



DEPARTMENT OF THE AIR FORCE
27TH SPECIAL OPERATIONS CIVIL ENGINEER SQUADRON (AFSOC)
CANNON AIR FORCE BASE NEW MEXICO

ENTERED

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MAR 10 2010

Ms. Patricia Stewart
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East – Building 1
Santa Fe NM 87505-6063



Dear Ms. Stewart

Cannon Air Force Base, NM is forwarding two hardbound and two electronic copies of the Corrective Action Complete Proposals, Cannon Air Force Base, New Mexico, March 2010 for 14 Solid Waste Management Units (SWMUs) per requirement. The 14 SWMUs are: 2, 4, 6, 10, 50, 72, 75, 81, 82, 96, 98, 102, 106, and 125. The electronic CD copies contain both pdf formatted and strike-through versions of the document as NMED requested.

If you have any questions, please contact Mr. Hugh G. Hanson, Asset Management Flight, at 575- 784-6391.

Sincerely


RONALD A. LANCASTER, CG-13

cc:
NMED (Mr. David Cobrain) w/o documents
EPA Region 6 (Ms. Wendy Jacques) w/o documents

**URS RESPONSE TO COMMENTS
CORRECTIVE ACTION COMPLETE PROPOSALS
CANNON AIR FORCE BASE, NEW MEXICO**

Comments by James Bearzi, Chief, Hazardous Waste Bureau, New Mexico Environment Department, 11 February 2010.

The New Mexico Environment Department (NMED) has reviewed Cannon Air Force Base's (Permittee) *Corrective Action Complete Proposals*, dated October 2008 (Proposal). NMED hereby issues this notice of disapproval.

General Comment. The five "NMED Criterion" indicated on page 2 and listed in Section D of the Proposal are not published criteria to be referenced in the Permittee documents. The Permittee must describe a specific rationale for recommending the Corrective Action Complete status for each SWMU, rather than refining to generic criteria intended as guidance.

Response: Agree. This section, and all references to the NMED Criteria, will be removed.

Comment 1. Introduction and Sections C, D, E, F and G, pages 1-6: The format of the Introduction and Sections C, D, E, F and G appear to be copied from the Fact Sheet / Statement of Basis that is part of NMED's *Notice of Public Comment Period and Intent to Approve a Class 3 Permit Modification to RCRA Permit for Cannon Air Force Base* dated December 28, 2005. The Permittee, not NMED, is requesting changes to the Permit. The Permittee must rewrite the introductory sections of the Proposal to indicate that the document is submitted to the NMED from the Permittee.

Response: Agree. The Fact Sheet / Statement of Basis was provided by NMED with the instructions to use it as a template for the Corrective Action Complete Proposals. Since NMED no longer requests the use of the Fact Sheet / Statement of Basis as a template, these materials will be deleted, and the text will be edited to indicate that the document is submitted to NMED from the Permittee.

Comment 2. Reference to Corrective Action Complete Tables, pages 1 and 3: The Permittee must note the correct titles for proposed Permit attachments Table 1, Table 2 and Table 3. The Permittee has reversed the order of Tables 2 and 3 in the Proposal. The reference to incorrect tables was found throughout the document. The Permittee must revise the Proposal accordingly. Correct table titles are listed below.

Table 1. List of Solid Waste Management Units (SWMUs)
and Areas of Concern (AOCs) Requiring Corrective Action

Table 2. List of Solid Waste Management Units (SWMUs)
and Areas of Concern (AOCs) with Corrective Action Complete
with Controls Status

Table 3. List of Solid Waste Management Units (SWMUs)

and Areas of Concern (AOCs) with Corrective Action Complete
without Controls Status

Response: Agree. The text will be addressed as requested.

Comment 3. History / Current and Anticipated Future Land Use - SWMU 2, page 6: History / Current and Anticipated Future Land Use - SWMU 4, page 7: History / Current and Anticipated Future Land Use - SWMU 6, page 8: History / Current and Anticipated Future Land Use - SWMU 10, page 10: The Permittee states that the respective site was listed as "an Appendix II site". The term, Appendix II site, originated from a previous permit that is no longer valid. The Permittee must eliminate the term.

Agree. All references to Appendix I, II, and III will be removed.

