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

ENTERED

MAY 12 2010

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Dear Ms. Stewart

Cannon Air Force Base, NM is forwarding two hardbound and two electronic copies of the *RCRA Facility Investigation for Solid Waste Management Units 34, 78, 85, 91, and 107 Addendum Report, Cannon Air Force Base, New Mexico, May 2010* for your approval (Attachment).

If you have any questions, please contact Mr. Hugh G. Hanson, Asset Management Flight, at 575-784-0490.

Sincerely

RONALD A. LANCASTER
Chief, Asset Management Flight

Attachment:
Hardbound and Electronic Documents (2)

cc:
NMED (D. Cobrain) w/o Attachment
EPA Region VI (W. Jacques) w/o Attachment

F I N A L

RCRA FACILITY INVESTIGATION FOR SWMUS 34, 78, 85, 91, 95, AND 107 ADDENDUM REPORT

CANNON AIR FORCE BASE NEW MEXICO

June 2009

Prepared for

Under contract to

U.S. Army Corps of Engineers
Omaha District

URS
12120 Shamrock Plaza, Suite 300
Omaha, Nebraska 68154

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Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
µg/kg	micrograms per kilogram
ADR	Automated data review
A-E	Architect-Engineer
AFB	Air Force Base
AGE	aerospace ground equipment
APPL	Agriculture & Priority Pollutants Laboratories, Inc.
AST	aboveground storage tank
bgs	below ground surface
B.P.	before present
BRA	Baseline Risk Assessment
BTEX	benzene, toluene, ethylbenzene, and xylenes
CEC	cation exchange capacities
cm	centimeter
cm/sec	centimeters per second
cm/yr	centimeters per year
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COC	chain of custody
COPC	chemical of potential concern
CSM	conceptual site model
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DQCR	Daily Quality Control Report
DoD QSM	Department of Defense Quality Systems Manual
DQO	Data Quality Objective
DRO	Diesel Range Organics
EP	extraction procedure

ft/mi	feet per mile
ft/yr	feet per year
gal/ft	gallons per foot
gpm	gallons per minute
GRO	gasoline range organics
IDW	investigation-derived waste
in/yr	inches per year
IRP	Installation Restoration Program
J	estimated
km/hr	kilometers per hour
L/min	liters per minute
LCS	laboratory control sample
LRL	LRL Sciences, Inc.
m	meters
m/m	meters per meter
m/yr	meters per year
m^3/m	cubic meters per meter
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mm	millimeter
mph	miles per hour
MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
MTBE	methyl tert-butyl ether
NFA	No Further Action
NMED	New Mexico Environment Department
NRC	National Research Council
OWS	oil/water separator
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PH	Hydrion Ion Exponent
PID	photoionization detector

ppm	parts per million
QA	quality assurance
QC	quality control
QAPP	Quality Assurance Project Plan
RCRA	Resource Conservation and Recovery Act
RDA	recommended daily allowance
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
SCFS	Sample Collection Field Sheet
SOP	standard operating procedure
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	Target Analyte List
TCE	trichloroethene
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TRPH	total recoverable petroleum hydrocarbons
U	nondetect
UJ	estimated nondetect
URS	URS Group, Inc.
USACE	United States Army Corp of Engineers
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UTL	upper tolerance limit
VOC	volatile organic compound
VSI	visual site inspection
W-C	Woodward-Clyde Consultants, Inc.
WP	Work Plan
XRF	X-Ray Florescence

EXECUTIVE SUMMARY

This Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) addendum report addresses six Solid Waste Management Units (SWMUs) at Cannon Air Force Base (AFB) near Clovis, New Mexico that required additional investigation based on the analytical results from the RFI for 21 SWMUs. The six SWMUs are listed below.

- SWMU 34 – Aerospace Ground Equipment (AGE) Drainage Ditch
- SWMU 78 – Fire Department Training Area No. 1
- SWMU 85 – Stormwater Collection Point
- SWMU 91 – Recovered Fuel Tank No. 5114
- SWMU 95 – Northeast Stormwater Drainage Area
- SWMU 107 – Fire Department Training Area No. 3

Previous and RFI analytical results were reviewed and reevaluated using current NMED Soil Screening Levels (SSLs). This RFI Addendum report presents analytical results, compares the results to current NMED SSLs, and provides recommendations for all six SWMUs.

