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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

FEB 2 1 2020

Colonel Robert A. Masaitis
Commander, 27th Special Operations Wing
100 Air Commando Way, Suite 100
Cannon Air Force Base
New Mexico 88103-5214

RE: DISAPPROVAL
SWMU 109 WORK PLAN RCRA FACILITY INVESTIGATION
CANNON AIR FORCE BASE, NEW MEXICO
EPA ID #NM7572124454
HWB-CAFB-19-002

Dear Colonel Masaitis:

The New Mexico Environment Department (NMED) is in receipt of the Cannon Air Force Base (Permittee) *SWMU [Solid Waste Management Unit] 109 Work Plan RCRA Facility Investigation* (Work Plan) dated March 14, 2019. NMED has reviewed the Work Plan and hereby issues this Disapproval with the following comments. NMED's comments are provided as Attachment 1 of this letter.

The Permittee must submit a revised Work Plan that addresses all comments contained in this Disapproval. In addition, the Permittee must include a response letter that cross-references where NMED's numbered comments were addressed. The Permittee must also submit an electronic redline-strikeout version of the Work Plan showing where all changes have been made to the Work Plan and an electronic copy of the revised Work Plan. The revised Work Plan must be submitted no later than **June 5, 2020.**

If you have any questions regarding this letter, please contact Gabriel Acevedo at (505) 476-6043.

Sincerely,

Kevin Pierard
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
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File: CAFB 2020 and Reading

Attachment 1

NMED Comments

COMMENTS

1. Section 1.2, Purpose and Scope, Page 1-1

Permittee Statement: "Per and polyfluoroalkyl substances (PFAS) were investigated at SWMU 109 as part of a Site Inspection completed for Cannon AFB in 2018. This investigation recommended a Remedial Investigation to be completed in accordance with the Comprehensive Environmental Response Compensation and Liability Act [CERCLA] at SWMU 109. Preliminary screening levels are included for select PFOS [sic] analytes in the New Mexico Environment Department (NMED) Risk Assessment Guidance for Site Investigations and Remediation (NMED 2019). The guidance states that the evaluation of PFAS risks should not be used to guide future decisions about a site pending future research on PFAS toxicity. Due to the fact that PFAS are emerging contaminants, remedial investigations for PFAS at Cannon AFB [Air Force Base] (including SWMU 109) will be completed independently of this RFI [RCRA Facility Investigation] by AFCEC [Air Force Civil Engineering Center]."

NMED Comment: The Permittee's August 2018 *Site Inspection of Aqueous Film Forming Foam (AFFF Release Areas) Environmental Programs Worldwide Cannon Air Force Base* (Site Inspection) conclusions indicated that potentially complete soil exposure pathways exist at SWMU 109 due to the detection of perfluorooctanesulfonic acid (PFOS) and perfluoroctanoic acid (PFOA) in site soils potentially affecting site workers, construction workers, and site visitors. The identified exposure routes for human receptors for soils included inhalation, ingestion, and dermal contact. Sampling within the human health exposure interval (0 to 10 feet below ground surface (ft bgs)) was not completed during the Site Inspection in accordance with NMED's *Risk Assessment Guidance for Site Investigations and Remediation* (RA Guidance). Only surface soil samples and samples at greater than 10 ft bgs were collected during the Site Inspection. The Site Inspection also identified SWMU 109 as a PFAS groundwater release area that warrants further pathway analysis. The Permittee's follow up March 2019 *Site Inspection Report Addendum 01* (Site Inspection Addendum) only focused on the investigation of groundwater. In conclusion, the Site Inspection Addendum only recommended further investigation of the extent of PFAS contamination exceeding screening levels protective of human health in groundwater. However, the Permittee's focus solely on groundwater will result in significant data gaps with respect to assessing risk for identified site receptors and understanding the nature and extent of PFAS contamination at source areas.