Comment 4. Evaluation of Relevant Information - SWMU 4, page 8: The Permittee states that ten soil samples were collected from borings and submitted for analysis. Table 2, which summarizes the results of sample analyses, reports values for only eight samples because two of the ten samples were duplicates. The Permittee must clarify, in the text, that two of the ten samples were duplicates.

Response: Agree. The text will be revised as follows: "~~Ten~~ *Eight* soil samples *and two duplicates* were collected from the borings at depths of 8 to 10 feet bgs and 13 to 15 feet bgs."

Comment 5. Evaluation of Relevant Information - SWMU 6, page 9: The Permittee states that arsenic exceeded the NMED residential Soil Screening Level (SSL), but was considered to be within the range of background values, and not considered to be a chemical of potential concern (COPC). The maximum detected concentration of arsenic in subsurface soils, reported in *Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico, September 1997*, is 3.6 mg/kg and the Upper Tolerance Limit (UTL) for arsenic is 4.3 mg/kg. Therefore, the maximum arsenic concentration detected in subsurface soil samples at SWMU 6 (7.2 mg/kg) is not within the range of background values at the facility. As an initial screen, the maximum detected site concentration should be compared to the background UTL. If the initial screen indicates that the maximum detected concentration is greater than the background UTL, and sufficient data are available, a statistical comparison of site concentrations to background should be conducted. While either parametric or nonparametric tests may be used, the most commonly applied test for comparing site data to background is the nonparametric Wilcoxon Rank Sum (WRS) test. There may be sufficient data available for arsenic concentrations at SWMU 6 for the Permittee to conduct a statistical test to assess whether the site data are significantly different from the background population. The Permittee must a conduct statistical comparison of site concentrations and background values to determine if arsenic is a COPC.

Further, detected concentrations of arsenic, iron, mercury and thallium in subsurface soils at SWMU 6 exceeded NMED's risk-based soil screening level (SSL) for a Dilution Attenuation Factor (DAF) of 20, developed using default parameter values representative of environmental conditions in New Mexico. Site-specific SSLs, developed by substituting site-related data for the

default values, may indicate that the generic DAF 20 values are not representative of site conditions. The Permittee may choose to generate site-specific DAF values for arsenic, iron, mercury and thallium that are representative of conditions at SWMU 6.

Response: Comment noted. The October 2007 RFI for CAFB addressed 21 SWMUs, including SWMU 6, and was accepted by NMED in a letter dated 14 May 2008. It was noted that the diesel fuel stored in the former UST at SWMU 6 was unlikely to have contributed to the arsenic detections (5.9 mg/kg maximum) that were encountered during that investigation. The RFI also notes that the samples in which arsenic was detected were collected between 8 and 15 feet bgs, and that “the comparison of the site’s subsurface soil concentrations to screening levels designed for daily exposures (350 days per year for 30 years) to the top 2 feet of soil (0 to 2 feet bgs) is highly conservative and does not represent true exposure and potential for risk from the site.”

The text of the fourth sentence in the second paragraph from the bottom of page 9 will be revised as follows: “Arsenic exceeded the residential SSL (3.9 mg/kg), but was considered to be ~~within the range of~~ only slightly higher than background values, and was not considered to be a ~~COPC~~ related to the former UST.”

Because arsenic, iron, mercury, and thallium exceeded the generic Soil to Groundwater SSLs with a dilution attenuation factor (DAF) of 20, site-specific Soil to Groundwater SSLs were calculated for these four metals. To calculate a site-specific DAF for SWMU 6, NMED Equation 17 (NMED 2006) was used:

$$DAF = 1 + \left(\frac{K \times i \times D}{I \times L} \right)$$

Where:

$$D = \left(0.0112 \times L^2 \right)^{0.5} + D_a \left(1 - \exp \left[\frac{-L \times I}{K \times i \times D_a} \right] \right)$$

Parameter	Definition (units)	Site-Specific Value (basis)
DAF	Dilution/attenuation factor (unitless)	Calculated
K	Aquifer Hydraulic conductivity (m/yr)	34,713 (Radian 1994)
i	Hydraulic gradient (m/m)	0.0032 (Lee Wan 1990)
D	Mixing zone depth (m)	Calculated
I	Infiltration rate (m/yr)	0.011 (Wood and Sanford 1995)
L	Length of source parallel to groundwater flow (m)	6.1 (Figure 1-4)
D _a	Aquifer thickness (m)	36.6 (Lcc Wan 1990)