The six SWMUs addressed by this RFI Addendum report were previously proposed for No Further Action (NFA) status (URS 2000b). This RFI Addendum addresses concerns identified by the New Mexico Environment Department (NMED) during their review of the NFA proposals (NMED 2004a). All six SWMUs were investigated as part of this RFI Addendum. The scope of the RFI Addendum field effort included the collection of near-surface and subsurface soil samples.

Overall, 56 soil samples (51 samples, plus five field duplicates) were collected and submitted for chemical analysis during the 2008 RFI Addendum field effort. Soil samples were collected and analyzed for benzene, ethylbenzene, toluene, and xylenes (BTEX), total petroleum hydrocarbons (TPH)-diesel range organics (DRO), TPH-gasoline range organics (GRO), arsenic and lead. One-hundred percent of the analytical data from the samples collected at SWMUs 34, 78, 85, 91, 95 and 107 was determined to be acceptable for their intended use, including estimated (**J/UJ**) data.

Initial site characterization was completed for SWMU 91 and additional site characterization was completed for SWMUs 34, 78, 85, 95, and 107. With the exception of SWMU 107, all SWMUs included in this RFI Addendum have been adequately characterized, in accordance with the current applicable state and federal regulations, and the available data indicate that SWMUs 34, 78, 85, 91, and 95 do not pose an unacceptable level of risk under current and projected future land uses:

- Lead exceeded the residential human health SSL in surface soil at SWMU 34.
- Lead exceeded the residential SSL and one lead concentration exceeded the industrial SSL at SWMU 78.
- Arsenic exceeded residential SSLs in surface soil at SWMUs 85 and SWMU 95.

- TPH-DRO exceeded residential and industrial screening levels at SWMU 107.

Only the TPH-DRO concentrations at SWMU 107 require further action. Based on the findings of this RFI Addendum, Corrective Action Complete without Controls is appropriate for SWMU 91. In addition, Corrective Action Complete with Controls is appropriate for SWMUs 34, 78, 85 and 95. However, additional investigation and limited investigation-derived waste disposal is planned for SWMUs 34 and 78, and additional investigation is planned for SWMU 85 (all under a separate work plan). Following completion of this additional fieldwork at SWMUs 34, 78, and 85, a petition for Corrective Action Complete review should be submitted to NMED for SWMUs 34, 78, 85, 91, and 95, and upon NMED's approval of Corrective Action Complete status, a Class III modification should be made to Cannon AFB's RCRA Part B Permit to remove SWMUs 34, 78, 85, 91, and 95.

Additional action is recommended for SWMU 107.

This document presents the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Addendum report for six Solid Waste Management Units (SWMUs) at Cannon Air Force Base (AFB) near Clovis, New Mexico.

1.1 AUTHORITY

The United States Army Corps of Engineers (USACE) Omaha District has contracted URS Group, Inc. (URS) under Contract Number W9128F-04-0001, Task Order No. 28, to complete an RFI Addendum at SWMUs (34, 78, 85, 91, 95 and 107) at Cannon AFB, New Mexico that required additional investigation based on the analytical results from the RFI. The six SWMUs are listed below.

1.2 PURPOSE AND SCOPE

This RFI Addendum report describes the additional fieldwork completed for five and initial fieldwork for one Cannon AFB SWMUs during this project. The six SWMUs are listed below.

- SWMU 34 – Aerospace Ground Equipment (AGE) Drainage Ditch
- SWMU 78 – Fire Department Training Area No. 1
- SWMU 85 – Stormwater Collection Point
- SWMU 91 – Recovered Fuel Tank No. 5114
- SWMU 95 – Northeast Stormwater Drainage Area
- SWMU 107 – Fire Department Training Area No. 3

1.2.1 Project Background

All of the SWMUs addressed by this RFI Addendum were proposed for no further action (NFA) status (URS 2000b). This project addresses concerns identified by the New Mexico Environment Department (NMED) during its review of the NFA proposals (NMED 2004a). Most of the SWMUs included in this RFI Addendum have been investigated previously, with the exception of SWMU 91. The other five SWMUs (SWMUs 34, 78, 85, 95 and 107) required additional characterization. These SWMUs were investigated as part of this RFI Addendum. The scope of the field investigation included the collection of near-surface and subsurface soil samples.

