NEW MEXICO
ENVIRONMENT DEPARTMENT

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 3, 2020

George H. Cushman
Headquarters, Department of the Army
Office of the DCS, G-9
Army Environmental Office, Room 5C140
600 Army Pentagon
Washington, DC 20310-0600

RE: DISAPPROVAL
FINAL INTERIM MEASURES COMPLETION REPORT PARCEL 21 – SOLID WASTE MANAGEMENT UNIT 1 – TNT LEACHING BEDS
FORT WINGATE DEPOT ACTIVITY
MCKINLEY COUNTY, NEW MEXICO
EPA ID# NM6213820974
HWB-FWDA-19-006

Dear Mr. Cushman:

The New Mexico Environment Department (NMED) is in receipt of the Fort Wingate Depot Activity (Permittee) *Final Interim Measures Completion Report Parcel 21 – Solid Waste Management Unit 1 – TNT Leaching Beds* (Report), dated December 19, 2019. NMED has reviewed the Report and found that the Report contained multiple editorial and technical inaccuracies and deficiencies. NMED hereby issues this Disapproval.

The Permittee must submit a revised Report that addresses all comments contained in the attachment. Two hard copies and an electronic version of the revised Report must be submitted to the NMED. The Permittee must also include a redline-strikeout version in electronic format showing where all revisions to the Report have been made. The revised Report must be accompanied with a response letter that details where all revisions have been

made, cross-referencing NMED's numbered comments. The Revised Report must be submitted to NMED no later than **March 31, 2021**.

Should you have any questions or wish to discuss this matter, please contact me at (505) 476-6035, or Michiya Suzuki of my staff at (505) 476-6046.

Sincerely,

Kevin Pierard

Digitally signed by Kevin Pierard
Date: 2020.08.03 14:10:40 -06'00'

Kevin M. Pierard, Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
B. Wear, NMED HWB
M. Suzuki, NMED HWB
C. Hendrickson, EPA Region 6 (6LCRRC)
L. Rodgers, Navajo Nation
S. Begay-Platero, Navajo Nation
M. Harrington, Pueblo of Zuni
C. Seoutewa, Southwest Region BIA
G. Padilla, Navajo BIA
J. Wilson, BIA
B. Howerton, BIA
R. White, BIA
C. Esler, Sundance Consulting, Inc.
S. Smith, USACE

File: FWDA 2020 and Reading, Parcel 21

Attachment

GENERAL COMMENTS

1. Inconsistency in Data Presentation and Redundancy in Risk Assessment

NMED Comment: The Report is generally difficult to follow because the areas and tables identified in the Report are not consistent with the nomenclature used in Appendix D, *Risk Assessment Results,* which contains the supporting risk calculations. In addition, the Permittee conducted a full risk assessment on each sample to assess whether removal was sufficient. The sample-specific risk assessments should be presented separate from the overall risk assessment; inclusion of the over 700 pages of output unnecessarily complicates the risk assessment. The Permittee must revise the Report to utilize consistent nomenclature throughout the document. In addition, the Permittee must separate the assessments that were used for confirmation at individual locations from the overall risk assessment for the site.

2. Risk Assessment

NMED Comment: The risk assessments were unnecessarily complicated. Target organ analyses and Tier 2 ecological screening were included for all areas, even where initial human health screening and Tier 2 ecological risks resulted in acceptable risk. Remove unnecessary evaluations from the risk assessment.

3. Inaccuracies / Discrepancies

NMED Comment: The Report contains multiple inaccuracies and discrepancies. Some examples are listed below:

a. **Section 2.3.1, Climate, lines 2-3, page 2-4**, states, "[t]his indicates that the potential for infiltration is very low, especially throughout the warmer months of the year." The statement infers that contaminants are unlikely to migrate to the groundwater due to high evapotranspiration rate. However, various contaminants have already migrated to the aquifers at the site.

b. **Section 3.2.1, Data Quality Objectives, lines 9-11, page 3-2**, states, ""[r]efer to Table 3-2 for a complete LOQ evaluation with respect to achieving the human SSLs/RSLs. In all cases, the laboratory's achievable LOQs are lower than the applicable SSLs/RSL." According to Table 3-2, *Summary of Selected Human Health Soil Screening Criteria*, page 2 of 3, the applicable screening level (residential SSL) and the laboratory limit of quantitation (LOQ) for dimethyl phthalate are listed as 0.2 mg/kg and 0.33 mg/kg, respectively. In this case, the laboratory LOQ is higher than the applicable soil screening level (SSL).

c. **Section 5.1, Baseline Sampling of Stockpile Staging Areas, lines 12-13, page 5-4**, states, "[a]nalyte detections in Area 2 consisted of metals at concentrations less than background levels, low level SVOCs, and nitrate." According to Table 5-2*, AOC 2 [sic] Baseline Sample Results*, the cadmium concentrations in samples 2101B-AC01-0002-I-SO-A, B, and C are recorded as 0.65, 0.67, and 0.51 mg/kg, respectively, exceeding the background level of 0.224 mg/kg. Accordingly, the statement is not accurate.