Inserting the site-specific values used for each parameter, resulted in a calculated, site-specific DAF for SWMU 6 of 1,070.7. As shown in the table below, multiplying this site-specific DAF by the generic migration to groundwater SSLs for a DAF of 1 produces SWMU 6-specific migration to groundwater SSLs for arsenic, iron, mercury, and thallium, which in all cases are greater than the maximum concentrations identified at the site. These site-specific SSLs will be added to Table 3.

Metal	DAF 1	Site-Specific Migration to Groundwater SSL	Maximum Detected Concentration
Arsenic	0.0145 mg/kg	15.5 mg/kg	5.9 mg/kg
Iron	277 mg/kg	296,584 mg/kg	9,430 mg/kg
Mercury	0.105 mg/kg	112.4 mg/kg	0.017 mg/kg
Thallium	0.172 mg/kg	184.2 mg/kg	4.6 mg/kg

Comment 6. Evaluation of Relevant Information - SWMU 50, page 11: The Permittee states that SWMU 50 is a duplicate of SWMU 48A, that investigations have been conducted at SWMU 48A, and therefore, that no further work is required for this SWMU. This statement is incorrect. SWMU 48A is the subject of ongoing investigations. The Permittee must revise the statement.

Response: Agree. The text will be revised to read: "Investigations have been conducted at SWMU 48A, and so no further work is required for this SWMU 50."

Comment 7. SWMU 75, Sanitary Sewer Lift Station Overflow Pit (SD-13), pages 12-13: The overflow pit, described as being 100 feet wide by 600 feet long, is currently beneath impounded surface water that serves as a water hazard at the golf course. The presence of manganese, at concentrations greater than NMED SSLs for the industrial use scenario, was determined by analyses of two soil samples collected near the southern and eastern perimeter of the hazard. Samples of sediment and subsurface soil were not collected from lower elevations of the site where overflow of sewage would have collected when the sewage lift station pumps failed. The two soil samples are inadequate to determine the nature and extent of potential contamination. SWMU 75 has, therefore, not been fully investigated. However, because the impoundment is lined, investigation and corrective action at this site may be deferred until changes in the landscape and/or removal of impounded surface water allow access for investigation beneath the former overflow pit. SWMU 75 must be removed from the Proposal.

Response: Comment noted. Manganese was detected in four samples (550 mg/kg maximum) at SWMU 75 at levels below both Residential (3,590 mg/kg) and Industrial (48,400 mg/kg) Soil SSL Concentrations. Manganese was detected above the Construction Worker Soil SSL (150 mg/kg), but the 2007 RFI concluded that this exposure pathway did not apply to SWMU 75. NMED concurred with this conclusion in a letter dated 14 May 2008.

Comment 8. Evaluation of Relevant Information - SWMU 81, page 14: The Permittee described soil sampling and analyses conducted during a Remedial Investigation conducted in 1992. The number of soil samples described does not agree with the number of samples shown in Table 6. The text describes 10 surface and 13 subsurface samples while Table 6 indicates 25 combined surface and subsurface soil samples. Further, methylene chloride detects shown in Table 6 do not agree with NMED's copy of the referenced report which does not report any methylene chloride detections. The Permittee must resolve the discrepancy in number of soil samples and clearly indicate the source of values shown in Table 6. The Permittee must provide a copy of the document to NMED that describes sampling and results of VOC analyses. The Permittee should be aware that in order to determine whether a site is eligible for Corrective Action Complete with or without Controls status, NMED requires that the Permittee conduct

human health and ecological risk screening to determine if the contaminants potentially pose an unacceptable risk to human health and the environment. Cumulative risk must be evaluated at sites where multiple contaminants are present. After revising Table 6 so that it accurately reflects contaminants at SWMU 81, a Tier I Human Health and Ecological Hazard Index Analysis for COPCs must be conducted.

