the SSLs be included in this work plan to ensure removals are adequately characterized and to prevent multiple mobilization efforts.

2. There are a number of places in the KOA IM WP where the reader is referred to external documentation for a description of the procedures to be followed during the IM. The *Final Work Plan, Munitions and Explosives of Concern Removal and Surface Clearance, Kickout Area*, dated February 2015 (Final Work Plan), and *Munitions and Explosives of Concern, Non-Time Critical Removal Action, Kickout Area, SWMU 1, SWMU 10, SWMU 14, SWMU 15, SWMU 33, SWMU 74, AOC 76, AOC 89, AOC 90, AOC 91 and AOC 92 in Parcels 1, 2, 3, 11, 20 and 21* dated February 13, 2015 [Explosive Safety Submission (ESS)] are the two most frequently referenced documents. Other referenced documentation includes, but is not limited to, Data Item Description (DID) Worldwide Environmental Remediation Services - (WERS)-016.02, EM 385-1-1, the Site Safety and Health Plan (SSHP), Department of Defense (DoD) 6055.09-M, V7.E4.5.8.3.5, and the Deviation Approval and Risk Acceptance Document (DARAD). None of these documents are included as appendices to the KOA IM WP and the information in these documents referenced by the EOA IM WP is not presented or summarized in the text. The Final Work Plan is the only referenced document listed in Section 11.0, References, of the EOA IM WP. With the exception of the Environmental Protection Plan (EPP), submitted as part of the Final Work Plan, and relevant sections of the SSHP, it does not appear that the referenced information is conveyed to project personnel through site-specific training. Note that project details should be included in the project work plan rather than referenced to an external document. In cases where a project document has been or will be reviewed and approved by NMED, a specific reference citation and listing of the document as a reference (as done for the Final Work Plan) is sufficient. However, referenced documents that have not been submitted for regulatory review should be included as appendices to the project work plan and/or the information relevant to the project should be presented in the text.

At a minimum, the EOA IM WP should be revised to:

- List all referenced documents in Section 11.0 of the EOA IM WP;

- Demonstrate that the information in the referenced documents applicable to the IM project is conveyed to on-site project staff through site-specific training;
- Demonstrate that the information in the referenced documents applicable to the IM project and the final approved version of the EOA IM WP will be available to assigned on-site personnel at a single location throughout the IM project; and
- Present the referenced information or include the referenced document in the EOA IM WP for documents that have not been submitted to NMED for review and approval.

Revise the EOA IM WP to address these issues.

Specific Comments

1. Section 1.2. The second paragraph of Section 1.2 indicates that subsurface removals will be based on visual observations of munitions and explosives of concern (MEC) and material potentially presenting an explosive hazard (MPPEH). Based on the information furnished in the KOA IM WP, it is unclear how use of visual observations is sufficient to identify subsurface MEC and MPPEH. Further, surface patterns of MEC/MPPEH would not be deemed reliable in estimating subsurface items, given the long history of use at these sites. Typically, subsurface MEC investigations are conducted using geophysical support. While use of geophysical support and other methods may be contained in support documents not provided with this work plan, Section 1.2 should be revised to include lines of evidence that support the use of visual observations as the only means of identifying MEC and MPPEH in the subsurface.
2. Figure 3-1. Figure 3-1 presents a Conceptual Site Model for the Areas of Concern (AOCs) and Solid Waste Management Units (SWMUs) in the Kickout Area. All grayed items on the CSM are not addressed in the KOA IM WP. The CSM includes two release mechanisms that have been grayed. One of the mechanisms is Leaching; the other is illegible. Revise Figure 3-1 so that all grayed release mechanisms are legible.
3. Figure 3-1. Figure 3-1 indicates that the exposure media for potential receptors is surface soil from 0-6 inches below ground surface (bgs). The soil exposure interval for residents and construction workers is 0-10 feet bgs, in accordance with the NMED Soil Screening Guidance. While the discussion on page 3-4 (Section 3.1.4) indicates that risks from soil will be assessed from 0-10 feet bgs for all human receptors, the information provided in the text and figure regarding the depth interval for soil exposures should be reviewed and revised to eliminate inconsistencies.
4. Section 3.1.3. The last sentence of Section 3.1.3 (page 3-4) states: "Site-specific soil conditions are more likely to be dry and alkaline indicating metals should be relatively adsorbed to the soil and not be very mobile." However, the discussion offers no information in support of this assertion. While this chemical behavior may be true in stable