d. **Section 5.1, Baseline Sampling of Stockpile Staging Areas, lines 20-24, page 5-4**, states, "[s]everal SVOCs were detected in Area 1 samples, but concentrations were less than 0.1 mg/kg in all cases. No explosives were detected in samples collected from the Area 1 decision units. The %RSDs between replicates (Table 5-2) were less than 20% in general. Greater %RSDs are seen in SVOCs, but SVOC concentrations are less than 5 x the LOQ in all cases." The discussion is pertaining to the baseline sampling for Area 1, but the referenced table (Table 5-2) lists analytical data for Area 2. The table intended to be referenced may be Table 5-1.

e. **Section 5.3.1.2, Phase II Removal Action [for the Post-1962 Leaching Bed], lines 5-8, page 5-7**, states, "[i]n addition, a small amount of soil was removed from deeper portions of the excavation where RDX concentrations were highest (2101B-ES31, ES49, EF31, EF32, EF33, EF43, ES30 and ES49) to minimize potential leaching to groundwater (Figure 5-4)." According to Table 5-7, *Post-1962 (North) Leaching Bed Southeast Excavation Phase I Confirmation Sample Results (Detections Only) 10-35 ft bgs*, RDX was not detected at sample location (2101B-EF33).

f. **Section 5.6, Backfill, Compaction, and Final Grading, lines 5-6, page 5-13**, states, "[a]nalytical data for backfill from two borrow sources is included in Appendix B of the IMWP." According to the *Final Revision 2 Interim Measures Work Plan Parcel 21 – Solid Waste Management Unit 1 – TNT Leaching Beds* (Work Plan), backfill soil analytical data are included in Appendix A rather than Appendix B.

g. **Section 5.10.5, Monitoring Well Abandonment, lines 8-11, page 5-15**, states, "[t]he IMWP described two monitoring wells (TMW32 and TMW41) within Parcel 21 that could be affected by the excavations (ZAPATA 2017). The lateral extents of the excavations did not require abandonment of either monitoring well. TMW32 and TMW31 remain intact and part of the site-wide groundwater monitoring program." The statement contains a typographical error (either TMW41 or TMW31).

h. **Tables 5-1, 2, 4, 5, 6, 7, 9, 10, 13, 14, 16, 17, 19, 20, 23, 24, and 25** identify nitrate as an explosive compound. However, nitrate itself is not an explosive compound although it is a component of explosives. Other sources of nitrate also may be present at the Facility (e.g., sewage).

i. **Table 5-2, AOC 2 Baseline Sample Results** presents baseline sampling results for Area 2 that is the post-1962 leaching bed staging area north of Arterial Road No. 4. However, the table is titled to present AOC 2 baseline results. Permit Attachment 8 does not list AOC 2. Correct the typographical error in the revised Report.

The Permittee has signed a legal certification stating that all information in the document is accurate, yet multiple inaccuracies exist throughout the document. This has been an ongoing issue in documents submitted by the Permittee. The Permittee has assured NMED, in multiple meetings and phone calls over the past several years, that quality assurance and quality control (QA/QC) reviews would improve document quality. The Permittee must provide a thorough, comprehensive QA/QC review of every document submitted and ensure that the information provided is accurate and complete. Failure to follow NMED direction constitutes noncompliance and may result in an enforcement action. All inaccuracies and discrepancies identified in the Report must be corrected in the revised Report.

4. Appendix D, Risk Assessment Results

NMED Comment: Multiple issues are identified in Appendix D, *Risk Assessment Results.* First, it is difficult to cross-reference tables included in Appendix D because they are listed without a sequence designation (e.g., table numbers). This continuing quality control issue has been identified by NMED previously. Table numbers and titles for all tables must be included in all submittals. The Permittee has assured NMED multiple times that these issues were being addressed. Failure to follow NMED direction constitutes noncompliance and may result in an enforcement action. Add table numbers to Appendix D so they can be referenced in the revised Report.

Additionally, the following issues are identified in Appendix D and must be resolved:

a. In the *Residual Risk Calculations* tables, certain cells are shaded. However, it is not clear why they are shaded. Add a footnote to the table to clarify the intent of shaded cells in the revised Report. Ensure the tables are complete and include all relevant data in the revised tables.

b. The intent of the *Residual Risk Calculations* tables is to present residential risk; therefore, inclusion of the lowest screening levels, the basis for the lowest screening level, and whether the lowest screening level is exceeded is not relevant to the residential risk evaluation for residual contamination. While these data may have been used internally to assess the extent of removals needed, these comparisons should not be included in the final risk tables. Further, inclusion of screening levels and other data for chemicals that were not determined to be constituents of potential concern (COPCs), whether because the COPC was 100%

non-detect or below background, complicates the table, as this information is unnecessary. Remove the excess data, as appropriate.

c. The *Residual Risk Calculations* tables have a column to indicate whether the SL-SSL value was exceeded, but the actual screening levels are not listed on the tables. Revise the tables to include the SL-SSLs for each COPC.

SPECIFIC COMMENTS

5. Section 2.3.4.5, Hydrogeology, lines 33-34, page 2-6

Permittee Statement: "The groundwater flow direction in the alluvium present in the northern portion of FWDA is predominantly southwest and west."

NMED Comment: Although recent groundwater gauging data indicate that the alluvial groundwater flow direction is predominantly southwest and west, the groundwater leakage from well 69 may have been affecting the Facility's natural groundwater flow direction. No response required.

