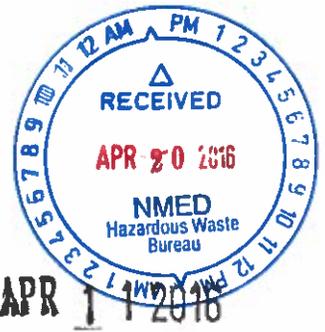




DEPARTMENT OF THE AIR FORCE  
27TH SPECIAL OPERATIONS MISSION SUPPORT GROUP (AFSOC)  
CANNON AIR FORCE BASE NEW MEXICO



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Commander, 27th Special Operations Mission Support Group  
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Mr. John E. Kieling  
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New Mexico Environment Department  
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Dear Mr. Kieling

Cannon Air Force Base is pleased to submit the "*Final Corrective Action Complete Proposal for SWMUs 36A, 111, 112, and 128*". If you have any questions regarding this submittal, please contact Ms. Brandy Chavez, Chief, Environmental Element at (575) 904-6747.

Sincerely

DOUGLAS W. GILPIN, Colonel, USAF

Attachment:

1. Final Corrective Action Complete Proposal for SWMUs 36A, 111, 112 and 128

cc:

NMED, Dave Cobrain  
NMED, Gabriel Acevedo  
NMED, Neelam Dhawan

**CORRECTIVE ACTION COMPLETE PROPOSAL  
FOR SWMU 36a, SWMU 111, SWMU 112, AND SWMU 128**

**CANNON AIR FORCE BASE  
NEW MEXICO  
RCRA PERMIT No. NM7572124454**

**Performance Based Remediation  
Contract Number: FA8903-13-C-0008**

*Prepared for*



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**March 2016**

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## List of Acronyms

AOC	Area of Concern
AFB	Air Force Base
bgs	below ground surface
CAC	Corrective Action Complete
CMS	Corrective Measures Study
DRO	Diesel Range Organics
FTA4	Fire Training Area 4
GRO	Gasoline Range Organics
HSWA	Hazardous and Solid Waste Amendments
JP-4	jet propellant, type 4
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MWR	Morale, Welfare and Recreation
NMED	New Mexico Environment Department
No.	Number
ORO	Oil Range Organics
OWS	oil/water separator
PCB	polychlorinated biphenyl
PID	photoionization detector
POL	petroleum, oil, and lubricants
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
SWMU 36a	DP036a (MWR Auto Body Shop)
SWMU 109	AT109 (Fire Department Training Area No. 4)
SWMU 110	AT110 (UST No. 2336)

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SWMU 111	SW111 (Unlined Pit)
SWMU 112	SW112 (OWS No. 2336)
SWMU 128	SW128 (OWS near Tank 4095 [Number 2])
TAL	target analyte list
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
USAF	United States Air Force
UST	underground storage tank
VOC	volatile organic compound

# CORRECTIVE ACTION COMPLETE PROPOSAL

## 1. Introduction

The United States Air Force (USAF) and Cannon Air Force Base (AFB) (Permittee) is requesting Corrective Action Complete (CAC) without Controls status for Solid Waste Management Units (SWMUs) 36a, 111, 112 and 128 from the New Mexico Environment Department (NMED) in with accordance the New Mexico Hazardous Waste Act (Section 74-4-1 et seq., New Mexico Statutes Annotated 1978, as amended, 1992) and the New Mexico Hazardous Waste Management Regulations 20.4.1 New Mexico Administrative Code. These SWMUs are listed in the Permittee's Resource Conservation and Recovery Act (RCRA) Part B Permit pursuant to 40 Code of Federal Regulations 270.42(c) of the Hazardous and Solid Waste Amendments of 1984.

If approved, the Permittee requests NMED initiate a modification of Cannon AFB's RCRA permit to adjust the content of the corrective action tables (Attachment 1 of Cannon AFB's RCRA Permit). The tables list the status of SWMUs at the Base, and their content is as follows:

- **Table 1** – List of SWMUs Requiring Corrective Action (corrective action may be necessary to characterize and/or remediate past releases of hazardous wastes or hazardous constituents)
- **Table 2** – List of SWMUs with Corrective Action Complete with Controls (corrective action has been completed, and further corrective action is not currently required; controls are required)
- **Table 3** – List of SWMUs with Corrective Action Complete without Controls (corrective action has been completed, and further corrective action is not currently required; no controls are required)

The SWMUs addressed by this document are listed in the following table:

SWMU	USAF Site Name	Name / Description
SWMU 36a (Area of Concern [AOC] 36)	DP036a	Morale, Welfare and Recreation (MWR) Auto Body Shop – Area of potentially contaminated soil discovered in 1994 near the current MWR Outdoor Recreation Center (formerly known as the Auto Hobby Shop).
SWMU 111	SW111	Unlined Pit – Used to collect runoff from Fire Department Training Area Number (No.) 4 (FTA4) (SWMU 109).
SWMU 112	SW112	Oil/Water Separator (OWS) No. 2336 – Underground storage tank (UST) used to recover jet propellant, type 4 (JP-4) fuel from runoff derived during training exercises at FTA4 (SWMU 109).
SWMU 128	SW128	OWS near Tank 4095 (No. 2)

The proposed modification would grant CAC without Controls status and move SWMUs 36a, 111, 112 and 128 from Table 1 to Table 3 of Cannon AFB RCRA permit (NM7572124454).

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## 2. Facility Description

Cannon AFB is located in Curry County, New Mexico, approximately 7 miles west of the City of Clovis. The Base encompasses approximately 4,320 acres of land. Cannon AFB is situated in a nearly flat plain sloping gently (10 to 15 feet per mile) to the east and southeast. Elevations in the vicinity of Cannon AFB range from 4,250 feet to 4,350 feet above mean sea level.

Cannon AFB dates to 1929, when Portair Field was established on the site as a civilian passenger terminal for early commercial transcontinental flights. In 1942 the Army Air Corps took control of the civilian airfield and it became known as the Clovis Army Air Base. In early 1945, the Base was renamed Clovis Army Air Field, where flying, bombing, and gunnery classes continued until the Base was de-activated in May 1947.

The Base was reassigned to the Tactical Air Command and formally reactivated as Clovis AFB in 1951. The Base was renamed Cannon AFB in 1957. Several Fighter-Bomber Groups and Tactical Fighter Wings have occupied the Base since 1951. In June 2006, it was announced that Cannon AFB would transfer from the Air Combat Command and become an Air Force Special Operations Command installation.

## 3. History of Investigation

The United States Environmental Protection Agency issued the Hazardous and Solid Waste Amendments (HSWA) Module IV to Cannon AFB's RCRA Operating Permit effective 17 December 1989. The HSWA module required investigation of the SWMUs in the permit at Cannon AFB. In January 1996, NMED received authorization for corrective action under the HSWA and became the administrative authority for this action.

**Section 4** of this document briefly describes the location and history of each SWMU. Detailed descriptions of the investigative results for each SWMU appear in the original investigative reports and/or administrative records. References for these sources are provided in **Section 5**.

## 4. SWMU Descriptions

The following subsections describe the location, history, and land use conditions for each SWMU. A summary of relevant information from previous investigations and a basis for CAC without Controls determination for the sites are also presented in this section. A site map showing the location of the SWMUs is presented as **Figure 4-1**.

### 4.1 SWMU 36A

#### 4.1.1 Location

SWMU 36a is located in the north central portion of Cannon AFB (**Figure 4-1**). SWMU 36a is an area of potentially contaminated soil identified approximately 72 feet southeast of the MWR Outdoor Recreation Center Building 214.

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## 4.1.2 History / Current and Anticipated Future Land Use

SWMU 36a was an area of potentially contaminated soil discovered in 1994 near the current MWR Outdoor Recreation Center (formerly known as the Auto Hobby Shop). The potential contamination was discovered by a contractor who was preparing the area for the construction of a parking lot. The current land use activities at the Outdoor Recreation Center probably would not have been responsible for this potential soil contamination. The potential contamination could be a remnant of the old MWR Auto Hobby Shop or from the area's use as a disposal site for fluids from an aircraft engine maintenance shop in the early 1950s. Waste disposal practices of the Auto Hobby Shop and the aircraft engine maintenance shop are unknown.

The site is currently covered by an asphalt parking lot. Future uses of the site are anticipated to be consistent with the current use of the site.

## 4.1.3 Evaluation of Relevant Information

### 4.1.3.1 USAF Initial Investigation (USAF 1994)

One soil sample was collected at the time the potential contamination was discovered in 1994 (USAF 1994). The soil sample was collected and analyzed for volatile organic compounds (VOCs), benzene, toluene, ethylbenzene, xylene, and a full Toxicity Characteristic Leaching Procedure (TCLP) hazardous/toxic/disposal waste suite of analyses. No parameters, except barium by TCLP, were detected. The concentration of barium (1.7 milligrams per liter [mg/L]) was below the regulatory threshold (100 mg/L). Based on the laboratory results, additional soil samples were not collected in 1994.

### 4.1.3.2 Corrective Measure Implementation Site Closure Report (URS 2008)

Seven soil borings (C36-SB01 through C36-SB07) were drilled and sampled at SWMU 36a on 21 June 2008. The borings were drilled within the 1994 estimated horizontal extent of potential contamination. Soil boring locations are shown on **Figure 4-2**.

The boring locations and depths were selected to identify potential contamination which could be present at this site. Borings were advanced to depths of 20 feet below ground surface (bgs). Fourteen soil samples (two from each soil boring) were collected and analyzed for VOCs by Method 8260C/5035; semivolatile organic compounds (SVOCs) by Method 8270D/3540C; total petroleum hydrocarbons (TPH)- Gasoline Range Organics (GRO), TPH- Diesel Range Organics (DRO), and TPH-Motor Oils by Method 8015B/5035; target analyte list (TAL) metals by Method 6010B/7471A/3050B; and pesticides/ polychlorinated biphenyls (PCBs) by Method 8081A/8082/3540C. The sample results for contaminants detected by laboratory analysis are presented in **Table 4-1**. The following is a summary of the analytical results:

### VOCs

Laboratory analysis identified three VOCs at concentrations below NMED residential soil screening levels (SSLs): m,p-xylene, methyl acetate, and tetrachloroethene. No additional VOCs were identified at concentrations above reporting limits in the soils analyzed.

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## SVOCs

Laboratory analysis identified ten SVOCs at concentrations below NMED residential SSLs: benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene. No additional SVOCs were identified at concentrations above reporting limits in the soils analyzed.

## TPHs

Laboratory analysis identified TPH-DRO and TPH-motor oil at concentrations below NMED residential SSLs. The maximum concentrations of TPH-DRO (100 milligrams per kilogram [mg/kg]) and TPH-Motor Oil (190 mg/kg) were detected in soil sample C36 SB07-018. TPH-GRO was not detected in any samples.

## TAL Metals

Metals concentrations identified in the soil samples analyzed were compared to the residential SSL and the background level identified for Cannon AFB (Woodward-Clyde 1997). Maximum concentrations of aluminum (12,800 mg/kg), barium (1,070 mg/kg), lead 61.9 (mg/kg), and potassium (3,290 mg/kg) were detected above Cannon AFB background levels. Aluminum and potassium exceeded the background levels in sample C36-SB07-18. Barium exceeded the background level in sample C36-SB05-04. Lead concentrations exceeded the background level in samples C36-SB02-04 and C36-SB06-04. While select metals exceeded the background concentrations, none of the TAL metals identified exceeded NMED residential SSLs.

## Pesticides

Laboratory analysis identified three pesticides at concentrations below NMED SSLs: alpha-chlordane, gamma-chlordane, and methoxychlor. No additional pesticides were identified at concentrations above reporting limits in the soils analyzed.

## PCBs

Laboratory analysis identified one PCB, archlor 1260, at a concentration below its corresponding NMED SSL. No additional PCBs were identified at concentrations above reporting limits in the soils analyzed.

## Comparison of Current Versus Historic SSLs

The 2006 NMED residential SSLs were utilized in the evaluation of the data as described above. The 2015 NMED residential SSLs were added to **Table 4-2** for comparison purposes to ensure the overall conclusions and recommendations of the report are consistent when compared to current risk standards. Based on the review of the maximum concentrations to the 2015 NMED SSLs, no exceedances were identified. Therefore, the overall conclusion of the report remains valid.

### *4.1.3.3 NMED Correspondence (NMED 2009, 2010, and 2015a)*

NMED issued an approval with direction letter for AOC 36 dated 6 February 2009 (NMED 2009). The letter stated the following:

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“Based on the information provided in the Report, AOC 36 has been investigated and all detected soil contaminants were reported at concentrations below residential New Mexico Soil Screening Levels (NMSSLs). The Permittee may petition for Corrective Action Complete without Controls status for this unit.”

NMED issued a status letter for AOC 36 dated 22 July 2010 (NMED 2010). The letter stated the following:

“AOC was adequately characterized in accordance with applicable regulations and the available data indicated that contaminants do not pose an unacceptable level of risk to human health the environment. No corrective action is required at the site known as AOC 36.”

Correspondence between NMED representative Naomi Davidson and Cannon AFB representative Laura Peters (NMED 2015a) discussed the status of AOC 36. Discussions between these representatives confirmed that two sites (MWR Auto Body Shop [AOC 36] and the Wheel and Tire Shop PD-680 Cleaning Dip Tank) were identified as SWMU 36. Ms. Davidson proposed renaming MWR Auto Body Shop as SWMU 36a and the Wheel and Tire Shop PD-680 Cleaning Dip Tank as SWMU 36b. Ms. Davidson further indicated that AOC 36/SWMU 36a could be moved to Table 3 upon permit renewal by submitting a CAC proposal requesting CAC without Controls for SWMU 36a. Copies of the NMED letters and correspondence are included in **Appendix A**.

## **4.1.4 Basis of Determination**

SWMU 36a is currently listed on Table 1 of the RCRA permit indicating further action is required to achieve CAC without Controls. Based on the sampling and assessment completed as part of the Corrective Measures Implementation Site Closure Report (URS 2008) and subsequent NMED review and approval (NMED 2009, 2010, and 2015a), soil contaminants at SWMU 36a do not pose an unacceptable level of risk to human health or the environment and the site qualifies for CAC without Controls status.

## **4.2 SWMUs 111 AND 112**

### **4.2.1 Location – SWMUs 111 and 112**

SWMUs 111 and 112 are located at FTA4 near the southeast corner of Cannon AFB, approximately 2,000 feet southeast of the end of Runway 31 (**Figure 4-1**). SWMU 112 is co-located within the boundaries of SWMU 111 (**Figure 4-3**).