environments, mobilization of metals and other contaminants at depth has been noted in areas of similar history to the AOCs/SWMUs being addressed in this work plan. For example, AOC 92 had 38 years of OBOD operations and SWMU 15 had years of OBOD operations. Continued open detonations will force contamination downward. For SWMU 14, where disposal of TNT-containing washout and for AOC 90 (ponds), liquid sources would likely mobilize metals more readily than in an arid environment. Thus, the conclusion that metals are immobile does not appear justified. A reference citation should be provided to site documentation that establishes that site soils are dry and alkaline in nature and that past history (liquid and OBOD operations) would not impact the mobilization of metals in soil. Revise the last sentence in Section 3.1.3 to include a reference citation to site-specific documentation and provide additional lines of evidence based on the site's past operating history that demonstrate the immobility of metals in soil. In addition, FWDA should ensure that the cited documentation is listed in Section 11.0, References, of the KOA IM WP.

5. Section 3.1.4. The last sentence of Section 3.1.4 (page 3-4) states: "For the purposes of this IM WP, surface soil is defaulted to 0 - 10 feet bgs for all human receptors." As indicated in Section 3.1.4, the NMED SSG recommends that a depth interval for soil of 0-1 foot bgs be used when determining exposure to soil contamination for commercial and industrial workers. Section 3.1.4 should explain why the soil depth interval recommended for commercial/industrial workers is not applicable to the KOA IM WP as it is unclear whether the assumption represents a conservative approach for assessing risks to commercial/industrial workers. The concern is that evaluating a larger exposure interval may not be protective of the industrial worker, especially in cases where soil is not being removed. A higher density of contamination in near surface soil could result in a higher exposure point concentration (EPC) than an EPC determined over a larger soil interval. In addition, the discussion should include lines of evidence supporting the use of a soil depth interval of 0-10 feet bgs for commercial/industrial receptors in the Kickout Area. Revise Section 3.1.4 to address these issues related to the assumed soil depth interval for estimating exposures to commercial/industrial workers.
6. Section 3.3.3. Step 3 states that ProUCL Version 4.1 will be used to calculate 95 percent upper confidence limits (95% UCL). Note that ProUCL Version 5.1 is now available and should be used by FWDA for calculating 95% UCLs. Revise the discussion of Step 3 to indicate that ProUCL Version 5.1 (or most current) will be used to calculate 95% UCLs.
7. Section 3.3.4. As noted in previous comments, it is advised that the IM Completion Report include all pathways for all receptors in the cumulative risk assessment (human health and ecological). However, if FWDA still chooses to provide separate reports for different aspects of the risk assessment, the discussion of risk reporting on pages 3-8 and 3-9 should be revised to indicate that the IM Completion Report will state that all pathways applicable to the Kickout Area were not addressed in the IM. In addition, the revised text should indicate that a comprehensive assessment of cumulative risk addressing all applicable pathways will be submitted to NMED once all the scopes of work applicable to the Kickout Area are completed.
8. Section 4.1.2. The next to last sentence of Section 4.1.2 (page 4-4) states: "The grid, minus the area of the waste burial pit, will be turned over to the Army for QA [quality assurance]"

following QC [quality control] of the grid(s).” The intent of this sentence is unclear as the QC performed on the grids and the QA that will be performed once a grid is turned over to the Army have not yet been explained in the text. An explanation is offered in Note 1 of Section 4.2.5.3, Defining Acceptance of the Cleanup Criteria (page 4-10). Revise Section 4.1.2 to refer to Note 1 of Section 4.2.5.3 for a description of QC inspection that will be performed on the grids and the QA (independent inspection) activities that will be performed when a grid is turned over to the Army. In addition, the discussion should be revised to demonstrate that the Army staff conducting the QC inspection and the staff conducting the QA inspection are independent.