6. Section 2.4.6, 1996 Remedial Investigation, lines 19-20, page 2-8

Permittee Statement: "A third sample was collected to represent the range of TNT/RDX concentrations throughout the leaching beds (ERM PMC 1997)."

NMED Comment: The purpose of the first and second samples was to determine the contaminant concentrations in the center of the most contaminated interval and from the interval below. However, the purpose for the third sample is not clear. Provide an explanation of how the third sample was collected to represent the range of contaminant concentrations in the revised Report.

7. Section 2.4.7, Building 503 Remediation and Demolition, lines 2-5, page 2-9

Permittee Statement: "Because explosive material may have migrated beneath the slab through expansion joints or cracks, linear shaped charges were used to open the cracks and destroy remaining explosives residue. After residues had been destroyed, the building slab debris was sampled for explosives, removed, and disposed."

NMED Comment: Provide more details on the sampling procedure for explosive residues beneath the slab, explain how they were destroyed and how complete destruction was ensured in the revised Report.

8. Section 3.0, Contaminants of Potential Concern and Remediation Goals, lines 3-5, page 3-1

Permittee Statement: "The IM [interim measures] were performed to remove soil impacted by TNT washout operations to achieve performance standards for human and ecological health as defined by NMED guidance (NMED 2019)."

NMED Comment: The scope of the interim measures was not limited to achieve performance standards for human and ecological health. The soils at depths greater than ten feet below ground surface (bgs) were also excavated to minimize leaching potential of contaminants. Revise the statement for accuracy.

9. Section 3.1, Contaminants of Potential Concern, lines 39-42, page 3-1, and lines 1-3, page 3-2

Permittee Statement: "Samples collected for waste characterization at Parcel 21, SWMU 1 were analyzed using the most recently published versions of the following methods: • Explosives – EPA 8330B • Ignitability/Corrosivity/Reactivity – EPA 1030/9012B and 9034/9045D • Paint Filter – EPA 9095D • TCLP SVOCs – EPA 1311/8270D • TCLP RCRA 8 Metals – EPA 1311/6020A/7470A."

NMED Comment: The Work Plan, dated September 29, 2017, listed RCRA 8 metals, pH, Flashpoint, VOCs, and water content as requirement for waste characterization. Comment 8 in NMED's *Approval with Modifications,* dated October 31, 2017, directed the Permittee to add relevant compound analyses (e.g., explosives) for waste characterization. The Permittee appropriately added explosive analysis for waste characterization; however, the proposed VOC analysis was removed but paint filter and TCLP SVOCs analyses were conducted. Provide an explanation for the deviation in the revised Report. Additionally, the deviation was not discussed in Section 5.10, *Deviation from the Interim Measures Work Plan*. Provide the explanation in Section 5.10 of the revised Report.

10. Section 3.2.1, Data Quality Objectives, lines 9-11, page 3-2

Permittee Statement: "In all cases, the laboratory's achievable LOQs are lower than the applicable SSLs/RSL."

NMED Comment: According to Table 3-2, the laboratory LOQ for dimethyl phthalate is higher than the applicable SSL. In this case, the risk associated with dimethyl phthalate could not be evaluated. Address the dimethyl phthalate concentrations where LOQ is higher than the SSL as a data gap and include the discussion in the revised Report.

11. Section 3.2.3, Human Health Screening Levels and Risk Evaluation Approach, lines 16-19, page 3-4

Permittee Statement: "Groundwater is being evaluated as part of a separate facility-wide groundwater assessment. However, the IM have removed the majority of the soil contamination to 35 ft bgs, thus significantly reducing the potential for soil contamination to migrate to groundwater through source removal."

NMED Comment: Comment 7 in NMED's *Approval with Modifications,* dated October 31, 2017 states, "[w]hether or not the Permittee implements such a measure [placing chemical reductants or biological amendments or impermeable liner on the excavation floors], an in-depth discussion of how residual soil contamination is likely to affect the groundwater is required in the Interim Measures Report." Such discussion is not provided in the Report. Provide the discussion in the revised Report.

12. Section 4.3, Pre-Excavation Activities, pages 4-3 and 4-4

NMED Comment: Activities associated with preparation for excavation are described in the section. If photographs were taken during the activities, include the photographs in the revised Report.

In addition, it is not clear whether traditional cultural properties (TCPs) were discovered during the activities. Provide a discussion regarding the discovery, or lack thereof, of TPCs in the revised Report.

13. Section 5.0, Interim Measures, lines 17-22, page 5-2, and lines 7-9, page 5-3

Permittee Statements: "Sample Source (two letters) [is defined as] AC = Soil Staging Area, EF = Excavation Floor, ES = Excavation Sidewall, WC = Waste Characterization from Soil Stockpile, [and] WP = Waste Profile."
and,
"[Sample] 2101A-BR01-0102-C-SO [is designated as] Backfill Reuse Composite Soil Sample 01 collected from 1-2 ft bgs from the pre-1962 leaching bed at SWMU 01, Parcel 21."

NMED Comment: Backfill reuse composite soil sample (BR) is not presented in the sample source definition. Include the definition of BR in the revised Report, if actually used in the Report. Otherwise, present an example for designation that is relevant to the actual sample designations used in the Report.