### **4.2.2 History / Current and Anticipated Future Land Use – SWMUs 111 and 112**

SWMUs 111 and 112 were part of FTA4 which consisted of the following four SWMUs (**Figure 4-1**):

- SWMU 109 (AT109) – Fire Department Training Area No. 4.

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- SWMU 110 (AT110) – UST No. 2336
- SWMU 111 (SW111) – Unlined Pit
- SWMU 112 (SW112) – OWS No. 2336

SWMU 109 was historically utilized as a fuel truck cleaning area between 1961 and 1974. An estimated 3,000 to 4,000 gallons of fuel percolated into the ground at AT109 as a result of the fuel truck cleaning activities (Walk 1990). In 1974, SWMU 109 was activated as part of FTA4. Waste oils, solvents, and recovered JP-4 were burned during fire training activities completed at SWMU 109 from 1974 to 1975. Recovered JP-4 was utilized as the fuel source for all fire training exercises at SWMU 109 from 1975 to 1995 (Harza 1997).

One UST was installed to the west of SWMU 109 (at SWMU 110) in 1975 for storage of recovered JP-4. The UST was removed from service in 1987 based on suspected leaks from the UST. The UST was removed from the SWMU in March 1989, along with approximately 204 cubic yards of contaminated soil which was landfarmed at FTA4. Approximately 1,000 gallons of JP-4 were estimated to have been released into the soils as a result of leaks from the UST during its 12 years of operation. The UST was replaced with an aboveground storage tank for JP-4 for fire training activities at SWMU 109 (Walk 1990).

During use as a fire training area, a 40-foot by 70-foot concrete-lined pit surrounded by a 4-foot tall berm was constructed at SWMU 109. The pit was filled with gravel and a mock airplane was located in the center of the pit. The concrete pit was saturated with water during fire training exercises. Runoff from the fire training area was originally collected in an unlined pit (SWMU 111) located northeast of SWMU 109. This pit was backfilled in 1985 when an OWS (SWMU 112) was installed adjoining the unlined pit. Drainage features were also installed at SWMU 109 that conveyed the excess fuel and water from SWMU 109 to the OWS located at SWMU 112.

Fire training activities were completed at SWMU 109 until 1995. The OWS was removed in 1997. The berm surrounding SWMU 109 was removed in December 2000. SWMU 109 has been identified as undeveloped land from 2005 to the present.

SWMU 110 was proposed as CAC without controls in 2013. Additional investigation and/or corrective action was required at SWMUs 109, 111, and 112 to achieve CAC without controls (CB&I 2013). Soil samples were collected from SWMUs 109, 111, and 112 in November 2014. The soil samples indicated that soil contamination remains at SWMU 109, which will require a soil removal to achieve CAC without controls. The extent of the soil excavation will be discussed in a separate status report. The results of the soil sampling at SWMUs 111 and 112 support a recommendation for CAC without controls and are discussed in the subsequent sections.

## 4.2.3 Evaluation of Relevant Information

Due to the historical operation of SWMUs 111 and 112 as a portion of FTA4, historical investigations discussed in the following sections include discussions of samples collected from

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all four SWMUs identified in FTA4. However, only those results relevant to the contamination present at SWMUs 111 and 112 are discussed in greater detail in the subsequent summaries of historical reports.

## 4.2.3.1 1985 Installation Restoration Program Phase II (Radian 1986)

In 1985, Radian performed sampling that focused on SWMU 109. Two soil borings (borings 9A and 9B) were completed to a depth of 47 feet bgs. Boring 9A was located approximately 50 feet northeast of SWMU 109. Boring 9B was located approximately 100 feet southeast of SWMU 109. Samples from the borings were analyzed for oil, grease, purgeable halocarbons, purgeable aromatics, and lead; however, samples were not analyzed for TPH. Oil and grease were detected at concentrations ranging from 10 to 280 mg/kg in boring 9A and 10 to 37 mg/kg in boring 9B. Lead was detected at concentrations below the 2015 NMED residential SSLs in borings 9A and 9B. All purgeable halocarbons and aromatics were nondetect (Radian 1986).

## 4.2.3.2 1988 Remedial Investigation (Walk 1990)

Subsequent to the 1985 investigation, the UST located in FTA4 (SWMU 110) was suspected of leaking. Therefore, a Remedial Investigation (RI) was initiated to characterize the UST area (SWMU 110) as well as the runoff area (SWMU 111) at FTA4. In January 1988, six soil borings were completed near the former UST area (SWMU 110) and three soil borings were completed near the former runoff collection area (SWMU 111). Samples were analyzed for VOCs and metals; however, samples were not analyzed for TPH. Analytical results indicated the presence of JP-4 at SWMU 110 to a depth of 60 feet bgs.

No VOCs were detected in soil samples collected from borings B4, B5, or B9 at SWMU 111. All barium, cadmium, chromium, lead, mercury, selenium, and silver concentrations detected in soil samples from borings B4, B5, and B9, were below the 2015 NMED residential SSLs. All detected concentrations of arsenic in borings B4, B5, and B9 exceeded the 2015 NMED residential SSL (4.25 mg/kg). Arsenic concentrations in B4 ranged from 16 to 28.2 mg/kg. Arsenic concentrations in B5 ranged from 16.8 to 35.7 mg/kg. Arsenic concentrations in B9 ranged from 19.2 to 152.5 mg/kg (Walk 1990). Analytical results from the 1988 RI are included in **Table 4-3**.

## 4.2.3.3 1991 Remedial Investigation (Woodward-Clyde 1992)

The objective of the RI was to evaluate the nature and extent of potential hazardous contaminants present at FTA4. Three soil borings were completed at SWMU 109 and one soil boring was completed near SWMUs 111/112 to determine the nature and extent of contamination. All samples were analyzed for VOCs, TPH, lead, and chromium. Due to exceedances of laboratory hold times, one surface sample location (boring 1094) was resampled for VOCs (at boring 1098) and subsurface samples from three borings (1091, 1092, and 1093) were resampled for VOCs (at borings 1095, 1096, and 1097, respectively) (**Figure 4-4**). Analytical results indicated the presence of TPH in subsurface soils at SWMU 109 ranging from 5 to 62 feet bgs. Xylene and ethylbenzene were identified in soils at SWMU 109 ranging from 4

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to 10 feet bgs and were presumed to be the result of residual fuel constituents from fire training exercises at the site (Woodward-Clyde 1992).

Borings 1091 and 1095 were collected approximately 10 feet southeast of SWMUs 111/112. Xylenes were detected at concentrations below the 2015 NMED residential SSL (871 mg/kg) with concentrations estimated at 0.002 mg/kg in the surface soil at boring 1091. No additional VOCs were detected in the soil samples collected from borings 1091 or 1095. TPH was detected at concentrations below the 2015 NMED residential SSL (1,000 mg/kg) with maximum concentrations of 27.3 mg/kg and 56.6 mg/kg in boring 1091. Chromium was detected at concentrations below the 2015 NMED residential SSL (96.6 mg/kg) with concentrations ranging from 3.6 to 10 mg/kg in soil samples from soil boring 1091. Lead was detected in boring 1091 at concentrations below the 2015 NMED residential SSL (400 mg/kg) with concentrations ranging from 2.2 mg/kg to 6.6 mg/kg (Woodward-Clyde 1992). Analytical results from the 1991 RI are included in **Table 4-4**.

#### 4.2.3.4 1997 RCRA Facility Investigation (Harza 1997)

Nineteen soil borings were completed to delineate the nature and extent of contamination at FTA4 during the RCRA Facility Investigation (RFI). All soil samples were analyzed for VOCs, SVOCs, cyanide, TAL metals, and TPH. Two of the sixteen borings (SB06 and SB14) were associated with SWMUs 111/112. Soil boring SB14 was installed within the boundaries of SWMUs 111/112, and located in the center of SWMU 112. The total depth of the boring was 16 feet bgs, and three subsurface samples were collected for analysis. No VOCs, SVOCs, or cyanide were detected in soil samples collected from SB14. All concentrations of metals detected in SB14 were below 2015 NMED SSLs. TPH at SB14 were detected in the soil sample collected from one to two feet bgs in concentrations exceeding the 2015 NMED SSL (1,000 mg/kg) with a concentration of 1,040 mg/kg. The remaining soil samples collected from two to three feet bgs and 15 to 16 feet bgs had concentrations of TPH ranging from 17.6 to 17.9 mg/kg, respectively (Harza 1997).

SB06 was located to the east-northeast of SWMUs 111/112. The total depth of the boring was 17 feet bgs, and three subsurface samples were collected for analysis. No VOCs, SVOCs, or cyanide were detected in soil samples collected from SB14. All concentrations of metals detected in SB06 were below 2015 NMED SSLs. TPH was detected at concentrations below the 2015 NMED SSL (1,000 mg/kg) with concentrations ranging from 44.2 to 118 mg/kg (Harza 1997). Analytical results from the 1997 RFI are included in **Table 4-5**.

#### 4.2.3.5 2001 Corrective Measures Study (Foster Wheeler 2001)

A Corrective Measures Study (CMS) was completed for the FTA4 in 2001. As part of the CMS, the corrective action objective for TPH at SWMU 111 was defined as 5,000 mg/kg, which exceeds the 2015 NMED SSLs. The corrective action objective in soil was based on a ranking score that incorporated three criteria: depth to groundwater, wellhead protection area, and distance to surface water body for FTA4. The highest TPH concentration detected at SWMU 111 was 1,040 mg/kg at a depth of one to two feet bgs. Based on the site characteristics and

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potential contaminant sources, the CMS recommended No Action for SWMU 111 (Foster Wheeler 2001).

The OWS (SWMU 112) was activated at FTA4 in 1985 and received waste from SWMU 109. Since the OWS is no longer present at FTA4 and all related soil contamination was addressed under SWMU 111, the CMS recommended “SWMU 112 be removed from the RCRA permit for Cannon AFB” (Foster Wheeler 2001).

## *4.2.3.6 2004 Phase I Soil Investigation (TN & Associates 2005)*

Thirteen soil borings were completed at FTA4 to confirm the presence of TPH soil contamination in the vicinity of SWMU 109 and SWMUs 111/112. The soil borings ranged in depth from 6 to 50 feet bgs. The analytical results confirmed that soils at SWMU 109 were impacted with TPH at concentrations exceeding the 2015 NMED residential SSLs. Based on the results of the investigation, the soil contamination at SWMU 109 was estimated to be 90 feet wide by 175 feet long and extend between 3 and 20 feet bgs (TN & Associates 2005).

One of the 13 soil borings was planned to be completed at SWMUs 111/112 to reevaluate the 1997 RFI sample at SB14. This sample was designated as CAFB-SB14, and two soil samples were collected from this location and analyzed for TPH. TPH were not detected in the samples collected from CAFB-SB14. However, the resampled location of CAFB-SB14 (as indicated on Figure 3 of the 2004 report) did not correspond to the initial sample location from the 1997 RFI (SB14). Therefore, this sample could not be utilized to confirm or deny the presence of TPH at the historical SB14 location (TN & Associates 2005). Analytical results from the 2004 Phase I Soil Investigation are included in **Table 4-6**.

## *4.2.3.7 2005 Voluntary Corrective Measures (Tetra Tech 2005)*

Approximately 500 cubic yards of contaminated near surface soils (to 2 feet bgs) were excavated from SWMU 109 between 28 March 2005 and 22 April 2005. Confirmation soil samples indicated that contamination still existed within the footprint of the excavation and additional corrective action was required (Tetra Tech 2005).

## *4.2.3.8 Corrective Action Complete Proposals (CB&I 2013)*

A CAC proposal was completed and submitted for SWMUs 111 and 112. The CAC proposal recommended CAC with controls for SWMUs 111 and 112 due to the presence of elevated TPH identified at SWMUs 111/112 in soil boring SB14 from the 1997 RFI (CB&I 2013).

## *4.2.3.9 SWMUs 111/112 Status Report (URS 2015)*

Additional sampling was completed at SWMUs 111/112 in November 2014 (URS 2015). The objective of the November 2014 sampling event was to obtain confirmation samples for TPH and arsenic from selected borings at SWMUs 111/112. The scope of work was to confirm the presence or absence of TPH in soil boring SB14 (from the 1997 RFI) and arsenic in soil boring SB09 (from the 1998 RI).

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## 4.2.3.9.1 Total Petroleum Hydrocarbons

SB14 was initially completed as part of a 1997 RFI for FTA4 (including SWMU 109, SWMU 111, and SWMU 112) (Harza 1997). The boring was reportedly resampled during the 2004 Phase I Soil Investigation (TN & Associates 2005). However, the resampled location (CAFB-SB14) did not correspond to the initial sample location from the 1997 RFI (SB14). Therefore, this sample was not considered representative of the conditions at SWMUs 111/112.

Data from the 1997 RFI indicated that SB14 was advanced to 20 feet bgs and field screened using a photoionization detector (PID). Based on results of the PID screening, samples were collected at 1, 2, and 15 feet bgs. Analytical results from the 1997 RFI indicated the presence of TPH at the following concentrations and depths:

1.04E+03 mg/kg – 1 foot bgs

1.78E+01 mg/kg – 2 feet bgs

1.79E+01 mg/kg – 15 feet bgs

The historical sampling indicated TPH contamination was limited to the surface soils at SB14 in 1997. To confirm the historical sampling results, SB14 was resampled in 2014 and screened to a depth of 20 feet bgs. The location of the boring was obtained using location information obtained from the 1997 RFI. Soil samples were collected from the 1 foot bgs interval. One additional soil sample was collected from 19 feet bgs based on the results of the PID screening. Both soil samples were analyzed for TPH-GRO/DRO/Oil Range Organics (ORO).

All sampling results were below the 2015 NMED screening levels for TPH. No TPH were identified at the 1 to 2 feet bgs soil interval where TPH-DRO was historically identified. TPH-ORO was detected at 9.1E+00 mg/kg in one sample interval at SB14 from 19 to 20 feet bgs. TPH-DRO and TPH-GRO were below detection limits in this sample. TPH analytical results from the November 2014 sampling event are included in **Table 4-7**.

Based on results of the sampling completed in 2014, the TPH previously identified has been naturally attenuated to below NMED screening levels (URS 2015).