The RA Guidance does not state that investigation to define nature and extent of PFAS contamination at a site should not be conducted. The RA Guidance currently recommends a qualitative evaluation of site risk due to the evolving understanding of PFAS toxicity.

Preliminary soil screening levels (SSLs) for human health receptors and tap water for PFOA and PFOS are provided in the RA Guidance for use during required risk assessment. United States Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) are also available for evaluation of PFAS. Evaluation of site contamination with NMED SSLs and/or EPA RSLs is required to determine whether levels of site contamination warrant further investigation or site cleanup, or whether a corrective action is complete at a site.

SWMU 109 is a Solid Waste Management Unit listed on the Cannon AFB RCRA Permit. PFAS meet the definition of Hazardous Waste as specified in 42 U.S.C. §6903 and 74-4-3 NMSA (Hazardous Waste Act). The Permittee's intent to perform PFAS investigation under the CERCLA program will not exempt the Permittee from the corrective action requirements and risk assessment required for corrective action status determination for SWMUs and AOCs for PFAS. Therefore, NMED requires that the Work Plan be revised to include the collection of additional soil and groundwater sampling data for receptor risk and nature and extent evaluation of PFAS contamination at the site. Required risk evaluation for PFAS must be addressed and discussed in the RFI report. Collection of additional soil concentration data and groundwater data for PFAS site characterization during the proposed RFI may minimize the need for additional investigation in the future at SWMU 109. In the absence of complete site characterization and risk assessment, NMED will be unable to approve a corrective action complete determination for SWMU 109.

2. Section 3.6.5, Comparison of Site Metals Concentrations to Background Levels, Page 3-7

Permittee Statement: "Step 2: The two-sample hypothesis test will be used to compare the mean/median concentrations of the site data to the mean/median concentrations of background data to determine if site concentrations are elevated compared with background. The two tests are the Gehan and Tarone-Ware which are standard statistical tests included in the USEPA ProUCL software."

NMED Comment: The Gehan and the Tarone-Ware tests are only appropriate for censored data sets (i.e., data sets with non-detects). If neither the site data nor the background data set have non-detects, either the t-test or Wilcoxon-Mann-Whitney test may be more appropriate for the statistical evaluation of the soil background data set. Provide the rationale for use of the proposed statistical tests with respect to known and anticipated data distributions or revise the Work Plan to cite the appropriate background evaluation statistical tests in the section discussion.

3. Section 3.6.9, Vapor Intrusion, Page 3-9

Permittee Statement: "No current building or receptors are located at SWMU 109. Therefore, the evaluation of vapor intrusion will be limited to a qualitative discussion of potential vapor intrusion."

NMED Comment: The lack of an existing structure at SWMU 109 is not a sufficient line of evidence to only warrant a qualitative discussion of the vapor intrusion (VI) pathway. The Permittee must also consider future use of the site (e.g., residential exposure scenario). RA Guidance Section 2.5.2.2, Potentially Complete Pathway; Qualitative Discussion, provides the criteria for determining if only a qualitative evaluation of VI pathway is warranted. As clarification, required lines of evidence supporting a qualitative evaluation approach for the VI pathway specified in the RA Guidance are as follows:

- Detections of volatile and toxic compounds are minimally detected (e.g., once or twice) in site media (soil, soil-gas, and/or groundwater);
- Concentrations are below screening levels (i.e., vapor intrusion screening levels (VISLs) for soil-gas and/or groundwater listed in RA Guidance Table A-4, NMED Vapor Intrusion Screening Levels);
- There is no suspected source(s) for volatile and toxic compounds; and
- Concentrations are decreasing with depth (for soil).

In addition, if volatile and toxic compounds were present at a site but the source(s) and associated contaminated soil have been removed, and the following criteria have been met, only a qualitative assessment of the vapor intrusion pathway is required:

- Confirmation sampling indicates removal of the source with minimal volatile and toxic compounds detected in soil/soil-gas or groundwater data,
- Concentrations are below screening levels (i.e., VISLs for soil-gas and/or groundwater listed in RA Guidance Table A-4),
- No evidence to suggest dense/sinking vapors, and
- Concentrations decrease with depth.