9. Section 4.1.7. The next to last sentence in Section 4.1.7 indicates the Army will use UXO construction support when working in and around sediment potentially contaminated by MEC. However, the discussion does not describe the type(s) of assistance that UXO construction support will provide. Revise Section 4.1.7 to include a description of the activities that UXO construction support may perform during road maintenance when addressing sediment potentially contaminated by MEC.
10. Section 4.2.5.2. Note 2 in Section 4.2.5.2 indicates that areas of the arroyo outside of a designated waste pit that have surface or near surface MEC and debris will be cleared but will not be sampled. The text also states that non burial pit areas may be characterized as part of the Parcel 3 RFI. It will be necessary to characterize non burial pit areas as part of the IM or the Parcel 3 RFI to determine if contamination stemming from the removed MEC and debris remains in the soil. Revise Note 2 of Section 4.2.5.2 to indicate that non burial pit areas from which MEC and debris were removed will be characterized as part of the Parcel 3 RFI or IM.
11. Section 4.7.3. The first sentence of Section 4.7.3 states that the Army has performed site-specific training for all on-site personnel assigned to the MEC clearance work in the Kickout Area. However, the content of the site-specific training is not detailed. There is no indication that the contents of the KOA IM WP, the *Final Work Plan, Munitions and Explosives of Concern Removal and Surface Clearance, Kickout Area*, dated February 2015, *Munitions and Explosives of Concern, Non-Time Critical Removal Action, Kickout Area, SWMU 1, SWMU 10, SWMU 14, SWMU 15, SWMU 33, SWMU 74, AOC 76, AOC 89, AOC 90, AOC 91 and AOC 92 in Parcels 1, 2, 3, 11, 20 and 21* dated February 13, 2015 (the Explosive Safety Submission), the Environmental Protection Plan (EPP), the Accident Prevention Plan (APP), and the Site Safety and Health Plan (SSHP), as well as other applicable regulations, procedures, and safety and health standards noted in the KOA IM WP were covered in the training session(s). Revise Section 4.7.3 to provide a bulleted list similar to the bulleted list provided for refresher training, of the types of information covered in the site-specific training session(s).
12. Section 4.7.9.6.1. The discussion in the first paragraph of Section 4.7.9.6.1 (page 4-24) indicates that the Sorting/Inspection Area (SIA) processes are equipped with three special features. The first, SIA Plant Start/Shutdown Switches is presented and discussed under Note 1 at the bottom of page 4-24. The other two features, Emergency Shutdown Safety Switches and a Multi-camera Video System, are described in Notes 1 and 2, respectively, at the top of page 4-26. It is likely that the Notes at the top of page 4-26 are numbered

incorrectly and should be re-labeled as Note 2 and Note 3. Review this information and revise the note numbers on page 4-26 as necessary.

13. Section 4.7.9.6.1. The discussion of Emergency Shutdown Safety Switches at the top of page 4-26 states: “All personnel within the SIA area will be trained to identify situations when the switch must be deployed.” No additional information regarding this training is provided. Revise the discussion of Emergency Shutdown Safety Switches to indicate when SIA area personnel will receive training on the identification of situations during which the switches should be deployed.
14. Section 4.7.9.7. The second sentence of the first paragraph of Section 4.7.9.7 notes that the Army will conduct an engineering evaluation to define safe areas of the arroyo for personnel and establish safe stand-off distances for excavation and machinery working near the arroyo. However, the text does not indicate when this evaluation will be performed. In addition, performance of the engineering evaluation is not listed among the bulleted tasks presented in Section 4.1.1 of the KOA IM WP. Revise Section 4.7.9.7 to indicate when the engineering evaluation will be performed and how the results of the evaluation will be communicated to all stakeholders. In addition, ensure that the engineering evaluation is added to the list of tasks presented in Section 4.1.1.
15. Section 4.7.9.7.1. Section 4.7.9.7.1 indicates that the arroyo has been differentiated into three primary areas. The text notes that Area 2 has an extremely high density of MEC, MPPEH, and waste military munitions and that it is likely that the area will be cleared by mechanical means. However, the discussion notes that if areas of the arroyo are safe to enter and work, a manual “mag and dig” clearance may be conducted to maintain the integrity of the arroyo walls and floor. Based on the information provided, it is unclear how the decision to conduct a mechanical removal or a manual “mag and dig” will be reached. In addition, it is unclear when the decision will be made. Revise the discussion of Area 2 to include the criteria to be applied in determining if a mechanical removal, or a manual “mag and dig”, or a combination of both should be conducted. In addition, state when the decision on the type of removal will be made (e.g., after the Army’s engineering evaluation).
16. Section 4.7.9.7.1. The discussion of Arroyo Clearance on pages 4-35 and 4-36 should be relabeled as Section 4.7.9.7.2. Revise the heading for Section 4.7.9.7.1, Arroyo Clearance, to read Section 4.7.9.7.2, Arroyo Clearance. This typographical error also led to the mislabeling of Section 4.7.9.7.2, Arroyo Clearance Quality Control and Quality Assurance Documentation, and Section 4.7.9.7.3, SWMU 14 Waste Burial Pit and Arroyo Clearance. The headings for these sections should be revised to read Section 4.7.9.7.3 and Section 4.7.9.7.4, respectively.
17. Section 4.7.9.7.1. The last paragraph of Section 4.7.9.7.1 at the top of page 4-36 is confusing and should be rewritten. For example, the first sentence refers to “visually impacted material”. It is likely that the quoted phrase should read “visually identified material”. Revise the entire paragraph for improved clarity.
18. Section 4.7.9.10. Section 4.7.9.10 cites the ESS and Section 5.0 of the Final Work Plan for information on inspection and storage of MPPEH, munitions debris (MD), and range related

debris. However, it is unclear whether the referenced documents provide similar or different information. Revise Section 4.7.9.10 to clarify whether the ESS and Section 5.0 of the Final Work Plan provide different information on inspection and storage of MPPEH, MD, and range related debris or if both documents provide the same information.