## 4.2.3.9.2 Arsenic

Soil boring B9 was initially completed as part of the Installation Restoration Program RI for Site 9: Underground Storage Tank Runoff Area at FPTA-4 (Walk 1990). The boring was completed to a depth of 61.5 feet bgs. Soil samples were collected at the following depths: 1.5, 4, 6.5, 9, 11.5, 16.5, 31.5, 46.5, and 61.5 feet bgs. Analytical results from the RI indicated the presence of arsenic at the following concentrations and depths:

<1.83E+01 mg/kg – 1.5 feet bgs

1.92E+01 mg/kg – 4 feet bgs

3.09E+01 mg/kg – 6.5 feet bgs

9.44E+01 mg/kg – 9 feet bgs

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8.60E+01 mg/kg – 11.5 feet bgs

5.07E+01 mg/kg – 16.5 feet bgs

1.53E+02 mg/kg – 31.5 feet bgs

5.23E+01 mg/kg – 46.5 feet bgs

2.58E+01 mg/kg – 61.5 feet bgs

The results of the historical sampling suggested that arsenic contamination was present throughout the soil boring. To confirm the historical sampling result, B9 was resampled in 2014. The location of the boring was obtained using location information from the 1990 RI. The soil boring was advanced to the depth of the largest historical arsenic concentration in the boring (31.5 feet bgs). Samples were collected from the surface soil (0 to 1.5 feet bgs) and the largest historical concentration of arsenic from 0 to 10 feet bgs (7.5 to 9 feet bgs) for the purposes of providing adequate data to complete risk assessment calculations should arsenic contamination be identified above the NMED screening level of 4.25E+00 mg/kg. Additional samples were collected at 11.5, 16.5, and 31.5 feet bgs to duplicate the historical RI samples collected to the depth of the highest arsenic concentration identified (31.5 feet bgs). All samples were analyzed for arsenic only. Arsenic analytical results from the November 2014 sampling event are included in **Table 4-8**.

All sampling results were below the 2015 NMED residential SSL for arsenic (4.25E+00 mg/kg). The maximum concentration of arsenic detected was 4.22E+00 mg/kg at a depth of 1.5 feet bgs. Based on the 2014 analytical results, arsenic contamination is not present at concentrations above the current NMED residential SSL.

The data for the 1990 RI (Walk 1990) was generated during the inception of inductively coupled plasma technology for metals analysis. All arsenic samples collected during the completion of the 1990 RI indicated uncharacteristically elevated arsenic concentrations at all four sites included in the RI (SWMUs 85, 86, 96, and 109). Arsenic sampling completed in subsequent investigations at Cannon AFB consistently identified arsenic concentrations at significantly reduced concentrations from those reported in the 1990 RI. Based on the 2014 analytical results for arsenic and the absence of natural or engineered remedial activities to explain the decline in arsenic concentrations, the historically elevated arsenic concentrations (identified in the 1990 RI) are considered to be erroneous; therefore, arsenic is not a contaminant of concern at SWMUs 111/112. The arsenic analytical results reported in the 1990 RI for borings B4, B5, and B9 are considered invalid (URS 2015).

## 4.2.4 Basis of Determination

The current status of SWMUs 111/112 is corrective action required. This determination was based on the elevated TPH identified at SB14 in the 1997 RFI. Subsequent resampling has confirmed that the historical contamination has been naturally attenuated and is no longer present at the SWMU.

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Additional concerns were identified by historically elevated arsenic concentrations identified by the 1990 RI at borings B4, B5, and B9. The highest concentrations of arsenic were identified at B9 (152.5 mg/kg). This boring was resampled to demonstrate that the historically elevated arsenic concentrations were not indicative of arsenic contamination, but rather were the result of the analytical methodology utilized at the time the samples were collected. Subsequent arsenic sampling completed at B9, as well as additional locations as part of subsequent investigations at FTA4, have consistently identified arsenic at concentrations below the 2015 NMED residential SSLs.

Based on the results of the resampling for TPH and arsenic at SWMUs 111/112, no contamination was identified in excess of NMED residential SSLs for arsenic or TPHs. Therefore, these results support a recommendation of CAC without controls for SWMUs 111/112. NMED concurred with the conclusion that SWMUs 111/112 do not pose an unacceptable risk to human health and/or the environment in an approval letter dated 2 September 2015 (NMED 2015b). A copy of the approval letter is included as **Appendix B** to this proposal.

## **4.3 SWMU 128**

### **4.3.1 Location**

SWMU 128 is located in the north central portion of Cannon AFB (**Figure 4-1**) to the south of Building 223.

### **4.3.2 History**

SWMU 128 was defined in the original 1987 RCRA Facility Assessment (RFA) for Cannon AFB as an OWS near tank 4095 (No. 2). The RFA identified an OWS and UST at this location. SWMU 127 was identified as OWS near tank 4095 (No. 1) at the same location. The identification of two OWS near tank 4095 was an error for two reasons: first, no OWS or UST were present in 1987; and second, only one OWS has historically been identified near Facility 4095.

Facility 4095 originally consisted of a 135-gallon concrete sand trap and leach field that received wash water from the petroleum, oil, and lubricants (POL) refueling truck wash rack. The sand trap measured 2.5 feet by 4.5 feet in aerial extent and extended approximately 3.5 feet below the pavement. The sand trap discharged to a rectangular leach field approximately 300 square feet in size, located approximately 10 feet northeast of the wash rack.

The sand trap and leach field became active in 1977. The leach field became inactive in the 1980s. The old leach field was bypassed in 1991 and an OWS enclosed in a concrete vault was installed in line with the wash-rack's drain pipe and downstream from the sand trap. The original leach field and sand trap remained in place but were no longer used. After the OWS and new leach field were installed, the wastewater from the OWS discharged to the new leach field located approximately 20 feet northeast of the former leach field. Recovered petroleum products

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temporarily were stored in the OWS for recycling. Potential contaminants include jet propellant, type 4 fuel and oil and grease.

SWMU 127 includes the wash rack, the old leach field, the OWS, the area where the sand trap is located, and the new leach field (Cannon AFB 2015). Contaminants associated with the historical activities at Facility 4095 are currently being addressed as part of remedial efforts and/or reports for SWMU 127. Based on the identified areas included within SWMU 127, it is apparent that SWMU 128 is a duplicate of SWMU 127.

### **4.3.3 Evaluation of Relevant Information**

Facility 4095 was investigated as part of the 1994 Appendix III SWMUs Phase I RFI and then again in the 1997 Appendix III SWMUs Phase II RFI. Then in 2000, the facility was evaluated as part of the CMS at SWMUs 31, 48A, 77, and 127. This area was recently investigated again to address soil vapor comments made with respect to the 2000 CMS. The results of this most recent sampling event are under review by NMED. These historical studies have addressed the areas of the wash rack, OWS, historical leach field, and newer leach field. Figure 7-2 from the CMS for SWMU 127 is included in **Appendix C** to show the sampling locations with respect to the historical site features (Cannon AFB 2015).

### **4.3.4 Basis of Determination**

The 1987 RFA identified SWMUs 127 and 128 associated with Facility 4095. Facility 4095 included a wash rack, sand trap, OWS, old leach field, and new leach field. This facility was used to support washing of POL refueling trucks. The original facility was updated in 1991. All areas of the facility have been thoroughly investigated and continue to be addressed by SWMU 127. Based on the identification of SWMU 128 as a duplicate of SWMU 127, SWMU 128 qualifies for CAC without Controls status.

**TABLE 4-1**  
**SWMU 36a - CORRECTIVE MEASURES IMPLEMENTATION FIELD INVESTIGATION ANALYTICAL DATA**  
**CANNON AFB, NEW MEXICO**

FIELD ID	C36-SB01-008		C36-SB01-018				C36-SB02-004				C36-SB02-018				C36-SB03-010				C36-SB03-018				C36-SB04-004							
			June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008							
			Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual																		
<b>VOLATILE ORGANIC COMPOUNDS (µg/kg)</b>																														
m,p-Xylene (sum of isomers)	0.6 F	1 / 14	<	0.48	5.5	U	<	0.5	5.5	U	0.6	0.46	5.3	F	<	0.47	5.5	U	<	0.47	5.4	U	<	0.46	5.4	U	<	0.47	5.5	U
Methyl Acetate	3.6 F	1 / 14	<	1.1	11	U	<	1.2	11	U	<	1.1	11	U	3.6	1.1	11	F	<	1.1	11	U	<	1.1	11	U	<	1.1	11	U
Tetrachloroethene	2.9 F	1 / 14	<	0.6	5.5	U	<	0.62	5.5	U	<	0.58	5.3	U	<	0.59	5.5	U	<	0.59	5.4	U	<	0.58	5.4	U	<	0.6	5.5	U
<b>SEMIVOLATILE ORGANIC COMPOUNDS (µg/kg)</b>																														
Benzo(a)anthracene	78 F	1 / 14	<	58	370	U	<	58	370	U	78	58	350	F	<	58	360	U	<	58	360	U	<	58	360	U	<	58	360	U
Benzo(a)pyrene	110 F	1 / 14	<	50.7	370	U	<	50.7	370	U	110	50.7	350	F	<	50.7	360	U	<	50.7	360	U	<	50.7	360	U	<	50.7	360	U
Benzo(b)fluoranthene	170 F	4 / 14	<	60	370	U	<	60	370	U	170	60	350	F	<	60	360	U	<	60	360	U	<	60	360	U	<	60	360	U
Benzo(g,h,i)perylene	110 F	1 / 14	<	55.2	370	U	<	55.2	370	U	110	55.2	350	F	<	55.2	360	U	<	55.2	360	U	<	55.2	360	U	<	55.2	360	U
Benzo(k)fluoranthene	80 F	2 / 14	<	61	370	U	<	61	370	U	70	61	350	F	<	61	360	U	<	61	360	U	<	61	360	U	<	61	360	U
Chrysene	150 F	3 / 14	<	60.6	370	U	<	60.6	370	U	150	60.6	350	F	<	60.6	360	U	<	60.6	360	U	<	60.6	360	U	<	60.6	360	U
Fluoranthene	250 F	6 / 14	<	65.4	370	U	<	65.4	370	U	250	65.4	350	F	<	65.4	360	U	<	65.4	360	U	<	65.4	360	U	<	65.4	360	U
Indeno(1,2,3-cd)pyrene	83 F	1 / 14	<	60.4	370	U	<	60.4	370	U	83	60.4	350	F	<	60.4	360	U	<	60.4	360	U	<	60.4	360	U	<	60.4	360	U
Phenanthrene	130 F	1 / 14	<	58.2	370	U	<	58.2	370	U	130	58.2	350	F	<	58.2	360	U	<	58.2	360	U	<	58.2	360	U	<	58.2	360	U
Pyrene	260 F	6 / 14	<	54.1	370	U	<	54.1	370	U	260	54.1	350	F	<	54.1	360	U	<	54.1	360	U	<	54.1	360	U	<	54.1	360	U
<b>PESTICIDES (ORGANOCHLORINE) (µg/kg)</b>																														
alpha-Chlordane	4.7	1 / 14	<	0.9	4	U	<	0.9	4	U	4.7	0.9	4		<	0.9	4	U	<	0.9	4	U	<	0.9	4	U	<	0.9	4	U
gamma-Chlordane	1100	3 / 14	<	0.9	4	U	<	0.9	4	U	12	0.9	4		<	0.9	4	U	<	0.9	4	U	<	0.9	4	U	<	0.9	4	U
Methoxychlor	6 F	2 / 14	<	1	20	U	<	1	20	U	<	1	20	U	<	1	20	U	<	1	20	U	<	1	20	U	<	1	20	U
<b>POLYCHLORINATED BIPHENYLS (PCB) (µg/kg)</b>																														
Aroclor 1260	53 F	1 / 14	<	4	60	U	<	4	60	U	<	4	50	U	<	4	60	U	<	4	50	U	<	4	50	U	<	4	60	U
<b>TOTAL PETROLEUM HYDROCARBONS (mg/kg)</b>																														
Diesel Range Organics	100	9 / 14	3.8	1	11	F	<	1	11	U	47	2	21		3.8	1	11	F	<	1	11	U	<	1	11	U	<	1	11	U
Motor Oils	190	9 / 14	7.2	3.5	11	F	<	3.5	11	U	100	7	21		6.3	3.5	11	F	<	3.5	11	U	<	3.5	11	U	<	3.5	11	U
<b>METALS (mg/kg)</b>																														
Aluminum	12800	14 / 14	8760	20	266		8460	20	266		10700	20	256		8200	20	264		9900	20	261		9170	20	259		7870	5.1	66	
Antimony	0.37 F	1 / 14	<	0.1	0.8	U	0.37	0.1	0.8	F	<	0.1	0.8	U	<	0.1	0.8	U												
Arsenic	2.7	13 / 14	0.13	0.09	0.7	F	0.93	0.09	0.7		1.1	0.09	0.6		0.28	0.09	0.7	F	0.65	0.09	0.7	F	1.1	0.09	0.7		<	0.09	0.7	U
Barium	1070	14 / 14	191	0.05	0.6	J	101	0.05	0.6		504	1	11		52.6	0.05	0.6		85.4	0.05	0.5		81.1	0.05	0.5		333	0.25	2.8	
Beryllium	0.65	14 / 14	0.32	0.04	0.2		0.43	0.04	0.2		0.35	0.04	0.2		0.4	0.04	0.2		0.38	0.04	0.2		0.33	0.04	0.2		0.3	0.04	0.2	

**TABLE 4-1**  
**SWMU 36a - CORRECTIVE MEASURES IMPLEMENTATION FIELD INVESTIGATION ANALYTICAL DATA**  
**CANNON AFB, NEW MEXICO**