14. Section 5.0, Interim Measures, lines 16-19, page 5-3

Permittee Statement: "If a sidewall confirmation sample (less than 10 ft bgs) exceeded these criteria, the sidewall was excavated an additional one ft, at a minimum, and re-sampled. If floor sample results exceeded performance standards, the area was excavated at least an additional 2.5 ft vertically (to a maximum depth of 35 ft bgs) and the process repeated."

NMED Comment: A sidewall confirmation sample was collected at mid-depth from a maximum of 400-square feet sidewall segment. When the sidewall was horizontally excavated for an additional one foot, explain whether the entire segment of the sidewall soils (e.g., 400-square feet x one feet = 400 cubic feet) was removed; otherwise, provide more detailed information regarding the extent of over-excavation of the sidewall and the re-sampling procedure for sidewalls. Similarly, a floor confirmation sample was collected at the center of a maximum of 400-square feet segment of excavation floor. When the floor was vertically excavated for an additional 2.5 feet, explain whether the entire segment of the floor soils (e.g., 400-square feet x 2.5 feet = 1,000 cubic feet) was removed; otherwise, provide more detailed information regarding the extent of over-excavation of the floor and the re-sampling procedure for excavation floors. Revise the Report accordingly.

15. Section 5.1, Baseline Sampling of Stockpile Staging Areas, lines 12-13, page 5-4

Permittee Statement: "Analyte detections in Area 2 consisted of metals at concentrations less than background levels, low level SVOCs, and nitrate."

NMED Comment: Incremental sampling methodology (ISM) was used for the baseline sampling. However, ISM is not appropriate for SVOC analysis. The results of SVOC analysis obtained from ISM must not be used for risk evaluation. The results of SVOC analysis obtained from ISM must be removed from the revised Report.

16. Section 5.1, Baseline Sampling of Stockpile Staging Areas, lines 18-20, page 5-4

Permittee Statement: "Likewise, metals concentrations in samples collected from Area 1 were consistent with background levels with the exception of 2101A-AC01 where lead ranges from 25-30.7 mg/kg compared with a background concentration of 12.4 mg/kg."

NMED Comment: According to Table 5-1, *Area 1 Baseline Sample Results,* the lead concentration in sample 2101A-AC02 ranged from 13.3 to 14.1 mg/kg, which also exceeded the background concentration of 12.4 mg/kg. In addition, the cadmium concentrations in

samples 2101A-AC01 and AC02 exceeded the background concentration of 0.224 mg/kg, and the mercury concentrations in samples 2101A-AC01-0002-I-SO-A and B exceeded the background concentration of 0.03 mg/kg. The silver concentrations in samples 2101A-AC01-0002-I-SO-A, B, and C and 2101A-AC02-0002-I-SO-B exceeded the background concentration of 0.13 mg/kg, and the zinc concentration in sample 2101A-AC01-0002-I-SO-A exceeded the background concentration of 49.2 mg/kg. Revise the Report for accuracy.

17. Section 5.1, Baseline Sampling of Stockpile Staging Areas, lines 20-24, page 5-4

Permittee Statement: "Several SVOCs were detected in Area 1 samples, but concentrations were less than 0.1 mg/kg in all cases. No explosives were detected in samples collected from the Area 1 decision units. The %RSDs between replicates (Table 5-2) were less than 20% in general. Greater %RSDs are seen in SVOCs, but SVOC concentrations are less than 5 x the (LOQ [sic] in all cases."

NMED Comment: ISM is not appropriate for SVOC analysis. Remove the results of all SVOC analyses obtained from ISM in the revised Report.

18. Section 5.3.1.1.1, [Phase I] Confirmation Sampling [for the Post-1962 Leaching Bed], lines 19-26, page 5-6

Permittee Statement: "Note that the reference material used for the Laboratory Control Sample (LCS) and Laboratory Control Sample Duplicate (LCSD) in explosives analysis for 10 confirmation samples collected from the southeast excavation (Sample Delivery Group [SDG] 218040319) was determined to be bad, resulting in recoveries outside precision limits. By the time that the reference material was identified as the source of error, the samples were out of hold time. Therefore, additional samples were collected from the original locations for explosives analysis only (SDG 218050935); these samples are identified with the original sample name followed by a "2" in the report tables and lab reports."

NMED Comment: The percent (%) recovery for LCS and LCSD was particularly low for tetryl and 3,5-dinitroaniline in SDG 218040319. Presumably, the low recovery for these analytes caused the data to be rejected. However, the % recovery for LCS and LCSD was also low for several analytes (e.g., 7% LCS and 9% LCSD for tetryl) in SDG 218050935, which presents the data for the resampled group. It is not clear why data reported in SDG 218040319 were rejected but SDG 218050935 were qualified based on the values of % recovery for LCS and LCSD. Provide an explanation in the revised Report.

19. Section 5.3.1.1.2, [Phase I] Risk Screening [for the Post-1962 Leaching Bed], lines 36-38, page 5-6

Permittee Statement: "Figure 5-5 presents those locations in the post-1962 (north) leaching bed where human health or ecological performance standards were exceeded."

NMED Comment: The sample location of 2101B-ES40 where the human health performance standard was exceeded is not visible (e.g., hidden by other data label) on Figure 5-5. Revise the figure to show all hidden sample locations.

20. Section 5.3.1.2, Phase II Removal Action [for the Post-1962 Leaching Bed], lines 5-8, page 5-7

Permittee Statement: "In addition, a small amount of soil was removed from deeper portions of the excavation where RDX concentrations were highest (2101B-ES31, ES49, EF31, EF32, EF33, EF43, ES30 and ES49) to minimize potential leaching to groundwater (Figure 5-4)."