If the established RA Guidance criteria supporting qualitative evaluation of the VI pathway are not met, a quantitative evaluation of the vapor intrusion pathway will be required as outlined in RA Guidance Section 2.5.2.3, Complete Pathway; Quantitative Assessment. Corrective action status determination for all SWMUs and AOCs require appropriate evaluation of the VI pathway. Revise the Work Plan to include lines of evidence supporting qualitative evaluation of the VI pathway. If lines of evidence cannot be provided in support

of a qualitative evaluation, a quantitative evaluation of the VI pathway must be performed. Revise the Work Plan accordingly.

4. **Section 3.7, Ecological Risk Assessment, Page 3-10**

NMED Comment: The identified Section 3.7 issues must be addressed as follows:

a. The Permittee has stated "[f]or ecological receptors, the relevant soil interval is 0 to 10 feet bgs for burrowing receptors and plants, while the 0 to 5 feet bgs interval is applicable to non-burrowing receptors, as stated in NMED (2017) guidance. For the preliminary screening the 0 to 10 feet soil interval will be used." The current RA Guidance Volume II, Soil Screening Guidance for Ecological Risk Assessments, Table 1, Soil Exposure Intervals, defines the soil exposure intervals for non-burrowing and shallow rooted plants as 0 to 1 ft bgs. Use of a 0 to 10 ft bgs soil exposure interval for evaluation of risk for non-borrowing ecological receptors may or may not be a conservative approach for evaluating risk for the pathway, depending on the distribution of contamination. Therefore, the Work Plan must be revised to propose evaluation of ecological site receptors within their respective exposure intervals as defined in the RA Guidance.

b. The Permittee stated "[i]f site concentrations exceed the ecological screening levels, the chemical will be identified as of potential concern." In the event the Tier 1 risk screen evaluation results in adverse risk, a Tier 2 risk assessment must be conducted in accordance with RA Guidance Volume II, Section 4.0, Tier 2 SLERA [Screening Level Ecological Risk Assessment]. The results of the Tier 2 SLERA along with additional lines of evidence and uncertainties must be provided and discussed in the investigation report to determine if additional investigations and refinement of the risk and/or corrective actions are warranted. Revise the Work Plan to propose a complete ecological risk evaluation in accordance with the RA Guidance. The complete risk evaluation approach must be discussed in Section 3.7 of the revised Work Plan.

5. **Figure 3-1, Site Conceptual Exposure Model Fire Training Area 4 (SWMU 109)**

NMED Comment: The identified issues must be addressed as follows:

a. The subsurface pathway is listed as insignificant/incomplete for ecological receptors on the site conceptual exposure model. However, the preliminary screening assessment approach outlined in Section 3.7 proposes to use subsurface soil (0 to 10 ft bgs) concentration data for the initial risk screen evaluation. If subsurface data will be considered during ecological risk screen evaluation, then the dermal contact pathway for all ecological receptors must be identified as a potential pathway on the

site conceptual exposure model. Revise the conceptual exposure model and other affected sections of the Work Plan accordingly.

b. The soil vapor pathway is listed as insignificant/incomplete. However, as noted in Comment 3 of this attachment, the vapor intrusion pathway may or may not be complete and requires further evaluation and, potentially, characterization in accordance with the RA Guidance. Therefore, the site conceptual exposure model must be revised to reflect that the vapor intrusion pathway is potentially complete for future site receptors. Revise the Work Plan accordingly.