FIELD ID DATE COLLECTED			C36-SB01-008				C36-SB01-018				C36-SB02-004				C36-SB02-018				C36-SB03-010				C36-SB03-018				C36-SB04-004			
			June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008							
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual																				
Calcium	191000	14 / 14	125000	16	222		73100	16	222		110000	16	213		85100	16	220		90900	16	217		94400	16	216		175000	33	442	
Chromium	9.9	14 / 14	6.8	0.03	0.6		6.9	0.03	0.6		8.2	0.03	0.5		6.4	0.03	0.6		7.9	0.03	0.5		7.6	0.03	0.5		5.8	0.03	0.6	
Cobalt	2.7	14 / 14	1.9	0.05	0.6	J	2.2	0.05	0.6		1.8	0.05	0.5		1.9	0.05	0.6		2.4	0.05	0.5		2.2	0.05	0.5		1.4	0.05	0.6	
Copper	4.7	14 / 14	1.9	0.09	0.6		1.6	0.09	0.6		4.7	0.09	0.5		2.2	0.09	0.6		2.4	0.09	0.5		2	0.09	0.5		2.6	0.09	0.6	
Iron	10200	14 / 14	7770	14	111		7560	14	111		9310	14	107		7520	14	110		9130	14	109		8520	14	108		6680	3.5	28	
Lead	61.9	14 / 14	3.7	0.09	5.5	J	4.4	0.09	5.5	F	61.9	0.09	5.3		4.7	0.09	5.5	F	4.8	0.09	5.4	F	5	0.09	5.4	F	3.2	0.09	5.5	F
Magnesium	5750	14 / 14	3240	0.74	8.9	J	3780	0.74	8.9		2810	0.74	8.5		3770	0.74	8.8		3350	0.74	8.7		3190	0.74	8.6		3060	0.74	8.8	
Manganese	124	14 / 14	70.5	0.13	0.6		71.4	0.13	0.6		82	0.13	0.5		74.1	0.13	0.6		100	0.13	0.5		81.7	0.13	0.5		50.7	0.13	0.6	
Mercury	0.018 J	7 / 14	0.018	0.01	0.1	J	<	0.01	0.1	U	0.018	0.01	0.1	F	0.01	0.01	0.1		0.013	0.01	0.1	F	0.011	0.01	0.1	F	0.015	0.01	0.1	F
Nickel	8	14 / 14	6.1	0.07	0.6	J	5.5	0.07	0.6		6.6	0.07	0.5		5.3	0.07	0.6		6.8	0.07	0.5		6.3	0.07	0.5		5.4	0.07	0.6	
Potassium	3290	14 / 14	1830	13.88	111	J	2170	13.88	111		1750	13.88	107		2040	13.88	110		1990	13.88	109		1870	13.88	108		1300	13.88	110	
Sodium	244	12 / 14	80	7.36	111	F	205	7.36	111		50.3	7.36	107	F	57.7	7.36	110	F	44	7.36	109	F	41	7.36	108	F	70.2	7.36	110	F
Vanadium	20	14 / 14	17.9	0.06	0.6		15	0.06	0.6		18.4	0.06	0.5		13.9	0.06	0.6		20	0.06	0.5		18.2	0.06	0.5		14.9	0.06	0.6	
Zinc	29	14 / 14	9.7	1.15	5.5	J	11.3	1.15	5.5		29	1.15	5.3		10.6	1.15	5.5		11.7	1.15	5.4		10.5	1.15	5.4		5.1	1.15	5.5	F

Notes:  
< = Less than the Reporting Limit  
µg/kg = microgram per kilogram  
mg/kg = milligram per kilogram  
F = Result between MDL and RL  
J = Estimated  
MDL = Method Detection Limit  
Qual = Qualifier  
RL = Reporting Limit  
U = Nondetect  
UB = Qualified nondetect due to method blank  
UJ = Estimated Nondetect

**TABLE 4-1**  
**SWMU 36a - CORRECTIVE MEASURES IMPLEMENTATION FIELD INVESTIGATION ANALYTICAL DATA**  
**CANNON AFB, NEW MEXICO**

FIELD ID			C36-SB04-014				C36-SB05-004				C36-SB05-018				C36-SB06-004				C36-SB06-018				C36-SB07-004				C36-SB07-18			
	DATE COLLECTED		June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008							
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual																				
<b>VOLATILE ORGANIC COMPOUNDS (µg/kg)</b>																														
m,p-Xylene (sum of isomers)	0.6 F	1 / 14	<	0.47	5.4	U	<	0.47	5.5	U	<	0.48	5.5	U	<	0.48	5.6	U	<	0.48	5.5	U	<	0.47	5.5	U	<	0.48	5.6	U
Methyl Acetate	3.6 F	1 / 14	<	1.1	11	U	<	1.1	11	U																				
Tetrachloroethene	2.9 F	1 / 14	<	0.58	5.4	U	<	0.59	5.5	U	<	0.6	5.5	U	<	0.61	5.6	U	<	0.6	5.5	U	<	0.59	5.5	U	2.9	0.6	5.6	F
<b>SEMIVOLATILE ORGANIC COMPOUNDS (µg/kg)</b>																														
Benzo(a)anthracene	78 F	1 / 14	<	58	360	U	<	58	360	U	<	58	360	U	<	58	370	U	<	58	370	U	<	58	360	U	<	58	370	U
Benzo(a)pyrene	110 F	1 / 14	<	50.7	360	U	<	50.7	360	U	<	50.7	360	U	<	50.7	370	U	<	50.7	370	U	<	50.7	360	U	<	50.7	370	U
Benzo(b)fluoranthene	170 F	4 / 14	<	60	360	U	69	60	360	F	67	60	360	F	76	60	370	F	<	60	370	U	<	60	360	U	<	60	370	U
Benzo(g,h,i)perylene	110 F	1 / 14	<	55.2	360	U	<	55.2	360	U	<	55.2	360	U	<	55.2	370	U	<	55.2	370	U	<	55.2	360	U	<	55.2	370	U
Benzo(k)fluoranthene	80 F	2 / 14	<	61	360	U	80	61	360	F	<	61	360	U	<	61	370	U	<	61	370	U	<	61	360	U	<	61	370	U
Chrysene	150 F	3 / 14	<	60.6	360	U	<	60.6	360	U	72	60.6	360	F	68	60.6	370		<	60.6	370	U	<	60.6	360	U	<	60.6	370	U
Fluoranthene	250 F	6 / 14	<	65.4	360	U	74	65.4	360	F	120	65.4	360	F	130	65.4	370	F	82	65.4	370	F	<	65.4	360	U	67	65.4	370	F
Indeno(1,2,3-cd)pyrene	83 F	1 / 14	<	60.4	360	U	<	60.4	360	U	<	60.4	360	U	<	60.4	370	U	<	60.4	370	U	<	60.4	360	U	<	60.4	370	U
Phenanthrene	130 F	1 / 14	<	58.2	360	U	<	58.2	360	U	<	58.2	360	U	<	58.2	370	U	<	58.2	370	U	<	58.2	360	U	<	58.2	370	U
Pyrene	260 F	6 / 14	<	54.1	360	U	61	54.1	360	F	100	54.1	360	F	110	54.1	370	F	69	54.1	370	F	<	54.1	360	U	55	54.1	370	F
<b>PESTICIDES (ORGANOCHLORINE) (µg/kg)</b>																														
alpha-Chlordane	4.7	1 / 14	<	0.9	4	U	<	0.9	4	U																				
gamma-Chlordane	1100	3 / 14	<	0.9	4	U	1.2	0.9	4		<	0.9	4	U	1100	0.9	4													
Methoxychlor	6 F	2 / 14	<	1	20	U	2.4	1	20	F	<	1	20	U	<	1	20	U	6	1	20	F	<	1	20	U	<	1	20	U
<b>POLYCHLORINATED BIPHENYLS (PCB) (µg/kg)</b>																														
Aroclor 1260	53 F	1 / 14	<	4	50	U	<	4	60	U	<	4	60	U	53	4	60	F	<	4	60	U	<	4	60	U	<	4	60	U
<b>TOTAL PETROLEUM HYDROCARBONS (mg/kg)</b>																														
Diesel Range Organics	100	9 / 14	<	1	11	U	5.7	1	11	F	5.9	1	11	F	74	5	56		73	2	22		69	2	22		100	5	56	
Motor Oils	190	9 / 14	<	3.5	11	U	13	3.5	11		14	3.5	11		180	17.5	56		170	7	22		150	7	22		190	17.5	56	
<b>METALS (mg/kg)</b>																														
Aluminum	12800	14 / 14	9500	10	130		8380	20	263		8720	10	133		7450	20	270		6390	5.1	66		7200	20	263		12800	10	134	
Antimony	0.37 F	1 / 14	<	0.1	0.8	U	<	0.1	0.8	U																				
Arsenic	2.7	13 / 14	1.2	0.09	0.7		1.1	0.09	0.7		1.4	0.09	0.7		1.8	0.09	0.7		1.2	0.09	0.7		2.2	0.09	0.7		2.7	0.09	0.7	
Barium	1070	14 / 14	95.3	0.05	0.5		1070	0.05	11		72	0.05	0.6		356	1	11		338	0.25	2.8		603	1	11		506	0.5	5.6	
Beryllium	0.65	14 / 14	0.47	0.04	0.2		0.35	0.04	0.2		0.43	0.04	0.2		0.35	0.04	0.2		0.33	0.04	0.2		0.31	0.04	0.2		0.65	0.04	0.2	

**TABLE 4-1**  
**SWMU 36a - CORRECTIVE MEASURES IMPLEMENTATION FIELD INVESTIGATION ANALYTICAL DATA**  
**CANNON AFB, NEW MEXICO**

FIELD ID DATE COLLECTED			C36-SB04-014				C36-SB05-004				C36-SB05-018				C36-SB06-004				C36-SB06-018				C36-SB07-004				C36-SB07-18			
			June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008				June 19, 2008							
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual																				
Calcium	191000	14 / 14	51300	8.2	108		97200	16	219		53300	8.2	110		191000	16	225		34600	4.1	55		190000	16	219		88100	8.2	111	
Chromium	9.9	14 / 14	8.2	0.03	0.5		7	0.03	0.6		7.6	0.03	0.6		9.9	0.03	0.6		6	0.03	0.6		5.6	0.03	0.6		9.5	0.03	0.6	
Cobalt	2.7	14 / 14	2.6	0.05	0.5		1.3	0.05	0.6		2.3	0.05	0.6		1.3	0.05	0.6		1.5	0.05	0.6		1.1	0.05	0.6		2.7	0.05	0.6	
Copper	4.7	14 / 14	2.4	0.09	0.5		3	0.09	0.6		2.2	0.09	0.6		2.2	0.09	0.6		1.9	0.09	0.6		2.5	0.09	0.6		2.8	0.09	0.6	
Iron	10200	14 / 14	9000	7.1	54		7960	14	110		8350	7.1	55		6030	14	112		6120	3.5	28		5990	14	110		10200	7.1	56	
Lead	61.9	14 / 14	5.1	0.09	5.4	F	4.5	0.09	5.5	F	6.7	0.09	5.5		22.2	0.09	5.6		6.2	0.09	5.5		4.2	0.09	5.5	F	6	0.09	5.6	
Magnesium	5750	14 / 14	3160	0.74	8.7		2710	0.74	8.8		3860	0.74	8.8		3150	0.74	9		2920	0.74	8.8		2990	0.74	8.8		5750	0.74	8.9	
Manganese	124	14 / 14	100	0.13	0.5		66.6	0.13	0.6		108	0.13	0.6		40.4	0.13	0.6		80.2	0.13	0.6		40.6	0.13	0.6		124	0.13	0.6	
Mercury	0.018 J	7 / 14	<	0.01	0.1	U	0.014	0.01	0.1	F	<	0.01	0.1	UB	<	0.01	0.1	UB												
Nickel	8	14 / 14	6.7	0.07	0.5		6.7	0.07	0.6		6.3	0.07	0.6		5.2	0.07	0.6		4.9	0.07	0.6		4.9	0.07	0.6		8	0.07	0.6	
Potassium	3290	14 / 14	2290	13.88	108		1480	13.88	110		2280	13.88	110		1170	13.88	112		1640	13.88	111		1080	13.88	110		3290	13.88	111	
Sodium	244	12 / 14	221	7.36	108		42.1	7.36	110	F	210	7.36	110		<	7.36	112	UB	128	7.36	111		<	7.36	110	UB	244	7.36	111	
Vanadium	20	14 / 14	18	0.06	0.5		16.5	0.06	0.6		17.3	0.06	0.6		14.6	0.06	0.6		13.9	0.06	0.6		14.5	0.06	0.6		18.6	0.06	0.6	
Zinc	29	14 / 14	13.5	1.15	5.4		12	1.15	5.5		15.5	1.15	5.5		17.3	1.15	5.6		23.5	1.15	5.5		11	1.15	5.5		18.4	1.15	5.6	

Notes:  
< = Less than the Reporting Limit  
µg/kg = microgram per kilogram  
mg/kg = milligram per kilogram  
F = Result between MDL and RL  
J = Estimated  
MDL = Method Detection Limit  
Qual = Qualifier  
RL = Reporting Limit  
U = Nondetect  
UB = Qualified nondetect due to method blank  
UJ = Estimated Nondetect

**TABLE 4-2**  
**SWMU 36a - COMPARISON OF MAXIMUM CHEMICAL CONCENTRATIONS TO SSLs**  
**CANNON AFB, NEW MEXICO**

Chemical	Maximum Detected Concentration (mg/kg)	Qual	2006 Residential SSL (mg/kg) <sup>1</sup>	2015 NMED Residential SSLs (mg/kg) <sup>2</sup>	Background Concentration (mg/kg)	Exceeds SSL ?	Exceeds Background ?
<b>VOLATILE ORGANIC COMPOUNDS (mg/kg)</b>							
m,p-Xylene (sum of isomers)	6.00E-04	F	8.20E+01	7.64E+02		NO	
Methyl Acetate	3.60E-03	F	3.76E+04	7.82E+04		NO	
Tetrachloroethene	2.90E-03	F	1.25E+01	6.77E+00		NO	
<b>SEMIVOLATILE ORGANIC COMPOUNDS (mg/kg)</b>							
Benzo(a)anthracene	7.80E-02	F	6.21E+00	1.53E+00		NO	
Benzo(a)pyrene	1.10E-01	F	6.21E-01	1.53E-01		NO	
Benzo(b)fluoranthene	1.70E-01	F	6.21E+00	1.53E+00		NO	
Benzo(g,h,i)perylene	1.10E-01	F	N/A	N/A		N/A	
Benzo(k)fluoranthene	8.00E-02	F	6.21E+01	1.53E+01		NO	
Chrysene	1.50E-01	F	6.15E+02	1.53E+02		NO	
Fluoranthene	2.50E-01	F	2.29E+03	2.32E+03		NO	
Indeno(1,2,3-cd)pyrene	8.30E-02	F	6.21E+00	1.53E+00		NO	
Phenanthrene	1.30E-01	F	1.83E+03	1.74E+03		NO	
Pyrene	2.60E-01	F	2.29E+03	1.74E+03		NO	
<b>PESTICIDES (ORGANOCHLORINE) (mg/kg)</b>							
alpha-Chlordane	4.70E-03		N/A	N/A		N/A	
gamma-Chlordane	1.10E+00		N/A	N/A		N/A	
Methoxychlor	6.00E-03	F	N/A	N/A		N/A	
<b>POLYCHLORINATED BIPHENYLS (PCB) (mg/kg)</b>							
Aroclor 1260	5.30E-02	F	1.12E+00	2.43E+00		NO	
<b>TOTAL PETROLEUM HYDROCARBONS (mg/kg)</b>							
Diesel Range Organics	1.00E+02		2.50E+03	1.00E+03		NO	
Motor Oils	1.90E+02		2.50E+03	1.00E+03		NO	
<b>METALS (mg/kg)</b>							
Aluminum	1.28E+04		7.78E+04	7.80E+04	1.22E+04	NO	YES
Antimony	3.70E-01	F	3.13E+01	3.13E+01	N/A	NO	N/A
Arsenic	2.70E+00		3.90E+00	4.25E+00	4.30E+00	NO	NO
Barium	1.07E+03		1.56E+04	1.56E+04	8.90E+02	NO	YES
Beryllium	6.50E-01		1.56E+02	1.56E+02	7.30E-01	NO	NO
Calcium	1.91E+05		N/A	NA	2.37E+05	N/A	NO
Chromium	9.90E+00		1.00E+05	9.66E+01	1.33E+01	NO	NO
Cobalt	2.70E+00		1.52E+03	NA	4.70E+00	NO	NO
Copper	4.70E+00		3.13E+03	3.13E+03	8.30E+00	NO	NO
Iron	1.02E+04		2.35E+04	5.48E+04	1.31E+04	NO	NO
Lead	6.19E+01		4.00E+02	4.00E+02	8.70E+00	NO	YES
Magnesium	5.75E+03		N/A	NA	1.93E+04	N/A	NO
Manganese	1.24E+02		3.59E+03	1.05E+04	3.33E+02	NO	NO
Mercury	1.80E-02	J	1.00E+05	2.38E+01	N/A	NO	N/A
Nickel	8.00E+00		1.56E+03	1.56E+03	1.50E+01	NO	NO
Potassium	3.29E+03		N/A	N/A	2.51E+03	N/A	YES
Sodium	2.44E+02		N/A	N/A	N/A	N/A	N/A
Vanadium	2.00E+01		7.82E+01	3.94E+02	3.28E+01	NO	NO
Zinc	2.90E+01		2.35E+04	2.35E+04	3.06E+01	NO	NO