NMED Comment: According to Table 5-7, *Post-1962 (North) Leaching Bed Southeast Excavation Phase I Confirmation Sample Results (Detections Only) 10-35 ft bgs,* the RDX concentrations in sample locations 2101B-EF36-3536, EF37-2526, EF38-2021, ES29-1520, ES35-2025, ES36-2025, ES39-2530, ES47-1520, and ES50-1015 exceeded the SL-SSL of 0.06 mg/kg. Although the depths of these sample locations were shallower than 35 feet bgs, additional soil was not removed at these locations, except for EF36-3536 where soils were excavated to a depth of 36 feet bgs. Explain why an additional soil removal was not conducted at these locations in the revised Report.
In addition, the 2,4,6-trinitrotoluene concentrations exceeded the SL-SSL of 0.86 mg/kg in samples 2101B-EF41-1011 and ES45-1520 although RDX was not detected at these two locations. The exceedance of 2,4,6-trinitrotoluene was neither discussed, nor prompted additional soil removal at these locations. Include the discussion regarding the exceedance of 2,4,6-trinitrotoluene and explain why additional soil removal was not conducted at the locations in the revised Report.

21. Section 5.3.1.2, Phase II Removal Action [for the Post-1962 Leaching Bed], lines 8-9, page 5-7

Permittee Statement: "Phase I sample locations that were excavated during Phase II have been identified in Tables 5-3 through 5-8 by shading."

NMED Comment: Table 5-3 lists the results of waste profile samples. Table 5-4 lists the results of confirmation sampling conducted in the northwest excavation in the post-1962 leaching bed where Phase II excavation was not implemented. Therefore, Tables 5-3 and 5-4 appear to be irrelevant to Phase II removal action. Correct the statement in the revised Report.

22. Section 5.3.1.2.1, [Phase II] Confirmation Sampling [for the Post-1962 Leaching Bed], lines 12-14, page 5-7

Permittee Statement: "The only exceedance found during Phase II was an RDX concentration (0.629 mg/kg) in excess of the SL-SSL at 25-30 ft bgs (2101B-ES76). This exceedance did not prompt further excavation due to the depth of the detection."

NMED Comment: The Executive Summary, lines 2-3, page ES-2, states that a maximum excavation depth of 35 ft bgs was established. Since the soil was only removed to a depth of 30 feet bgs, the Permittee could have further excavated to remove the exceedance (e.g., up to 35 feet bgs). Provide an explanation for why the soil removal described in the work plan and approved by NMED was not conducted in the revised Report. Major deviations from the NMED-approved work plan must be discussed in the deviations section.

23. Section 5.3.1.2.1, [Phase II] Confirmation Sampling [for the Post-1962 Leaching Bed], lines 15-17, page 5-7

Permittee Statement: "The Phase II removal areas and confirmation sample results from the southeastern excavation are shown on Figure 5-6."

NMED Comment: Figure 5-6, *Phase 2 Confirmation Samples Post-1962 (North) Leaching Bed*, depicts sampling locations at depths from the ground surface (e.g., ES57-0002) to 30 feet bgs (e.g., ES76-2530). Figure 5-4, *Phase 2 Confirmation Samples (10-35 ft bgs) Post-1962 (North) Leaching Bed* presents overlapping sampling locations with different designations. For example, sample location ES47-1520 in Figure 5-4 almost overlaps with sample location ES76-2530 in Figure 5-6. Since both Figures 5-4 and 5-6 present Phase II confirmation sampling locations, it is not clear why these sampling locations are designated differently. Explain the difference between Figures 5-4 and 5-6 in the revised Report.

Additionally, Figure 5-4 depicts several sampling locations with SL-SSL exceedances (e.g., ES29-1520). It is not clear from Figure 5-4 which sampling locations were further excavated to remove the soils containing exceedances. The Permittee must provide figures that clearly demonstrate the sequence of soil removal and present the excavated areas where and when each phase was implemented. Include the appropriate figures in the revised Report.

24. Section 5.3.1.2.3, [Phase II] Residual Risk [in the Post-1962 Leaching Bed], lines 35-36, page 5-7

Permittee Statement: "As presented in Table 5-12, residual risk results indicate that the remaining soil meets human health and ecological performance standards for applicable receptors."

NMED Comment: Although the remaining soil meets human health and ecological risk levels in the post-1962 (North) leaching bed, residual risk for contaminants migrating from soil to groundwater remains. Comment 7 in NMED's *Approval with Modifications*, dated October 31, 2017 states, "[e]xplosives were previously detected at a depth of 45 ft bgs in the TNT Leaching Beds. Residual soil contamination will likely remain below the total depth of the excavation (35 ft. bgs), and the Permittee will need to address the effect on groundwater."

The Permittee's November 27, 2017 response letter states, "[t]he Army will evaluate contingency measures to address the potential of migration of residual contaminants to groundwater left in the soil upon completion of the excavation. This evaluation will be based upon confirmation sample data prior to backfilling. Use of chemical reductants, biological amendments, liners, or other contingency measures will be evaluated as appropriate. The Army will coordinate the activities with the NMED. The Army will seek the NMED's approval should a contingency measure be selected."