Response: Agree. The text will be revised to clarify that a total of 10 surface and 12 subsurface soil samples were analyzed for VOCs by the laboratory. Table 7 will be revised to reflect a total of 22 soil samples. Methylene chloride will be removed from the text and Table 6. Table 6 will also be modified to include an ecological risk screening in which maximum VOC concentrations will be compared to USEPA Region 5 RCRA Ecological Screening Levels (USEPA 2003). Tables 6 and 7 will also be modified to include a human health risk screening for cumulative risk. The relevant portions of the 1992 RI (W-C 1992) will be provided to NMED.

Comment 9. Evaluation of Relevant Information - SWMU 82, page 16: The Permittee states that 27 soil borings were drilled to depths of 76 feet below ground surface and that 120 samples from 15 borings were analyzed for various contaminants. Table 9, which summarizes combined surface and subsurface soil sample analyses, indicated that 108 soil samples were analyzed. The Permittee must clearly describe the location of soil samples that were analyzed and resolve the discrepancy in number of soil samples described in the text and those shown in Table 9.

Response: Agree. A total of 125 samples were collected from soil borings in the area of SWMU 82. Fourteen of the 27 borings were located outside of the Landfill 2 trench areas. Seventeen soil samples (one from the surface and 16 from the subsurface) were collected from two of these borings to determine background values in the area of SWMU 82. The text will be revised to clarify that a total of 108 soil samples were collected within the trench areas and used to characterize SWMU 82. All sample locations are identified on Figure 3-3 of the RFI for Landfill 1 and Landfill 2 (WCC 1993).

Comment 10. Evaluation of Relevant Information - SWMU 96, page 18: The maximum concentrations of arsenic and mercury in subsurface soils at SWMU 96 exceeded NMED's risk-based SSL for a DAF of 20, developed using default parameter values generally representative of environmental conditions in New Mexico. A site-specific DAF, developed by substituting site-related data for the default values, may indicate that the DAF 20 values are not representative of site conditions. The Permittee may choose to generate site-specific DAF values for arsenic and mercury that are representative of conditions at SWMU 96.

Response: Agree. In accordance with the response to Comment 5, a new site-specific DAF of 1070.7 has been developed for SWMU 96. The revised site-specific migration to groundwater screening levels for arsenic and mercury are 15.5 mg/kg and 112.4 mg/kg, respectively, based on the calculated site-specific DAF. The maximum detected concentrations of arsenic (5.6 mg/kg) and mercury (0.24 mg/kg) are both below the revised site-specific migration to groundwater screening levels. This site-specific screening value discussion will be added to the SWMU 96 discussion on pages 17-18.

Comment 11. SWMU 102, Wastewater Treatment Effluent Discharge, pages 21-22: The maximum concentrations of arsenic and thallium in subsurface soils at SWMU 102 exceeded NMED's risk-based SSLs for a DAF of 20, developed using default parameter values generally representative of environmental conditions in New Mexico. A site-specific DAF, developed by substituting site-related data for the default values, may indicate that the DAF 20 values are not representative of site conditions. The Permittee may choose to generate site specific DAF values for arsenic and thallium that are representative of conditions at SWMU 102.

The Permittee states that arsenic and thallium concentrations were within the range of CAFB background levels. The maximum detected concentration of arsenic in subsurface soils, reported in *Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico, September 1997*, is 3.6 mg/kg and thallium was not detected in subsurface soils at the facility. Therefore, the arsenic and thallium concentrations detected in subsurface soil samples at SWMU 102 are not within the range of background values. See Comment 5 for the appropriate approach to comparing maximum detected concentrations to background UTLs and conducting statistical analyses to assess whether the site data are significantly different from the background population. The Permittee must conduct statistical comparisons of site concentrations and background values to determine if arsenic and thallium are COPCs.

The Permittee states that ecological screening was not completed because the site is located in an industrial area. NMED considers the site of SWMU 102 to be remote to industrial activities. NMED conducted a preliminary Tier I Ecological Hazard Index Analysis and determined that lindane, arsenic, mercury and thallium are constituents of potential ecological concern. The Permittee must conduct Tier I Human Health and Ecological Hazard Index Analyses for contaminants at SWMU 102.