Notes:

<sup>1</sup> NMED Soil Screening Levels Revision 4.0 (June 2006)

<sup>2</sup> NMED Risk Assessment Guidance for Site Investigations and Remediation (July 2015)

mg/kg = milligram per kilogram

N/A = Not Applicable

J = Estimated

Qual = Qualifier

F = Result between MDL and RL

SSL = Soil Screening Level

RL = Reporting Limit

**TABLE 4-3**  
**1988 REMEDIAL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	S9-B4-1.5 December 10, 1987 Result	S9-B4-4 December 10, 1987 Result	S9-B4-6.5 December 10, 1987 Result	S9-B4-9 December 10, 1987 Result	S9-B4-11.5 December 10, 1987 Result	S9-B4-16.5 December 10, 1987 Result	S9-B4-21.5 December 10, 1987 Result
<b>VOLATILE ORGANIC COMPOUNDS</b>								
No analytes detected								
<b>METALS (mg/kg)</b>								
Arsenic	4.25E+00	<	2.19E+01	2.68E+01	2.60E+01	2.58E+01	2.82E+01	<
Barium	1.56E+04	7.02E+01	8.85E+01	1.85E+02	2.91E+02	1.69E+02	3.70E+01	7.60E+01
Cadmium	7.05E+01	7.30E+00	7.20E+00	6.50E+00	6.20E+00	9.00E+00	8.50E+00	5.70E+00
Chromium	9.66E+01	1.86E+01	2.57E+01	2.56E+01	2.91E+01	2.90E+01	3.49E+01	2.57E+01
Lead	4.00E+02	3.54E+01	3.80E+01	5.90E+01	4.07E+01	3.33E+01	2.49E+01	3.03E+01
Mercury	2.38E+01	<	<	<	<	<	<	<
Selenium	3.91E+02	<	<	<	<	<	<	<
Silver	3.91E+02	5.40E+00	6.70E+00	2.07E+01	1.33E+01	1.54E+01	6.20E+00	1.01E+01

Notes:

< = less than the reporting limit

mg/kg = milligrams per kilogram

NMED = New Mexico Environment Department

SSL= soil screening level

  = concentration exceeds NMED SSL

**TABLE 4-3**  
**1988 REMEDIAL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	S9-B4-26.5 December 10, 1987 Result	S9-B4-31.5 December 10, 1987 Result	S9-B5-1.5 December 9, 1987 Result	S9-B5-4 December 9, 1987 Result	S9-B5-6.5 December 9, 1987 Result	S9-B5-9 December 9, 1987 Result	S9-B5-11.5 December 9, 1987 Result
<b>VOLATILE ORGANIC COMPOUNDS</b>								
No analytes detected								
<b>METALS (mg/kg)</b>								
Arsenic	4.25E+00	1.69E+01	1.60E+01	1.68E+01	<	3.38E+01	2.62E+01	2.47E+01
Barium	1.56E+04	1.18E+02	1.02E+02	1.02E+02	6.77E+02	5.63E+02	5.21E+02	1.77E+02
Cadmium	7.05E+01	7.20E+00	7.60E+00	7.60E+00	6.20E+00	9.70E+00	1.12E+01	8.50E+00
Chromium	9.66E+01	1.90E+01	2.58E+01	2.58E+01	2.81E+01	2.80E+01	1.85E+01	3.12E+01
Lead	4.00E+02	2.83E+01	2.50E+01	2.50E+01	3.48E+01	2.90E+01	3.84E+01	5.01E+01
Mercury	2.38E+01	<	<	<	<	<	<	<
Selenium	3.91E+02	<	<	<	<	<	<	<
Silver	3.91E+02	8.40E+00	2.40E+00	2.40E+00	1.64E+01	1.74E+01	1.36E+01	9.00E+00

Notes:

< = less than the reporting limit

mg/kg = milligrams per kilogram

NMED = New Mexico Environment Department

SSL= soil screening level

       = concentration exceeds NMED SSL

**TABLE 4-3**  
**1988 REMEDIAL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	S9-B5-16.5 December 9, 1987 Result	S9-B5-21.5 December 9, 1987 Result	S9-B5-26.5 December 9, 1987 Result	S9-B5-31.5 December 9, 1987 Result	S9-B9-1.5 December 8, 1987 Result	S9-B9-4 December 8, 1987 Result	S9-B9-6.5 December 8, 1987 Result
<b>VOLATILE ORGANIC COMPOUNDS</b>								
No analytes detected								
<b>METALS (mg/kg)</b>								
Arsenic	4.25E+00	3.57E+01	2.34E+01	2.86E+01	<	<	1.92E+01	3.04E+01
Barium	1.56E+04	1.04E+02	1.73E+02	6.35E+01	5.66E+01	1.01E+02	2.37E+02	8.57E+02
Cadmium	7.05E+01	1.27E+01	8.00E+00	9.20E+00	4.70E+00	9.00E+00	7.00E+00	9.10E+00
Chromium	9.66E+01	3.82E+01	2.74E+01	2.63E+01	1.27E+01	2.46E+01	2.49E+01	2.66E+01
Lead	4.00E+02	5.24E+01	3.48E+01	2.13E+01	3.07E+01	1.07E+01	1.09E+01	4.28E+01
Mercury	2.38E+01	<	<	<	<	<	<	8.00E-01
Selenium	3.91E+02	<	<	<	<	<	<	<
Silver	3.91E+02	1.35E+01	1.85E+01	9.80E+00	1.01E+01	<	8.10E+00	7.90E+00

Notes:

< = less than the reporting limit

mg/kg = milligrams per kilogram

NMED = New Mexico Environment Department

SSL= soil screening level

       = concentration exceeds NMED SSL

**TABLE 4-3**  
**1988 REMEDIAL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	S9-B9-9 December 8, 1987 Result	S9-B9-11.5 December 8, 1987 Result	S9-B9-16.5 December 8, 1987 Result	S9-B9-31.5 December 8, 1987 Result	S9-B9-46.5 December 8, 1987 Result	S9-B9-61.5 December 8, 1987 Result
<b>VOLATILE ORGANIC COMPOUNDS</b>							
No analytes detected							
<b>METALS (mg/kg)</b>							
Arsenic	4.25E+00	9.44E+01	8.60E+01	5.07E+01	1.53E+02	5.23E+01	2.58E+01
Barium	1.56E+04	2.81E+02	5.37E+02	2.84E+01	3.84E+02	4.10E+01	8.70E+01
Cadmium	7.05E+01	3.10E+00	1.90E+00	2.80E+00	3.00E+00	1.00E+00	1.40E+00
Chromium	9.66E+01	6.90E+00	2.23E+01	1.55E+01	8.80E+00	5.10E+00	6.20E+00
Lead	4.00E+02	5.50E+01	6.10E+01	5.70E+01	7.80E+01	3.00E+01	1.50E+01
Mercury	2.38E+01	<	<	<	<	<	<
Selenium	3.91E+02	1.60E+02	1.35E+02	1.51E+02	1.98E+02	<	<
Silver	3.91E+02	<	<	<	<	<	<

Notes:

< = less than the reporting limit

mg/kg = milligrams per kilogram

NMED = New Mexico Environment Department

SSL= soil screening level

  = concentration exceeds NMED SSL

**TABLE 4-4**  
**1991 REMEDIAL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	CAN109-1091-0000		CAN109-1091-0005		CAN109-1091-0010		CAN109-1091-0020		CAN109-1091-0030		CAN109-1091-0040	
		Result	Qual										
<b>VOLATILE ORGANIC COMPOUNDS (mg/kg)</b>													
Xylenes	8.71E+02	2.00E-03	J	1.10E-02	U	1.10E-02	U	1.20E-02	U	5.50E-02	U	5.70E-02	U
<b>METALS (mg/kg)</b>													
Chromium	9.66E+01	1.00E+01		6.40E+00		4.50E+00		8.80E+00		7.80E+00		6.60E+00	
Lead	4.00E+02	6.40E+00		4.80E+00		4.20E+00		6.60E+00		3.70E+00		2.20E+00	
<b>PETROLEUM HYDROCARBONS (mg/kg)</b>													
TPH	1.00E+03	2.73E+01		5.66E+01		4.51E+01	U	4.57E+01	U	4.45E+01	U	4.63E+01	U

Notes:  
J = Estimated  
mg/kg = milligrams per kilogram  
NMED = New Mexico Environment Department  
NS = not sampled  
SSL= soil screening level  
U = Nondetect

**TABLE 4-4**  
**1991 REMEDIAL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	CAN109-1091-0050		CAN109-1091-0060		CAN109-1095-0030		CAN109-1095-0040		CAN109-1095-0050		CAN109-1095-0060	
		Result	Qual										
<b>VOLATILE ORGANIC COMPOUNDS (mg/kg)</b>													
Xylenes	8.71E+02	1.10E-02	U	1.10E-02	U	2.75E-02	U	2.85E-02	U	5.50E-03	U	5.50E-03	U
<b>METALS (mg/kg)</b>													
Chromium	9.66E+01	3.60E+00		6.10E+00		NS		NS		NS		NS	
Lead	4.00E+02	2.50E+00		2.30E+00		NS		NS		NS		NS	
<b>PETROLEUM HYDROCARBONS (mg/kg)</b>													
TPH	1.00E+03	4.39E+01	U	4.26E+01	U	NS		NS		NS		NS	

Notes:  
J = Estimated  
mg/kg = milligrams per kilogram  
NMED = New Mexico Environment Department  
NS = not sampled  
SSL= soil screening level  
U = Nondetect

**TABLE 4-5  
1997 RFI ANALYTICAL DATA RESULTS  
CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	SB14-0101		SB14-0102		SB14-0115		SB06-0101		SB06-0107		SB06-0117	
		Result	Qual										
<b>VOLATILE ORGANIC COMPOUNDS</b>													
No analytes detected													
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>													
No analytes detected													
<b>METALS (mg/kg)</b>													
Aluminum	7.80E+04	3.53E+03		6.80E+03		4.65E+03		5.72E+03		3.76E+03		3.16E+03	
Antimony	3.13E+01	3.70E+00	J	4.20E+00	J	3.00E+00	J	2.20E+00	UJ	2.50E+00	J	2.20E+00	UJ
Arsenic	4.25E+00	1.40E+00		1.80E+00		3.30E+00		1.50E+00		1.80E+00		1.20E+00	
Barium	1.56E+04	6.84E+01		5.68E+01		1.92E+02		9.19E+01		5.62E+02		1.28E+02	
Beryllium	1.56E+02	3.60E-01		5.40E-01		3.80E-01		4.10E-01		3.10E-01		2.50E-01	
Cadmium	7.05E+01	5.30E-01	U	5.50E-01	U	5.60E-01	U	5.40E-01	UJ	5.60E-01	U	5.50E-01	UJ
Calcium	--	2.95E+03		1.58E+03		1.98E+05		2.85E+04		1.50E+05		1.48E+05	
Chromium	9.66E+01	5.70E+00		7.70E+00		5.30E+00		6.20E+00		4.50E+00		3.10E+00	
Cobalt		2.90E+00		3.40E+00		2.30E+00		2.60E+00		2.70E+00		1.60E+00	
Copper	3.13E+03	5.30E+00		5.10E+00		2.90E+00		6.30E+00		2.80E+00		1.90E+00	
Iron	5.48E+04	5.26E+03		7.49E+03		3.87E+03		6.20E+03		4.15E+03		3.00E+03	
Lead	4.00E+02	2.15E+01		6.90E+00		3.20E+00		9.00E+00		3.30E+00		2.20E+00	
Magnesium	--	7.02E+02		1.23E+03		4.95E+03		1.18E+03		2.45E+03		2.45E+03	
Manganese	1.05E+04	1.37E+02		9.76E+01		2.97E+01		1.01E+02	J	5.75E+01	J	2.87E+01	J
Mercury	2.38E+01	8.50E-02	U	8.80E-02	U	8.90E-02	U	8.60E-02	U	9.00E-02	U	8.80E-02	U
Nickel	1.56E+03	5.30E+00		7.00E+00		5.50E+00		6.30E+00		4.70E+00		4.30E+00	
Potassium	--	8.97E+02		1.35E+03		1.48E+03		1.81E+03		9.05E+02		9.00E+02	
Selenium	3.91E+02	8.30E-02	J	5.50E-02	UJ	5.60E-02	UJ	2.70E-01	U	2.80E-01	U	2.70E-01	U
Silver	3.91E+02	5.30E-01	U	5.50E-01	U	5.60E-01	U	5.40E-01	U	5.60E-01	U	5.50E-01	U
Sodium	--	1.00E+02		5.74E+01		2.81E+02		1.17E+02		1.29E+02		2.16E+02	
Thallium	7.82E-01	1.10E-01	U										
Vanadium	3.94E+02	1.29E+01		1.54E+01		1.80E+01		1.36E+01		1.19E+01		1.54E+01	
Zinc	2.35E+04	1.19E+01		1.45E+01		8.70E+00		1.52E+01		9.10E+00		6.30E+00	
<b>PETROLEUM HYDROCARBONS (mg/kg)</b>													
Petroleum Hydrocarbons	1.00E+03	1.04E+03		1.78E+01		1.79E+01		1.18E+02		4.42E+01		1.65E+01	U
<b>CYANIDE</b>													
No analytes detected													