The Permittee did not discuss any evaluation or implementation of the contingency measures in the Report. Include the discussion regarding the evaluation or implementation of the contingency measures or explain why such measures were not evaluated or implemented in the revised Report.

25. Section 5.3.2.1.1, [Phase I] Confirmation Sampling [for the Pre-1962 Leaching Bed], lines 22-23, page 5-8

Permittee Statement: "Barium in two samples at concentrations of 485 and 539 mg/kg in excess of the ESLs for plants (background is 482 mg/kg)."

NMED Comment: Although these exceedances can be cross-referenced from Table 5-13, *Pre-1962 (South) Leaching Beds Phase I Confirmation Sample Results (Detections Only) 0-10 ft bgs,* the sample locations where these exceedances were detected must also be identified in the text of the Report. Revise all applicable sections of the Report accordingly.

26. Section 5.3.2.1.1, [Phase I] Confirmation Sampling [for the Pre-1962 Leaching Bed], lines 37-38, page 5-8

Permittee Statement: "Phase I samples collected from the pre-1962 leaching bed from 10-35 ft bgs exhibited the following exceedances of NMED SL-SSLs (Table 5-14 and Figure 5-8)"

NMED Comment: Residual contamination associated with explosive compounds and nitrate remains at depths from ten to 35 feet bgs in the pre-1962 leaching bed. Provide figures that depict the locations where soils were further excavated in the revised Report (see Comment 23). If contingency measures were implemented, discuss the measures in the revised Report (see Comment 24).

27. Section 5.3.2.1.2, [Phase I] Risk Assessment [for the Pre-1962 Leaching Bed], lines 22-24, page 5-9

Permittee Statement: "Samples collected from the former Building 504 excavation were identified as having human health cancer and non-cancer risks and ecological risks greater than performance standards."

NMED Comment: The sample locations identified with risks greater than performance standards were further excavated and the risks were eliminated during Phase II and III soil removal actions. This section must clearly indicate that the risks were eliminated by further excavation. Revise the Report for clarity.

28. Section 5.3.2.2, Phase II Removal Action [for the Pre-1962 Leaching Bed], lines 37-39, page 5-9

Permittee Statement: "The Phase II removal area is presented on Figure 5-10; Phase I sample locations that were removed in Phase II are identified in Tables 5-13 through 5-15 by shading."

NMED Comment: The tables identify the sample locations where soils were further removed by shading. However, Table 5-13 contains 55 pages of sampling data and it is difficult to cross-reference each sample location where over-excavation was conducted because the corresponding figures do not indicate the locations where over-excavation was implemented. Provide figures that present the locations where additional soils were removed (see Comments 23 and 26).

29. Section 5.3.2.2.1 1, [Phase II] Confirmation Sampling [for the Pre-1962 Leaching Bed], lines 3-5, page 5-10

Permittee Statement: "The analytical results for 0-10 ft bgs are presented in Table 5-16 and Figure 5-4; exceedances of NMED human health and ecological screening levels were identified for the following analytes…"

NMED Comment: Table 5-16*, Pre-1962 (South) Leaching Bed Phase II Confirmation Sample Results (Detections Only) 0-10 ft bgs*, includes analytical results of 90 samples. Although the Report describes which analytes exceeded the applicable screening levels, sample designations where exceedances were detected must be identified. Identify these samples in the text of the revised Report.

Additionally, the sample locations depicted in Figure 5-10, *Phase 2 Confirmation Samples (0-10 ft bgs) Pre-1962 (South) Leaching Bed,* do not identify the exceedances. The presence of exceedances prompts Phase III soil removal. Since Phase III soil removal was conducted at the area, soil SL-SSL exceedances may have been present during Phase II confirmation sampling. Resolve the discrepancy and provide a revised figure in the revised Report, as appropriate.

30. Section 5.3.2.2.1 1, [Phase II] Confirmation Sampling [for the Pre-1962 Leaching Bed], lines 12-16, page 5-10

Permittee Statement: "Results for Phase II samples collected from 10-35 ft bgs in the pre-1962 (south) leaching bed are presented on Table 5-17 and Figure 5-11. RDX was detected (and exceeded the SL-SSL) in 96 of 112 sample locations with a maximum concentration of 24.5 mg/kg. Nitrate was detected at concentrations greater than the SL-SSL (425.45 mg/kg) in two locations with concentrations of 489 and 897 mg/kg."

NMED Comment: Figure 5-11, *Phase 2 Confirmation Samples (10-35 ft bgs) Pre-1962 (South) Leaching Bed,* do not identify any exceedances. Resolve the discrepancy in the revised Report. Additionally, these exceedances were detected from the soils at depths shallower than 35 feet bgs according to Table 5-17, *Pre-1962 (South) Leaching Bed Phase II Confirmation Sample Results (Detections Only) 10-35 ft bgs*. Explain whether the soils were removed to address the exceedances in the revised Report. If the soils were not removed, provide the justification for not following the NMED-approved work plan in the revised Report.

31. Section 5.3.2.2.2, [Phase II] Risk Assessment [for the Pre-1962 Leaching Bed], lines 18-19, page 5-10

Permittee Statement: "The cumulative risk assessment results for the Phase II samples collected from the pre-1962 (south) leaching bed in soil from 0 to 10 ft bgs are presented in Table 5-18 and Figure 5-12."