Response: Agree. In accordance with the response to Comment 5, a new site-specific DAF of 1070.7 has been developed for SWMU 102. The revised site-specific migration to groundwater screening levels for arsenic and thallium are 15.5 mg/kg and 184.2 mg/kg, respectively, based on the calculated site-specific DAF. The maximum detected concentrations of arsenic (5.8 mg/kg) and thallium (5.2 mg/kg) are both below the revised site-specific migration to groundwater screening levels. This site-specific screening value discussion will be added to the SWMU 102 discussion on pages 21-22.

Table 14 does not require modification to include an ecological risk assessment because all samples were collected from subsurface depths between 5 to 17 feet, well out of range of typical exposure scenarios (i.e. <20 cm) for ecological receptors. The language used on page 21 will be edited as follows:

Ecological Screening ~~was~~ is not typically completed for subsurface soils collected from depths greater than 20 centimeters (0.6 feet) bgs. ~~because the site is located in an industrial area.~~

Table 14 will also be modified to include a human health risk screening for cumulative risk.

Comment 12. SWMU 106, Fire Department Training Area No. 2, pages 22-24: The maximum detected concentration of chromium, residential SSL, industrial SSL, construction worker SSL and soil to groundwater SSL values shown in Table 16 are incorrect. Further, residential SSL, industrial SSL and soil to groundwater SSL values for benzene, toluene, ethylbenzene and xylene have been revised in *Technical Background Document for Development of Soil Screening Levels, Revision 5.0* (August 2009). The Permittee must resolve the discrepancy in chromium concentrations reported in *RCRA Facility Investigation for 21 SWMUS, Cannon Air Force Base, New Mexico, October 2007* and reported in the Proposal and use appropriate SSL values.

Response: Agree. Tables 15 and 16 will be revised to include the correct maximum detected concentration for chromium (19.2 mg/kg). However, these CAC Proposals were submitted in October 2008 when the 2006 NMED SSLs were current, so the SSLs presented for benzene, toluene, ethylbenzene and xylene will not be revised.

Comment 13. Basis of Determination - SWMU 125, page 25: The Permittee states that SWMU 125 has been determined to be appropriate for CAC without Controls based on NMED Criterion 5. However, if evidence indicates that no release to the environment has occurred or is likely to occur in the future from the SWMU, then the Permittee must indicate as such as the basis for determining that the site is appropriate for CAC without Controls.

Response: Agree. The following will be added to the end of the last paragraph under Basis of Determination: "*All evidence indicates that no release to the environment has occurred or is likely to occur in the future from SWMU 125.*"

Comment 14. Tables 1-16, Attached Tables: The column on the far right of each table lists whether or not a chemical is a COPC and the basis for a yes or no response. The column heading includes references to footnotes 9 and 10. Footnote 9 states, "For this site, a chemical is only considered a contaminant of potential concern if the maximum concentration exceeds background and the industrial or construction worker SSL." Footnote 10 refers to a list of reasons why the Permittee considers the chemical to not be a COPC. The column and the associated footnotes must be deleted as they do not reflect NMED policy in identifying COPCs.

The Permittee is referred to Identification of COPCs (Section 2.5.2) of the *Technical Background Document for Development of Soil Screening Levels, Revision 5.0* (August 2009) and to Data Evaluation (Chapter 5) of the US EPA guidance *Risk Assessment Guidance for Superfund, Volume I Human Health Evaluation Manual, Interim Final* (EPA/540/1-89/002). COPCs are those substances likely to be present in environmental media affected by a release. Any contaminant identified during investigation activities should be evaluated as a cope. A site-specific COPC list for soil may be generated based on maximum detected concentrations and refined through a site-specific risk assessment. If there is site history to indicate a chemical was potentially used or present at a site and the chemical was detected in at least one sample, this chemical must be included as a COPC and evaluated in the screening assessment. Inorganics that are present at levels indicative of natural background may be eliminated as a COPC.

Response: Agree. The last column of Tables 1 through 16 will be deleted along with the associated footnotes, and all analytes with detections will be treated as COPCs.

The Permittee must address all comments and submit a response and revised Proposal by March 15, 2010. All submittals must be in the form of two paper copies and one electronic copy. The Permittee must also provide an electronic red-line strike out version that shows all revisions made to the Proposal.