6. **Table 4-3, 1997 RCRA Facility Investigation Analytical Results**

NMED Comment: A residential SSL was not listed for naphthalene on the table. Human health SSLs for naphthalene are included in updated June 2019 RA Guidance, Table A-1: NMED Soil Screening Levels. The most conservative screening level for naphthalene is the residential cancer SSL (4.97E+01 milligrams per kilogram (mg/kg)). Revise the Work Plan tables to include the updated NMED SSL for naphthalene and ensure that naphthalene is evaluated with the current updated SSL during risk evaluation. Revise the Work Plan accordingly.

7. **Table 4-13, Proposed RFI Sampling Locations**

NMED Comment: The comments must be addressed as follows:

a. Sample analysis for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals for surface soils (0 to 1 feet bgs) at boring locations SB01 through SB10 were proposed; however, samples for total petroleum hydrocarbons (TPH) gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) were not proposed for surface soils. Surface soils were not previously sampled at the boring locations. Revise the Work Plan to also include the additional TPH analysis or provide the rationale for not proposing TPH analysis at the boring locations.

b. A TPH DRO concentration of 8,700 mg/kg was reported at 2 ft bgs at sample location CAFB-SB04/SB04A; however, the sampling plan did not include additional collection of samples for analysis for VOCs, SVOCs, and metals for the sample interval. Revise the Work Plan to include additional sampling at the 1 to 2 ft bgs sample interval and the following 4 to 5 ft bgs sample interval for VOCs, SVOCs, and metals analyses.

c. Asphalt materials were noted in surface soils on boring logs for the November 2014 through May 2016 sampling events. In some cases, exceedances of TPH residential SSLs were reported at locations where asphalt materials were observed in surface

soils. If asphalt materials are observed in surface soils at proposed sample locations, the samples may be collected at an interval below the encountered asphalt materials in soils representative of site conditions. No revisions to the sampling plan are required with respect to this comment.

8. **Section 5.3, Subsurface Drilling and Soil Sampling, Pages 5-4 through 5-6**

NMED Comment: Revise the Work Plan to include borehole abandonment procedures to be used following subsurface investigation. The Permittee must ensure the proposed method for borehole abandonment ensures that the borehole cannot act as a conduit for vertical migration of contaminants in the subsurface. Bentonite, cement grout, cement, or a combination of materials are acceptable for use for borehole abandonment.

9. **Section 5.6, Quality Assurance/Quality Control (QA/QC) Samples, Page 5-8**

NMED Comment: In addition to the proposed duplicate samples and matrix spike and matrix spike duplicate samples, the following additional quality assurance/quality control (QA/QC) samples must also be collected in accordance with the December 2018 Cannon Air Force Base Hazardous Waste Permit (Permit), Part 4, Investigation and Sampling Methods and Procedures, Section 4.2.6, Soil Sample Types:

a. Equipment blanks must be collected at a frequency of 10 percent of the sample population and must be analyzed for all proposed sample analytes. Revise the Work Plan accordingly.

b. Field blanks must be collected at a frequency of 1 per day for each media and must be analyzed for all proposed sample analytes. Revise the Work Plan accordingly.

c. In addition, revise the Work Plan to include the data review and validation to be completed during investigation reporting to meet the project data quality objectives for sample analysis. The requirements for sample analysis data quality objectives and QA/QC protocols are provided in Permit Section 4.5.9, Laboratory Reporting, Documentation, Data Reduction, and Corrective Action. Revise the Work Plan accordingly.

10. **Appendix B, Analytical Laboratory Information Reference Limits and Evaluation Tables and Sample Containers, Preservation, and Hold Times**

NMED Comment: NMED noted inconsistencies in SSLs provided in the Permittee's Appendix B worksheets and those specified by NMED's updated June 2019 RA Guidance. In addition, the Permittee has proposed that soil samples be analyzed for RCRA Eight metals instead of Total Analyte List (TAL) metals as indicated by respective table information. The Permittee

must review the SSLs provided on Appendix B tables and ensure that they correspond to those provided in the current RA Guidance. Also, revise the Work Plan to include soil sample analysis for TAL metals. Revise the Work Plan accordingly.