NMED Comment: According to Figure 5-12, exceedances of the cleanup standard remain in five sample locations. Explain whether additional soils were removed to address the exceedance in the revised Report.

32. Section 5.3.2.3.1 1, [Phase III] Confirmation Sampling [for the Pre-1962 Leaching Bed], lines 7-9, page 5-11

Permittee Statement: "Confirmation sample results for locations greater than 10 ft bgs are presented in Table 5-20 and Figure 5-14. RDX was detected in 19 of the 20 samples at concentrations ranging from 1.23 to 93.3 mg/kg. Nitrate was detected in one sample at a concentration (580 mg/kg) greater than the SL-SSL (425.45 mg/kg)."

NMED Comment: All exceedances were detected from the soils at depths shallower than 35 feet bgs according to Figure 5-14, *Phase 3 Confirmation Samples (10-35 ft bgs)* Pre-1962 (South) Leaching Bed. Explain whether additional soil was removed to address the exceedances in the revised Report. If further excavation was not conducted, provide the justification in the revised Report.

33. Section 5.5, Confirmation Sample Date Validation, lines 10-11 and 14-15, page 5-12

Permittee Statements: "Laboratory analyses were performed by GCAL and reported in Stage 2a staged electronic data deliverables (SEDDs) and Stage 4 laboratory reports."
and,
"Stage 2 laboratory reports are contained in Appendix F."

NMED Comment: Explain the purpose of including both Level II and IV laboratory reports in the Report. NMED previously provided multiple comments instructing the Permittee to include Level II rather than Level IV analytical reports (e.g., Comment 10 in NMED's October 29, 2018 *Disapproval for Parcel 7 RFI Report*). Unless there is a basis for including Level IV analytical reports, remove all Level IV analytical reports from the revised Report.

Laboratory analytical data packages shall be prepared in accordance with EPA-established Level III or IV analytical support protocols. However, the Permittee need only present summary tables of these data and Level II QC results to the NMED in reports or other documents. Raw analytical data, including calibration curves, instrument calibration data, data calculation work sheets, and other laboratory supporting data for samples from this project, shall be compiled and kept on file at the Facility for reference. The Permittee must make all data available to the NMED upon request. Therefore, for purposes of reporting Level II QC results are necessary. Level III and IV data simply must be maintained by the Permittee and be available upon request.

In addition, the analytical reports included in Appendix F appear to be Level IV rather than Level II. Verify the accuracy of the statement and revise the Report, as necessary.

34. Section 5.6, Backfill, Compaction, and Final Grading, lines 13-15, page 5-13

Permittee Statement: "After completion of borrow material removal, disturbed areas were graded to match adjacent topography, promote drainage, minimize erosion, and prevent ponding of water."

NMED Comment: If photographs were taken to show final conditions, include them in the revised Report.

35. Section 5.8, Closure of Soil Staging Areas, lines 5-6, page 5-14

Permittee Statement: "SVOCs were detected in the final [ISM] samples collected from Area 1 at concentrations less than 0.1 mg/kg, less than SSLs and ESLs and consistent with detections in baseline samples."

NMED Comment: As stated in previous NMED comments, ISM is not appropriate for SVOC analysis due to the homogenization process in the method. Remove all SVOC results collected from incremental samples and pertinent discussions from the revised Report. In addition, the Permittee must collect discrete samples from the soil staging areas for SVOC analysis. This sampling must be coordinated with NMED to ensure appropriate and representative coverage.

36. Section 6.0, Summary and Conclusion, lines 33-36, page 6-1

Permittee Statement: "The pre-1962 (south) leaching bed main excavation and small excavation in the vicinity of former Building 504 required three rounds of excavation and confirmation sample collection to meet project objectives."

NMED Comment: Table 5-22, *Pre-1969 (South) Leaching Bed Residual Risk Screening 0-10 ft bgs*, includes the results of the risk assessments for Buildings 503 and 504 and the Main area. The Main area appears to correlate to support the risk assessment in Appendix D as the 2101A Main area. Revise the Report to utilize consistent nomenclature throughout its entirety.

In addition, Appendix D, *Risk Assessment Results,* includes the results of risk assessments for two other areas; 2101B NW and 2101B SE. It is not clear why these areas are not included in Table 5-22 or a similar table summarizing the post- (north) leaching beds data. The overall risk discussions in the Report are difficult to follow and must be revised to clearly summarize the site risks for all areas. Revise the Report accordingly.

37. Section 6.0, Summary and Conclusion, lines 3-6, page 6-2

Permittee Statement: "A qualitative analysis of confirmation sample data was performed to identify areas where multiple samples exhibited elevated explosives concentrations, prioritizing RDX based on its low SL-SSL (0.06 mg/kg). The excavation was expanded horizontally and vertically to remove as much source material as possible."

NMED Comment: Although a maximum depth of 35 feet bgs was proposed for excavation, the maximum depth was not reached in most locations. As a result, residual contaminants were left in place above depths of 35 feet bgs. The Permittee should have removed more soils to minimize contamination above 35 feet bgs or implemented contingency measures stated in Comment 7 in NMED's *Approval with Modifications,* dated October 31, 2017. Provide an explanation in the revised Report for not adhering to the NMED-approved work plan.