Notes:

J = Indicates an estimated value

mg/kg = milligrams per kilogram

NMED = New Mexico Environment Department

SSL = soil screening level

Qual = Qualifier

U = Nondetect

1.04E+03 = concentration exceeds NMED Residential SSL

**TABLE 4-6**  
**2004 PHASE I SOIL INVESTIGATION ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION	NMED Residential SSL	CAFB-SB14 Result
<b>PETROLEUM HYDROCARBONS (mg/kg)</b> TPH	1.00E+03	4.50E+01

Notes:

NMED = New Mexico Environment Department

SSL= soil screening level

**TABLE 4-7**  
**NOVEMBER 2014 TPH ANALYTICAL DATA RESULTS**  
**CANNON AIR FORCE BASE, NEW MEXICO**

FIELD IDENTIFICATION			NMED Residential SSL	CAAT109-SB14-002			CAAT109-SB14-019		
DATE COLLECTED				November 7, 2014			November 7, 2014		
	Maximum	Frequency		Result	LOQ	Qual	Result	LOQ	Qual
<b>PETROLEUM HYDROCARBONS</b>									
<b>(mg/kg)</b>									
Diesel Range Organics	ND	0 / 66	1.E+03	<	1.10E+01	U	<	1.10E+01	U
Gasoline Range Organics	7.7E+01 J	17 / 66	1.E+03	<	1.10E+00	U	<	1.10E+00	U
Oil Range Organics	2.40E+02	14 / 66	1.E+03	<	2.10E+01	U	9.10E+00	2.20E+01	J

Notes:

< = Less Than Detection Limit

J = Estimated

LOQ = Limit of Quantitation

mg/kg = milligrams per kilogram

ND = Not Detected

NMED = New Mexico Environment Department

Qual = Qualifier

SSL = soil screening level

TPH = Total Petroleum Hydrocarbons

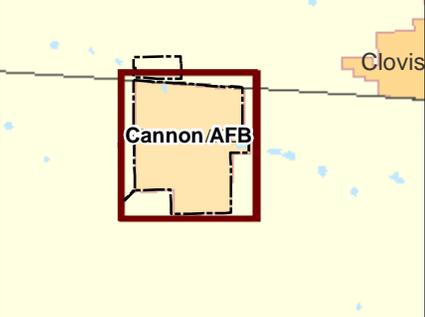
U = Nondetect





SWMU	Site Name
36A	MWR/Auto Body Shop (DP036)
128	Oil/water Separator near Tank Number 4095 (SW128)

**Locator Map**



**Legend**

-  Base Boundary
-  Site Boundary
- SWMU = Solid Waste Management Unit

Map projection: NAD83 State Plane Feet  
New Mexico East (FIPS 3001)



**Site Location Map**  
Cannon Air Force Base, New Mexico

Drawn By: DPG	Date: 3/9/2016	Project No. 23446539	Figure 4-1
Checked By: MS	Revision: 0		

6/19/2008	8'	18'
All VOCs	ND	ND
All SVOCs	ND	ND
All Pesticides	ND	ND
All PCBs	ND	ND
TPH-DRO	3.8	ND
TPH-GRO	ND	ND
TPH-Motor Oils	7.2	ND
All Metals	<SSL	<SSL

6/19/2008	4'	18'
M,P-Xylene	0.6	ND
Methyl Acetate	ND	3.6
All Other VOCs	ND	ND
Benzo(a) Anthracene	78	ND
Benzo(a) Pyrene	110	ND
Benzo(b)Fluoranthene	170	ND
Benzo(g,h,i) Perylene	110	ND
Benzo(k)Fluoranthene	70	ND
Chrysene	150	ND
Fluoranthene	250	ND
Indeno (1,2,3-cd) Pyrene	83	ND
Phenanthrene	130	ND
Pyrene	260	ND
All Other SVOCs	ND	ND
ALPHA-Chlordane	4.7	ND
Gamma-Chlordane	12	ND
All Other Pesticides	ND	ND
All PCBs	ND	ND
TPH-DRO	47	3.8
TPH-GRO	ND	ND
TPH-Motor Oils	100	6.3
All Metals	<SSL	<SSL

6/19/2008	4'	18'
All VOCs	ND	ND
Benzo(b)Fluoranthene	69	67
Benzo(k)Fluoranthene	80	ND
Chrysene	ND	72
Fluoranthene	74	120
Pyrene	61	100
All Other SVOCs	ND	ND
Gamma-Chlordane	1.2	ND
Methoxychlor	2.4	ND
All Other Pesticides	ND	ND
All PCBs	ND	ND
TPH-DRO	5.7	5.9
TPH-GRO	ND	ND
TPH-Motor Oils	13	14
All Metals	<SSL	<SSL

6/19/2008	4'	18'
Tetrachloroethene	ND	2.9
All Other VOCs	ND	ND
Fluoranthene	ND	67
Pyrene	ND	55
All Other SVOCs	ND	ND
Gamma-Chlordane	ND	1100
All Other Pesticides	ND	ND
All PCBs	ND	ND
TPH-DRO	69	100
TPH-GRO	ND	ND
TPH-Motor Oils	150	190
All Metals	<SSL	<SSL

6/19/2008	10'	18'
All VOCs	ND	ND
All SVOCs	ND	ND
All Pesticides	ND	ND
All PCBs	ND	ND
TPH-DRO	ND	ND
TPH-GRO	ND	ND
TPH-Motor Oils	ND	ND
All Metals	<SSL	<SSL

5/7/1994	0'-1'
TCLP Barium	1.7
Other compounds	<SSL

6/19/2008	4'	14'
All VOCs	ND	ND
Benzo(b)Fluoranthene	76	ND
Chrysene	68	ND
Fluoranthene	130	82
Pyrene	110	69
All Other SVOCs	ND	ND
Methoxychlor	ND	6
All Other Pesticides	ND	ND
AROCLOR 1260	53	ND
All Other PCBs	ND	ND
TPH-DRO	74	73
TPH-GRO	ND	ND
TPH-Motor Oils	180	170
All Metals	<SSL	<SSL

**Legend**

- Previous Sampling Location (Approximate)
- ⊕ 2008 CMI Boring Location
- ▭ Esitmed Extent of Contamination (USAF 1994)
- ✕✕ Fence
- ▭ Structure / Building

<SSL Sample Result(s) Did Not Exceed Residential Soil Screening Levels.

ND Sample Result(s) Did Not Exceed Detection Limits

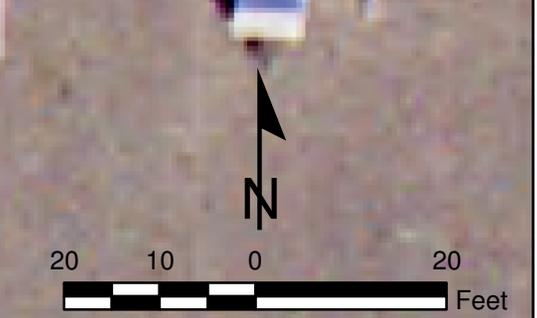
Note:  
TPH and Metals Results in mg/kg. All Other Results in g/kg.

The Results In Gray Boxes Were Obtained From Historical Sampling Events.

July 14, 2009 Z:\cannon\Figures\fig3-2.mxd

BLDG 224

6/19/2008	4'	14'
All VOCs	ND	ND
All SVOCs	ND	ND
All Pesticides	ND	ND
All PCBs	ND	ND
TPH-DRO	ND	ND
TPH-GRO	ND	ND
TPH-Motor Oils	ND	ND
All Metals	<SSL	<SSL



SWMU 36a - HISTORICAL SOIL SAMPLING LOCATIONS  
AREA OF CONCERN (AOC) 36  
CANNON AIR FORCE BASE, NEW MEXICO

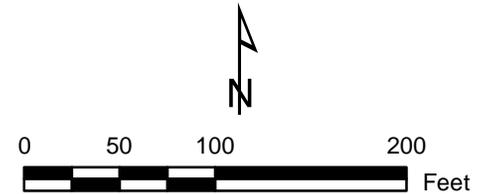
DRN. BY: LLS	DATE: 12/29/15	PROJECT NO.	FIG. NO.
CHK'D BY: KK	REVISION: 0	16170215	4-2



**Legend**

-  Installation Boundary
-  SWMU Boundary

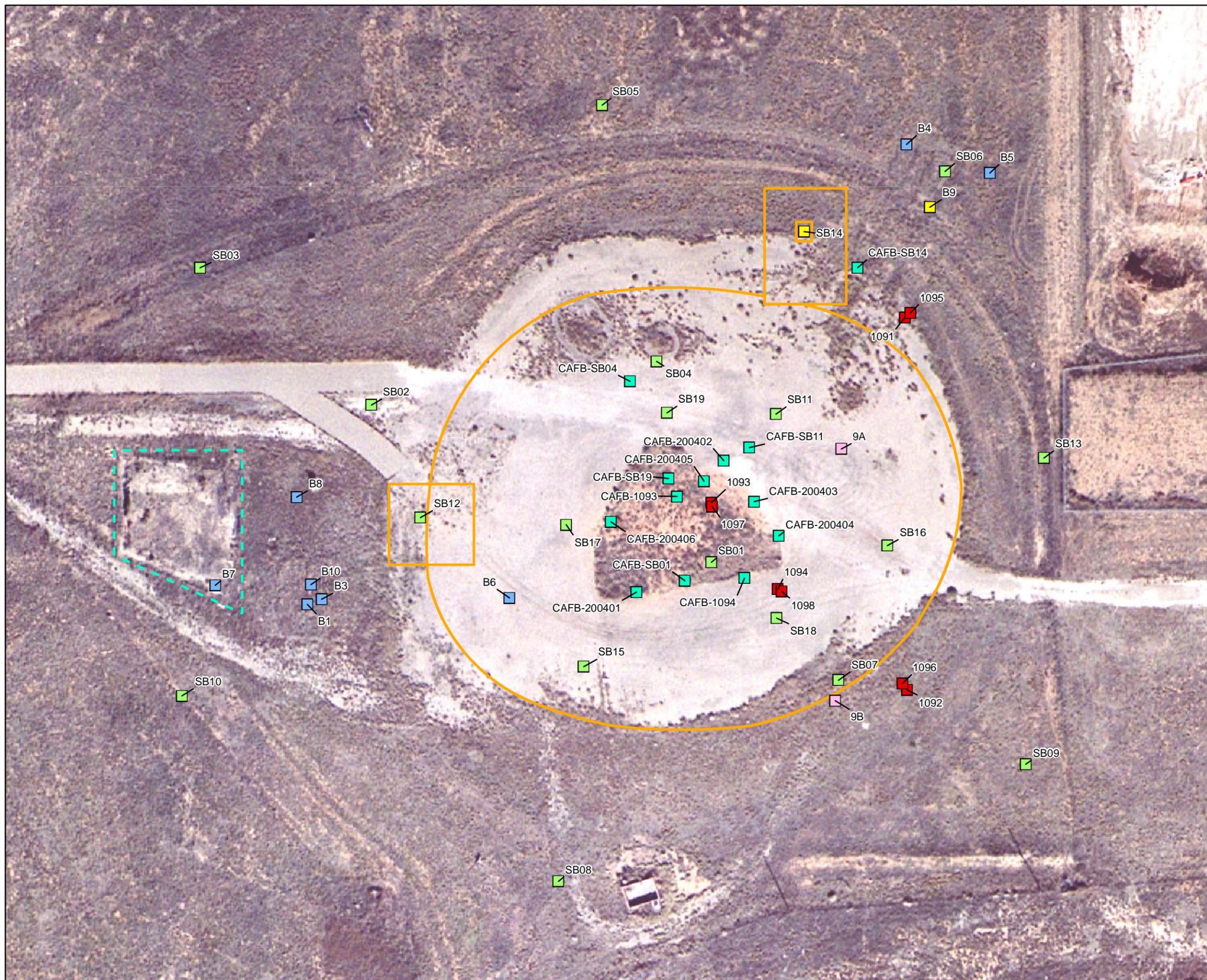
SWMU = Solid Waste Management Unit



**SWMU 111/112  
Site Location Map  
Cannon Air Force Base  
Clovis, New Mexico**

Drawn By: JZ	Date: 3/8/2016
Checked By: PW	Project No. 23446539

**Figure 4-3**

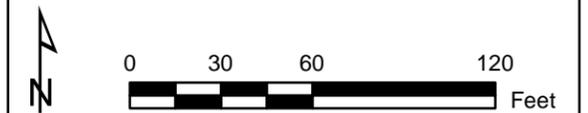


**Legend**

- Installation Boundary
- SWMU Boundary
- Land Farm
- Sample Location**
- URS - 2014
- TN & Associates - 2004
- Harza Consulting - 1997
- Woodward-Clyde - 1991
- Walk, Hydel & Associates - 1988
- Radian - 1985

**Notes:**

1. B9 is a resample of data collected in 1988.
2. SB14 is a resample of data collected in 1997.



**SWMU 111/112  
Historic Sampling Locations  
Cannon Air Force Base  
Clovis, New Mexico**

Drawn By: JZ	Date: 3/8/2016
Checked By: PW	Project No. 23446539

**Figure 4-4**

# CORRECTIVE ACTION COMPLETE PROPOSAL

---

## 5. References

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- CB&I. 2013. Corrective Action Complete Proposals, Eight Solid Waste Management Units (SWMUs 31, 34, 78, 85, 95, 110, 111, and 112), Cannon Air Force Base, New Mexico. April.
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- NMED. 2010. Review of AOC 36 Status, Cannon Air Force Base, New Mexico. July 22.
- NMED. 2015a. Email correspondence between Laura Peters of Cannon Air Force Base and Naomi Davidson of New Mexico Environment Department. March/April.
- NMED. 2015b. Approval Letter With Direction, SWMU 111/112 Status Report, Cannon Air Force Base, New Mexico. September 2.
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- URS. 2015. SWMU 111/112 Status Report, Cannon Air Force Base, New Mexico. June.
- USAF. 1994. Letter to William K. Honker, Chief of RCRA Permits Branch, USEPA Region VII regarding Possible Contamination on Base. April.

## CORRECTIVE ACTION COMPLETE PROPOSAL

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Walk, Haydel & Associates (Walk). 1990. Installation Restoration Program, Remedial Investigation Report, Cannon Air Force Base, New Mexico.

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Woodward-Clyde. 1997. Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico. Final Report. September.

1. New Mexico Environment Department (NMED). 2009. Approval With Direction, Final Site ST-26 (SWMU 48A and AOC 36), Corrective Measures Implementation, Site Closure Report, Cannon Air Force Base. February 6.
2. NMED. 2010. Review of AOC 36 Status, Cannon Air Force Base, New Mexico. July 22.
3. NMED. 2015a. Email correspondence between Laura Peters of Cannon Air Force Base and Naomi Davidson of New Mexico Environment Department. March/April.