19. Section 4.8. Section 4.8 states: “Project personnel will maintain sharp vigilance to ensure that non-essential personnel do not encroach into the EZ [exclusion zone] during MEC operations.” However, the text does not indicate what controls and/or procedures will be employed to ensure non-essential personnel do not enter the EZ. Revise this discussion to identify the controls and procedures that project personnel will use to prevent non-essential personnel from entering the EZ during MEC operations.
20. Section 4.13.1. The third bulleted item on page 4-42 notes that one composite sample for analysis of SVOCs, TAL metals, explosives, perchlorate, nitrate, cyanide, PCBs, and dioxins/furans, and one discrete sample for analysis of VOCs will be collected from each sidewall segment. The rationale for collecting a discrete sample for VOCs is not provided. Revise the third bulleted item on page 4-42 to explain why a discrete sample will be used for analysis of VOCs.
21. Section 4.13.1. The first bulleted item on page 4-43 notes that composite samples for analysis of TAL metals, explosives, and perchlorate will be collected from the bottom of the decision unit (DU) excavated at AOC 92. In addition, one discrete sample for analysis of SVOCs will be collected from the DU. The rationale for collecting a single discrete sample for SVOCs is not provided. Revise the first bulleted item on page 4-43 to explain why a single discrete sample will be used for analysis of SVOCs.
22. Section 4.13.2. According to Section 4.13.2 one composite sample will be collected for approximately every 500 cubic yards of sifted soil. The composite sample will consist of grab sub-samples collected as the piles of sifted soil are generated. However, the discussion does not indicate if the sub-samples should be collected from specified or random locations. Revise the first paragraph of Section 4.13.2 to furnish additional details regarding the collection of grab sub-samples from the piles of sifted soil. If this information is provided in Appendix A (e.g., Worksheet #17 of the UFP-QAPP), a reference to the discussion will suffice in addressing this issue.
23. Section 4.13.2. According to Section 4.13.2 one composite sample will be collected for approximately every 500 cubic yards of sifted soil. While this sample rate is acceptable if the contamination removed from the sifted soil was homogenous, if heterogeneity of contamination in the soil was observed, one composite sample should be collected for every 250 cubic yards be collected. Revise Section 4.13.2 to indicate that a sample rate of one composite sample per 500 cubic yards will be used for sifted soil subjected to homogeneous contamination and that a sample rate of one composite sample per 250 cubic yards will be used for piles derived from soil exhibiting heterogeneity of contamination.
24. Section 4.13.8.1. Section 4.13.8.1 states: “Measures will be taken during the field investigation to confirm that samples and records are not lost, damaged or altered.” However, the discussion does not identify the measures that will be employed to ensure

samples and records are not lost, damaged, or altered. Section 4.13.8.1 should be revised to list and discuss the controls and/or procedures that will be used to ensure samples and records are not lost, damaged, or altered.

25. Section 4.13.11. The second paragraph of Section 4.13.11 describes the tables of analytical results that will be generated from the project database. Based on the description provided, it appears that the tables will be overly complex as sampling information, analytical information, and risk screening information will be presented in a single table. It is recommended that separate tables be generated for sampling information (e.g., sample identification, date collected), analytical and laboratory information (e.g., analytical method, matrix, reporting limit, laboratory qualifiers), and risk assessment information (e.g., screening level source, screening level, indicator of exceedance of screening level). Revise the discussion of the analytical data tables to indicate that the types of information listed in the second paragraph of Section 4.13.11 will be presented in multiple tables.
26. Section 4.13.13. Section 4.13.13 provides information on decontamination procedures. However, much of the information provided is general in nature. Additional details are available in MC SOP No. 1, Field Equipment Decontamination, included in Appendix A.1, Field SOPs, of the KOA IM WP. Revise Section 4.13.13 to include a reference to MC SOP No. 1 in Appendix A.1 for additional details regarding decontamination of field equipment.