38. Appendix D, Risk Assessment Results, Building 503, pages D-5 and D-6

NMED Comment: The table indicates that only four data points are available to demonstrate risk for the completed excavation at Building 503. However, Figures 5-9 and 6-2, which depict the area of excavation along with the confirmation sample locations, indicate five samples were collected post excavation (ES004-005 through ES008-005).

Further, Figure 5-2 indicates that 14 samples were collected for determination of nature and extent. While some of the samples on Figure 5-2 likely are excluded because they represented soil that was subsequently removed, it does not appear that all characterization samples were collected within the removal area. It is not clear why only four of the five samples from the excavation area were included in the assessment, if the removals were adequate. It is also not clear why all samples representing the final conditions for Building 503 were not included in the risk assessment. In order to ascertain if Building 503 meets residential risk levels, all samples representing final soil conditions for the Building 503 exposure unit must be included in the risk assessment. Revise the Report to address these issues.

39. Appendix D, Risk Assessment Results, Building 504, pages D-7 and D-8

NMED Comment: The summary tables include 95% upper confidence levels of the mean (95UCLs). Revise the Report to include the ProUCL output files for those analytes where the 95UCL was used in the risk assessment. Note that the UCLs were not needed in the actual risk assessment; remove the calculated UCLs from the summary tables on Pages D-7 and D-8 (see also Comment 42 on incorrect usage of the UCL).

40. Appendix D, Risk Assessment Results, Building 504, page D-8

NMED Comment: The maximum concentration for RDX is highlighted as being above the SL-SSL. In the data range for Building 504, the minimum detected RDX concentration also exceeds the SL-SSL for RDX. The Report does not provide any lines of evidence to support an assertion that RDX has being adequately remediated and that residual levels of contamination do not pose a threat to groundwater. Revise the Report to address residual levels of RDX in soils that are above the SL-SSL and provide lines of evidence to indicate RDX does not pose a continuing threat to groundwater in the revised Report.

41. Appendix D, Risk Assessment Results, Area 2101B NW, pages D-9 and D-10

NMED Comment: It is unclear why SL-SSLs and results of comparisons are not provided for all COPCs including cobalt and several explosives. Revise the table for completeness.

42. Appendix D, Risk Assessment Results, Building 504, pages D-21 and D-22

NMED Comment: The risk table includes the 95UCL as the initial exposure point concentration. However, the 95UCL was used for comparison against the background reference value, which is based on the upper tolerance limit (UTL). Comparison of UCLs to UTLs is incorrect and not consistent with the NMED Soil Screening Guidance. It is important

to understand the nature of the statistical parameters being compared. For example, as the number of samples increase, the 95% UCL will converge on the mean of the population but the 95% UTL converges to the 95th percentile. The 95% UCL and the UTL are therefore not comparable. As noted in the NMED Soil Screening Guidance, the maximum detected site concentration is compared to the background UTL; if the maximum concentration is greater than the background reference value, then a two-sample hypothesis test must be run. It is noted that for all metals, the only constituent where the maximum detection was greater than the background concentration was lead. As such, lead should have initially been retained as a COPC. However, the maximum detected concentration (13.1 milligrams per kilogram, mg/kg) is well below the screening level (400 mg/kg). While correcting the table does not result in a change to the overall risk, the table must be revised to exclude the use of the UCL as the initial exposure point concentration for comparison to background.

Kimberly Rudawsky

From: Christy Esler
Sent: Monday, August 3, 2020 4:58 PM
To: Chasitty Badonie; Kimberly Rudawsky; Angela Makin
Subject: Fwd: Letter to Mr. Cushman
Attachments: 2020-08-03 D FWDA 19-006 FINAL.pdf; ATT00001.htm

Thank you,
Christy Esler | Program Manager
Sundance Consulting
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> **Date:** August 3, 2020 at 4:36:50 PM EDT
> **To:** "george.h.cushman.civ@mail.mil" <george.h.cushman.civ@mail.mil>
> **Cc:** "Pierard, Kevin, NMENV" <Kevin.Pierard@state.nm.us>, "Cobrain, Dave, NMENV" <dave.cobrain@state.nm.us>, "Wear, Benjamin, NMENV" <Benjamin.Wear@state.nm.us>, "Suzuki, Michiya, NMENV" <Michiya.Suzuki@state.nm.us>, "hendrickson.charles@epa.gov" <hendrickson.charles@epa.gov>, "lasar98@yahoo.com" <lasar98@yahoo.com>, "srbp@navajoadvantage.com" <srbp@navajoadvantage.com>, "clayton.seoutewa@bia.gov" <clayton.seoutewa@bia.gov>, "george.padilla@bia.gov" <george.padilla@bia.gov>, "judith.wilson@bia.gov" <judith.wilson@bia.gov>, "bj.howerton@bia.gov" <bj.howerton@bia.gov>, "robin.white@bia.gov" <robin.white@bia.gov>, Christy Esler <cesler@sundance-inc.net>, "Steve.W.Smith@usace.army.mil" <Steve.W.Smith@usace.army.mil>
> **Subject: Letter to Mr. Cushman**
>
> Good Afternoon,
> Please see attachment.
>
> Cynthia Martinez
> New Mexico Environment Department
> Hazardous Waste Bureau
> 2905 Rodeo Park Drive East, Bldg.1
> Santa Fe, New Mexico 87505-6313