BILL RICHARDSON  
Governor

DIANE DENISH  
Lieutenant Governor

NEW MEXICO  
ENVIRONMENT DEPARTMENT

*Hazardous Waste Bureau*

2905 Rodeo Park Drive East, Building 1

Santa Fe, New Mexico 87505-6303

Phone (505) 476-6000 Fax (505) 476-6030

[www.nmenv.state.nm.us](http://www.nmenv.state.nm.us)



RON CURRY  
Secretary

JON GOLDSTEIN  
Deputy Secretary

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

February 6, 2009

Colonel Timothy J. Leahy  
27<sup>th</sup> Special Operations Wing  
100 South D.L. Ingram Boulevard  
Cannon Air Force Base, New Mexico 88103-5214

**RE: APPROVAL WITH DIRECTION  
FINAL SITE ST-26 (SWMU 48A AND AOC 36)  
CORRECTIVE MEASURES IMPLEMENTATION (CMI)  
SITE CLOSURE REPORT  
CANNON AIR FORCE BASE, EPA ID NO. NM7572124454  
HWB-CAFB-08-007**

Dear Mr. Leahy:

The New Mexico Environment Department (NMED) reviewed the Department of the Air Force's (Permittee) *Site ST-26 (SWMU-26 and AOC 36) Corrective Measures Implementation (CMI) Site Closure Report* (the Report), dated October 2008 and hereby approves the Report with the following direction:

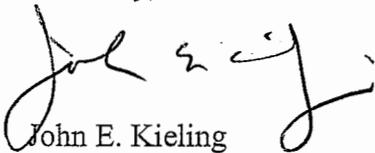
1. Total petroleum hydrocarbon (TPH) contamination was detected in 1994 at Solid Waste Management Unit (SWMU) 48A (17,300 mg/kg at 10 feet below ground surface), and it is unlikely that the detected hydrocarbons have degraded to concentrations less than the applicable cleanup levels listed in the guidance referenced below. Therefore, additional soil sampling at SWMU 48A is required before this site can be considered for a Corrective Action Complete determination. The Permittee must submit a work plan no later than June 12, 2009 that describes soil sampling activities to be conducted at SWMU 48A. The work plan must include soil sample collection at and around the location of contamination detected in soil boring 4806. All soil samples must be analyzed for diesel

range organics (DRO), oil range organics (ORO), gasoline range organics(GRO) and the constituents listed in Table 3 (Petroleum-Related Contaminants Screening Guidelines) of NMED's TPH Guidance (October 2006). This guidance can be found at [http://www.nmenv.state.nm.us/hwb/Guidance\\_docs/NMED%20TPH%20Guidance%2010-2006.pdf](http://www.nmenv.state.nm.us/hwb/Guidance_docs/NMED%20TPH%20Guidance%2010-2006.pdf).

2. Based on the information provided in the Report, AOC 36 has been investigated and all detected soil contaminants were reported at concentrations below residential New Mexico Soil Screening Levels (NMSSLs). The Permittee may petition for Corrective Action Complete without Controls status for this unit.
3. The Permittee does not explain in the Report if the Investigative Derived Waste (IDW) was sampled or where it was disposed. The Permittee must submit a letter to NMED no later than February 27, 2009 documenting the fate of the IDW generated during the 2008 sampling activities.
4. The Permittee states in Section 3.4.2.3 of the Report that TPH results for AOC 36 were screened against NMED's residential exposure for waste oil. For all future investigations involving petroleum spills of unknown origin, the Permittee must use NMED's residential value for "unknown oil" for comparison.

If you have any questions regarding this letter, please call Cheryl Frischkorn at (505) 476-6058.

Sincerely,



John E. Kieling  
Program Manager  
Permits Management Program  
Hazardous Waste Bureau

cc: C. Frischkorn, NMED HWB  
D. Cobrain, NMED HWB  
Jerry Pelfrey, CAFB  
File: CAFB 2009 and Reading  
CAFB-08-007



BILL RICHARDSON  
Governor

DIANE DENISH  
Lieutenant Governor

NEW MEXICO  
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RON CURRY  
Secretary

SARAH COTTRELL  
Deputy Secretary

**CERTIFIED MAIL - RETURN RECEIPT REQUESTED**

July 22, 2010

Ronald Lancaster  
27 SOCES/CEA  
506 N. DL Ingram Blvd.  
Cannon AFB, New Mexico 88103-5003

**RE: REVIEW OF AOC 36 STATUS  
CANNON AIR FORCE BASE, NEW MEXICO  
EPA ID #NM7572124454  
HWB-CAFB-10-002**

Dear Mr. Lancaster:

The New Mexico Environment Department (NMED) received a letter from the Cannon Air Force Base (Permittee) on April 21, 1994 stating that possible contamination was uncovered by a contractor while preparing a site for a parking lot. The contractor reported that the site appeared to be contaminated with petroleum or solvent products. The Permittee did not locate the source of the contamination. One sample of contaminated soil was collected and was analyzed for Toxicity Characteristic Leaching Procedure (TCLP suite), volatile organic compounds (VOCs); and benzene, toluene, ethylbenzene, and xylenes (BTEX). Only barium was detected in the sample, at 1.8 mg/L. The results of this phase of work were inconclusive. The Permittee stated the site would be referred to as "Area of Concern (AOC) number 36".

NMED received *Corrective Measure Implementation Work Plan for SWMU 48a (Site ST-26) and AOC 36* on November 21, 2007. The work plan indicated that AOC 36 is 72 feet southeast of Building 214 and was currently covered by an asphalt parking lot. The Permittee stated that potential contamination could be a remnant of an old Auto Hobby Shop or a disposal site for fluids from an aircraft engine maintenance shop in the early 1950s. However, the waste

R. Lancaster  
July 22, 2010  
Page 2

management practices of the Auto Hobby Shop and the aircraft engine maintenance shop are unknown. NMED approved the work plan on February 6, 2009.

NMED received Site *ST-26 (SWMU 48A) and AOC 36 Corrective Measures Implementation Site Closure Report* on November 20, 2008. Seven borings were advanced to 20 feet below ground surface (bgs) within and along the perimeter of the site known as AOC 36. Two soil samples from each boring were selected for analyses based on field screening results and observations. Four of the TAL metals (aluminum, barium, lead and potassium) were detected at concentrations slightly above Cannon Air Force Base's (CAFB) background levels. VOCs, semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), total petroleum hydrocarbon (TPH) and target analyte list (TAL) metals were detected at concentrations less than NMED Residential Soil Screening Levels (SSLs) (Revision 5.0, updated December, 2009). NMED approved the report on November 23, 2009.

NMED conducted a Tier 1 risk screening evaluation and found that none of the chemicals or metals that were detected at depths of ten feet or less bgs pose an unacceptable risk to human health. Barium is the only detected analyte considered to be a chemical of potential ecological concern (COPEC). However, barium was detected at a concentration that slightly exceeded CAFB's background levels in only one of fourteen soil samples.

AOC 36 was adequately characterized in accordance with applicable regulations and the available data indicate that contaminants do not pose an unacceptable level of risk to human health and the environment. No corrective action is required at the site known as AOC 36.

Please contact Pat Stewart at (505) 476-6059, should you have any questions.

Sincerely,



John E. Kieling  
Program Manager  
Permits Management Program  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
N. Dhawan, NMED HWB  
P. Stewart, NMED HWB  
H. Hanson, CAFB  
File: CAFB 2010 and Reading

## Wilson, Paul (Omaha)

---

From: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO <laura.peters.4@us.af.mil>  
Sent: Wednesday, April 08, 2015 10:33 AM  
To: Sonderman, Michael; Whalen, Maureen (m.whelen@fpm-remediations.com)  
Cc: Wilson, Paul (Omaha); RENAGHAN, BRIAN J GS-13 USAF AFCEC AFCEC/CZR  
Subject: FW: AOC 36 vs SWMU 36

Follow Up Flag: Follow up  
Flag Status: Flagged

FYI- Whenever the work is awarded, DP-36 should only need to complete the CACP process to move to SC. Remember that it is SWMU 36A now.

Thanks,

Laura Peters,GS-12, DAF  
Environmental Restoration Manager  
AFCEC/CZO  
575-784-0491  
DSN: 681-0491

Mailing Address  
27 SOCES/CEIER  
Bldg. 355  
506 N. Air Commando Way  
Cannon AFB, NM 88103-5003

-----Original Message-----

From: Davidson, Naomi, NMENV [mailto:naomi.davidson@state.nm.us]  
Sent: Wednesday, April 08, 2015 9:11 AM  
To: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO; Dhawan, Neelam, NMENV  
Cc: RENAGHAN, BRIAN J GS-13 USAF AFCEC AFCEC/CZR  
Subject: RE: AOC 36 vs SWMU 36

Yes, but I would probably bundle it with at least a few others in order to be more efficient. Thanks!

Naomi Davidson  
Environmental Scientist  
New Mexico Environment Department  
Hazardous Waste Bureau  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303  
(505) 476-6022 (w)  
(505) 476-6030 (f)  
[www.nmenv.state.nm.us/HWB](http://www.nmenv.state.nm.us/HWB)

-----Original Message-----

From: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO [mailto:laura.peters.4@us.af.mil]

Sent: Thursday, April 02, 2015 8:22 AM  
To: Davidson, Naomi, NMENV; Dhawan, Neelam, NMENV  
Cc: RENAGHAN, BRIAN J GS-13 USAF AFCEC AFCEC/CZRX  
Subject: RE: AOC 36 vs SWMU 36

Thanks Naomi,  
Do you need us to complete the CACP process for this site?

Laura Peters,GS-12, DAF  
Environmental Restoration Manager  
AFCEC/CZO  
575-784-0491  
DSN: 681-0491

Mailing Address  
27 SOCES/CEIER  
Bldg. 355  
506 N. Air Commando Way  
Cannon AFB, NM 88103-5003

-----Original Message-----

From: Davidson, Naomi, NMENV [mailto:naomi.davidson@state.nm.us]  
Sent: Wednesday, April 01, 2015 4:49 PM  
To: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO; Dhawan, Neelam, NMENV  
Subject: RE: AOC 36 vs SWMU 36

Laura,

I found this letter as I was browsing through the file looking for something else. Looks like we can add AOC 36/SWMU 36A to Table 3 upon permit renewal.

Naomi Davidson  
Environmental Scientist  
New Mexico Environment Department  
Hazardous Waste Bureau  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303  
(505) 476-6022 (w)  
(505) 476-6030 (f)  
[www.nmenv.state.nm.us/HWB](http://www.nmenv.state.nm.us/HWB)

-----Original Message-----

From: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO [mailto:laura.peters.4@us.af.mil]  
Sent: Wednesday, March 18, 2015 8:53 AM  
To: Davidson, Naomi, NMENV; Dhawan, Neelam, NMENV  
Subject: RE: AOC 36 vs SWMU 36

Naomi,

I am ok with the proposal. Most of the documentation we have at the base says AOC 36, so if we could add into the notes of SWMU 36A "formerly AOC 36" that may help tie things together better for anyone in the future.

In my summary of the current table 2 sites, I will list SWMU 36 from the 87 RFA as SWMU 36B. I will try to remember to add the rationale to my summary that I type up.

Let me know if there is anything else.

Thanks,  
Laura

-----Original Message-----

From: Davidson, Naomi, NMENV [mailto:naomi.davidson@state.nm.us]  
Sent: Wednesday, March 18, 2015 8:36 AM  
To: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO; Dhawan, Neelam, NMENV  
Subject: RE: AOC 36 vs SWMU 36

Laura,

I am trying to figure this out and haven't gotten very far, but I agree it looks like a typo happened at some point. The original 2003 permit had SWMU 36 as the MWR Auto Body Shop. The description is:  
This is a possible disposal pit found near the current MWR Outdoor Recreation Center (Building 214) which was originally the MWR auto hobby shop. This pit could be a remnant of the old Auto Hobby Shop or a disposal site for fluids coming from an aircraft engine maintenance shop in the early 1950s.

I found a Class 3 Modification Request - NFA proposals dated July 2000 that describes AOC 36:  
AOC 36, Building #214 Parking Lot, is the name assigned to an area of potential soil contamination while analytical results were pending. During excavation activities to prepare the site for a parking lot, a contractor reported discovering an area of potentially contaminated soil. Soil that visually appeared to be impacted was segregated, and samples of this soil were collected. However, laboratory analysis of these samples did not indicate the presence of any significant contamination in the soil.

It looks like these are the same thing.

It looks like SWMU 36 from the 1987 RFA, Wheel and Tire Shop PD-680 Cleaning Dip Tank, got lost somehow, though it would most likely be on Table 2 if it had stayed with the right name.

I propose we change names, having the MWR Auto Body Shop as SWMU 36A, as it's been SWMU 36 since the original permit, and perhaps designate the Wheel and Tire Shop PD-680 Cleaning Dip Tank as SWMU 36B.

Have you found any other documents that might lend clarity to this issue? If you are ok with my proposal let me know and we'll get it done during the permit renewal.

Thanks.

Naomi Davidson  
Environmental Scientist  
New Mexico Environment Department  
Hazardous Waste Bureau  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303  
(505) 476-6022 (w)

(505) 476-6030 (f)  
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-----Original Message-----

From: PETERS, LAURA L CIV USAF AFMC 27 SOCES/AFCEC/CZO [mailto:laura.peters.4@us.af.mil]  
Sent: Wednesday, March 11, 2015 1:41 PM  
To: Davidson, Naomi, NMENV; Dhawan, Neelam, NMENV  
Subject: AOC 36 vs SWMU 36

Good Afternoon Naomi,

I have been going through our Table 2 as you requested during the visit to try and get a handle on which SWMUs should go where. I have a discrepancy here that I believe we need to correct. The permit modification table 1 states that SWMU 36 is the MWR Auto Body Shop. Our records indicate that the shop was designated AOC 36. SWMU 36 from the 1987 RFA is Wheel and Tire Shop PD-680 Cleaning Dip Tank. That activity was associated with Bldg. 194 at that time and is associated with the activities listed for SWMUs 35 and 37. Both of those SWMUs were listed as a code 1 in the Table 2. I am not sure how to clear up this issue. I believe that the original SWMU 36 belongs with 35 and 37, but it looks like the name has been changed since that time. I am in the process of trying to figure out if the SWMUs marked with a code 1 in table 2 are still active. Reviewing the original information in the RFA has led me to this discrepancy. All of our documentation with the MWR shop says AOC 36. The first inference I see related to SWMU 36 is in the 2004 NMED letter attached that identifies the area as SWMU 36, perhaps in error. This results in 2 sites having a designation as SWMU 36. How should we clear up this issue?

Laura Peters,GS-12, DAF  
Environmental Restoration Manager  
AFCEC/CZO  
575-784-0491  
DSN: 681-0491

Mailing Address  
27 SOCES/CEIER  
Bldg. 355  
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Cannon AFB, NM 88103-5003





SUSANA MARTINEZ  
Governor  
JOHN A. SANCHEZ  
Lieutenant Governor

## NEW MEXICO ENVIRONMENT DEPARTMENT

2905 Rodeo Park Drive East, Building 1  
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RYAN FLYNN  
Secretary  
BUTCH TONGATE  
Deputy Secretary

### CERTIFIED MAIL - RETURN RECEIPT REQUESTED

September 2, 2015

Colonel Douglas W. Gilpin  
Commander, 27th Special Operations  
Mission Support Group  
110 E. Alison Avenue, Suite 1098  
Cannon Air Force Base

**RE: APPROVAL WITH DIRECTION  
SWMU 111/112 STATUS REPORT  
CANNON AIR FORCE BASE, NEW MEXICO  
NM7572124454  
HWB-CAFB-15-003**

Dear Colonel Gilpin:

The New Mexico Environment Department (NMED) has received Cannon Air Force Base's (Permittee) *SWMU 111/112 Status Report* (Report), dated June 25, 2015 and received June 26, 2015. NMED has completed review and hereby approves the Report with the following comments.

#### Comments:

**NMED Comment No. 1:** The electronic copy of any submitted report must include a copy of the report text in Microsoft Word format and the data tables in Excel format. Given that this report is of a significantly smaller volume than most submittals, this was not a hindrance during review. However, it should be noted that these reporting requirements must be met for all future submittals.

Additionally, boring logs must be submitted as a formatted official record of drilling activities. Submittal of hand written field logs does not meet this standard. Also, a numerical value must be provided with all reported field screening head space analysis data for future drilling log

submittals.

**NMED Comment No. 2:** A review of historical report information indicates sampling of the former unlined pit (SWMU 111) and oil water separator (OWS) No. 2336 (SWMU 112) associated with Fire Training Area No. 4 was conducted during the 1997 *RCRA Facilities Investigation* by Harza Environmental Services which reported a total petroleum hydrocarbon (TPH) concentration of 1,040 milligrams per kilogram (mg/kg) at boring location SB14 for the one-foot below ground surface (bgs) sample interval. The reported concentration exceeded the NMED TPH residential soil screening level (SSL) of 1,000 mg/kg. No other TPH SSL exceedances were reported for the remaining samples collected at 2 and 15 feet bgs, respectively. Subsequently, a resampling event was conducted in association with the *Phase I Investigation Soil Corrective Measures Fire Training Area 04* by TN & Associates, Inc. which included the resampling of SB14 in 2004. The investigation findings for SWMU 111/112 indicated TPH concentrations were below laboratory reporting levels for the two samples collected at the 0 to 1 foot and 9 to 10 foot bgs sample intervals. However, based on the provided sample map, the actual location of sample collection was outside (east) of the established boundary of SMWU 111/112 and was not representative of the site conditions. The current 2014 resampling event documented in the Report submitted by Cannon Air Force Base indicates that only an oil range organic (ORO) TPH concentration of 9.10 mg/kg was detected at the 19 to 20 foot bgs sample interval, which is well below the 1,000 mg/kg TPH residential SSL. TPH was not detected in the additional sample collected at the 1 to 2 foot bgs sample interval. The samples were collected within the former location of SWMU 112.

**NMED Comment No. 3:** In order to evaluate the validity of analytical results reported in the Walk, Haydel & Associates, *Remedial Investigation Report* completed in 1990, from analyses of soil samples obtained from boring locations B4, B5 and B9, resampling was conducted at location B9 and included with the findings for SWMU 111/112. The exceedences of arsenic reported in 1990 for the sample location and all sample intervals to the boring termination depth of 61.5 feet bgs exceeded NMED SSLs and site specific background concentrations. The highest reported concentration was 152.5 mg/kg at the 31.5 foot bgs sample interval. However, the 1990 data was deemed invalid in the findings of the *RCRA Facility Investigation for SWMUs 34, 78, 85, 91, 95 and 107 Addendum Report* completed by URS in 2009. Additional sampling conducted during field activities at SWMU 111/112 presented in the current Report found the concentrations were below the residential SSL for arsenic of 4.25 mg/kg for the resampling of B9 at the 1.5 foot bgs (4.22 mg/kg), 9 foot bgs (2.38 mg/kg), 11.5 foot bgs (3.22 mg/kg), 16.5 foot bgs (3.73 mg/kg ) and 31.5 foot bgs (1.75 mg/kg) sample intervals indicating that the concentrations reported in the 1990 investigation may have been attributed to the method of analysis used.

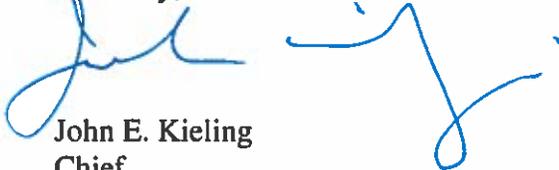
NMED concurs with the Permittee's conclusion that the above mentioned sites do not pose unacceptable risk to human health and the environment. However, if in the future any additional information becomes available that indicates that these sites may pose a risk to human health or the environment, NMED may require the Permittee to conduct corrective action at these sites. The Permittee may submit a permit modification request to change the status of Solid Waste Management Units 111/112 from Corrective Action Required to Corrective Action Complete

Colonel Gilpin  
September 2, 2015  
Page 3

(CAC). The request for a permit modification must be submitted in accordance with 40 CFR §270.42 (c) pertaining to Class 3 modifications.

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

Sincerely,



John E. Kieling  
Chief  
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB  
G. Acevedo, NMED HWB  
B. Wear, NMED HWB  
N. Dhawan, NMED HWB  
B. Chavez, CAFB  
R. Lancaster, CAFB  
L. Peters, CAFB

File: CAFB 2015, SWMU 111/112 Status Report Approval with Direction





DEPARTMENT OF THE AIR FORCE  
AIR FORCE CIVIL ENGINEER CENTER  
JOINT BASE SAN ANTONIO LACKLAND TEXAS

ENTERED

MAR 04 2015

Laura Peters  
Restoration Program Manager  
506 N. Air Commando Way  
Cannon AFB NM 88103

RECEIVED

Ms. Naomi Davidson  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Drive East Bldg 1  
Santa Fe NM 87505-6063

MAR 11 2015  
NMED  
Hazardous Waste Bureau

Dear Ms. Davidson,

The purpose of this letter is to present the status of Solid Waste Management Unit (SWMU) 128. Information about this SWMU indicates that it is a duplicate of SWMU 127. The attached letter status report presents that information in order to record the SWMU status in preparation for achieving corrective action complete status. If you have any questions regarding this submittal, please contact me at (575) 784-0491.

Sincerely,

LAURA PETERS, RPM, AFCEC/CZO

Attachment:  
Status of Solid Waste Management Unit 128

## Status of Solid Waste Management Unit 128

### 1.0 SWMU 128 Description

SWMU 128 was defined in the original 1987 RCRA Facility Assessment (RFA) for Cannon AFB as an Oil/Water Separator (OWS) near tank 4095 (#2). The RFA identified an OWS and Underground Storage Tank (UST) at this location. SWMU 127 was identified as OWS near tank 4095 (#1). This identification was in error because no OWS or UST were present in 1987. The only structures at Facility 4095 were a sand-trap and associated leach field. The site originally consisted of a 135-gallon concrete sand trap and leach field that received wash water from the petroleum, oil, and lubricants (POL) refueling truck wash rack at Facility 4095. The sand trap measured 2.5 feet × 4.5 feet in aerial extent and extended approximately 3.5 feet below the pavement. The sand trap discharged to a rectangular leach field approximately 300 square feet in size, located approximately 10 feet northeast of the wash rack.

The sand trap and leach field became active in 1977. The leach field became inactive in the 1980s. The old leach field was bypassed in 1991 and an OWS enclosed in a concrete vault was installed in line with the wash-rack's drain pipe and downstream from the sand trap. The original leach field and sand trap remained in place but were no longer used. After the OWS and new leach field were installed, the wastewater from the OWS discharged to the new leach field located approximately 20 ft. northeast of the former leach field. Recovered petroleum products temporarily were stored in the OWS for recycling. Potential contaminants include JP-4 fuel and oil and grease. SWMU 127 includes the wash rack, the old leach field, the OWS, the area where the sand trap is located, and the new leach field.

### 2.0 Facility 4095 History

Facility 4095 was investigated as part of the 1994 Appendix III SWMUs Phase I RFI and then again in the 1997 Appendix III SWMUs Phase II RFI. Then in 2000, the facility was evaluated as part of the Corrective Measures Study (CMS) at SWMUs 31, 48A, 77, and 127. This area was recently investigated again to address soil vapor comments made with respect to the 2000 CMS. The results of this most recent sampling event is under review by the New Mexico Environment Department (NMED). These historical studies have addressed the areas of the wash rack, OWS, historical leach field, and newer leach field. Figure 7-2 from the CMS has been attached to show the sampling locations with respect to the historical site features.

### 3.0 Summary and Conclusion

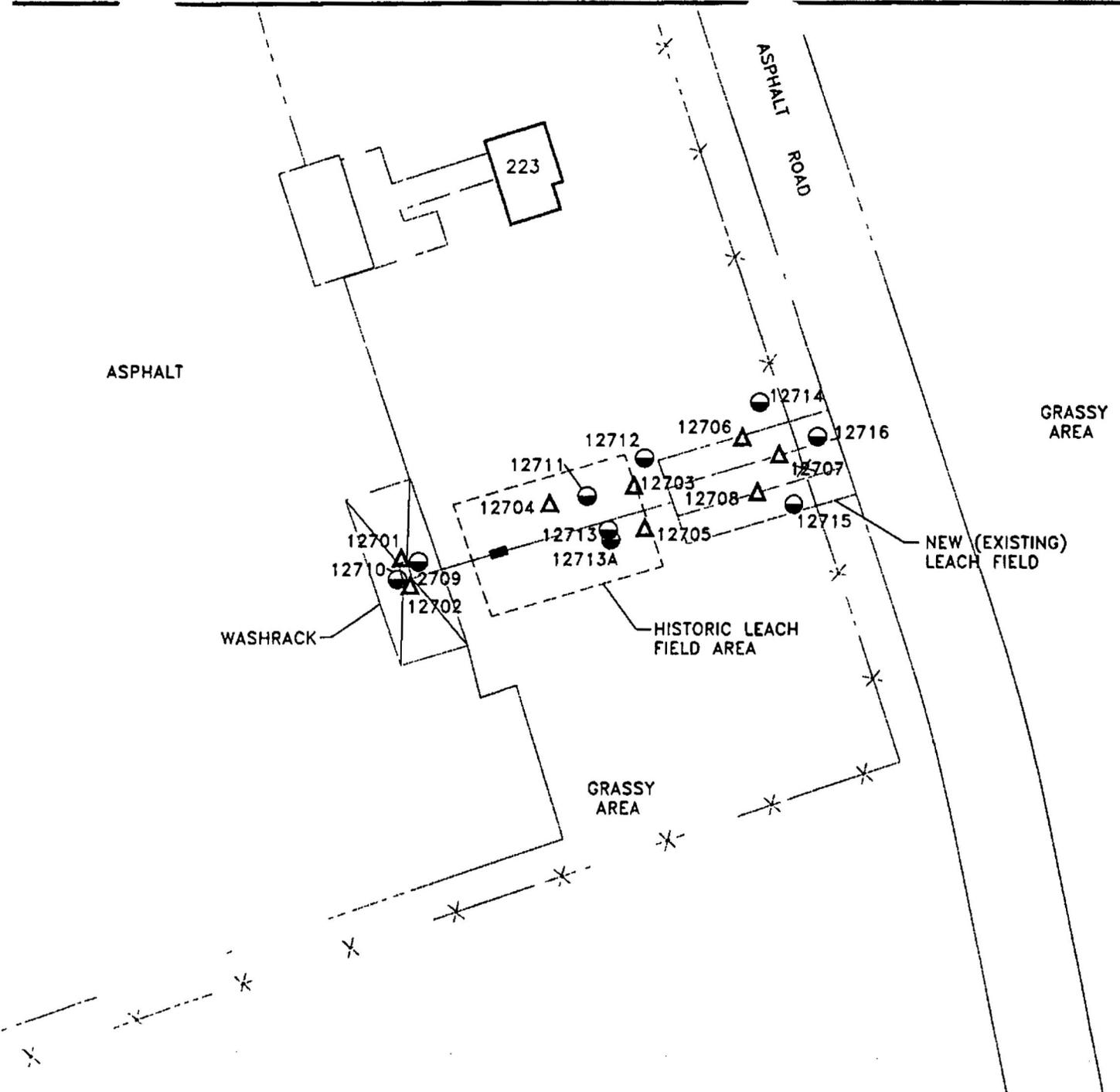
The 1987 RFA identified SWMUs 127 and 128 associated with Facility 4095. Facility 4095 included a wash rack, sand trap, OWS, old leach field, and new leach field. This facility was used to support washing of POL refueling trucks. The original facility was updated in 1991. All areas of the facility have been thoroughly investigated and continue to be addressed by SWMU 127. As a result, SWMU 128 appears to be a duplicate of SWMU 127. Therefore, SWMU 128 is recommended for Corrective Action Complete without Controls.

**LEGEND**

- 12701 PHASE I SOIL BORING LOCATION AND NUMBER
- ▲ PHASE I SOIL BORING LOCATION AND NUMBER
- PHASE II 1994 BORING LOCATION AND NUMBER
- OIL/WATER SEPARATOR
- X- FENCE

**NOTE:**  
 LOCATIONS AND SIZES OF ANY SAND TRAPS, OIL/WATER SEPARATOR, AND SEWER LINES ARE APPROXIMATE

SOURCE: CANNON AFB CAD FILES AND CANNON AFB RFI FIELD SAMPLING PLAN.



780 232

pril 07, 1999 1:01:06 p.m.  
 rrawing: f:\CANNON\M9602CC\T5500\FIG7-2.DWG (TSM)  
 refs: CAN-BASE.DWG

DRN BY	TSSM	DATE: 04/07/99	SAND TRAP AT POL WASHRACK - SWMU 127	PROJECT NO	FIG NO.
CHK'D BY		REVISION 0	SITE PLAN WITH BORING LOCATIONS	45FM9602CC 00	7-2
			CANNON AIR FORCE BASE NEW MEXICO		