Following soil sample collection and laboratory analytical testing, the data were reviewed and validated. This RFI Addendum report presents the analytical results, compares these results to current NMED SSLs, includes further human health and ecological risk evaluations, as necessary, and provides recommendations for each of these six SWMUs.

1.2.2 Previous Environmental Investigations and Regulatory Actions

The SWMUs included in this RFI Addendum report have had different levels of investigatory or regulatory actions. In June 2005, URS completed a document search and site visits (as necessary) for the sites where RFI sampling was originally planned, as described in the Pre-Draft Work Plan (WP) (URS 2005). The only site specific to this additional RFI is SWMU 91. Based on the findings of the document search, sampling was required at SWMU 91 because sampling results were not available to characterize the site.

As shown in **Table 1-1**, five of the six sites addressed by this RFI Addendum have been the subject of previous environmental sampling. Five of the sites (SWMUs 34, 78, 85, 95 and 107) were sampled as part of previous Remedial Investigations (RIs). The sixth site (SWMU 91) is being sampled to characterize the site. The locations of the SWMUs are shown on **Figure 1-1**.

1.3 REPORT ORGANIZATION

The remaining sections of this report are organized as follows:

- **Section 2** provides a description of Cannon AFB.
- **Section 3** discusses the decision process used to evaluate data and the need for further evaluation, if any.
- **Section 4** describes the field sampling procedures used.
- **Section 5** discusses the chemistry data reviews and validations completed for the new data collected during the 2008 RFI Addendum fieldwork.
- **Sections 6** through **11** describe the sampling activities (those completed during the RFI Addendum, if any, and during previous investigations), physical and chemical results, nature and extent of contamination, screening level risk evaluation, and summary and recommendations for each of the six SWMUs.
- **Section 12** presents the summary and recommendations.
- **Section 13** provides a list of the references used to produce this report.

The appendices contain the following information:

- **Appendix A** contains the Daily Quality Control Reports (DQCRs), boring logs, and sample collection field sheets (SCFSs).
- **Appendix B** contains the Data Quality Review and Validation results.
- **Appendix C** contains the analytical data, chain-of-custody (COC) forms, and Waste Manifest for the 2008 RFI samples.
- **Appendix D** contains summaries of data collected during both previous investigations and the 2008 RFI Addendum fieldwork.

- **Appendix E** presents documentation of previous activities for the six SWMUs (SWMUs 34, 78, 85, 91, 95 and 107).
- **Appendix F** contains the photographic log for the June 2005 SWMU inspection.
- **Appendix G** contains the photographic log for the October 2008 RFI Addendum fieldwork.
- **Appendix H** is reserved for potential comments and responses following NMED's review of this RFI Addendum Report.

TABLE 1-1
SUMMARY OF PREVIOUS INVESTIGATIONS
COMPLETED AT SWMUs 34, 78, 85, 91, 95 AND 107
CANNON AFB, NEW MEXICO

SWMU No.	Name	IRP No.	Investigation (Author & Date)					
			IRP Phase II Stage 1 (Radian 1986)	Final IRP RI (Walk Haydel 1990)	RI of 18 SWMUs (W-C 1992)	Phase III RFI (W-C 1997)	CMS (W-C 1999)	Other Sampling (USGS)
SWMU 34	AGE Drainage Ditch	SD-15	X		X			
SWMU 78	Fire Department Training Area No. 1	FT-06	X		X			
SWMU 85	Stormwater Collection Point	SD-12	X	X				
SWMU 91	Recovered Fuel Tank No. 5114	-	X[1]	X[1]	X[1]	X[1]	X[1]	X[1]
SWMU 95	Northeast Stormwater Drainage Area	SD-20	X	X	X			
SWMU 107	Fire Training Area No. 3	FT-08	X		X			

Notes:

[1] Denotes an investigation of SD-11, which is adjacent to SWMU 91

SWMU = Solid Waste Management Unit

IRP = Installation Restoration Program

RI = Remedial Investigation

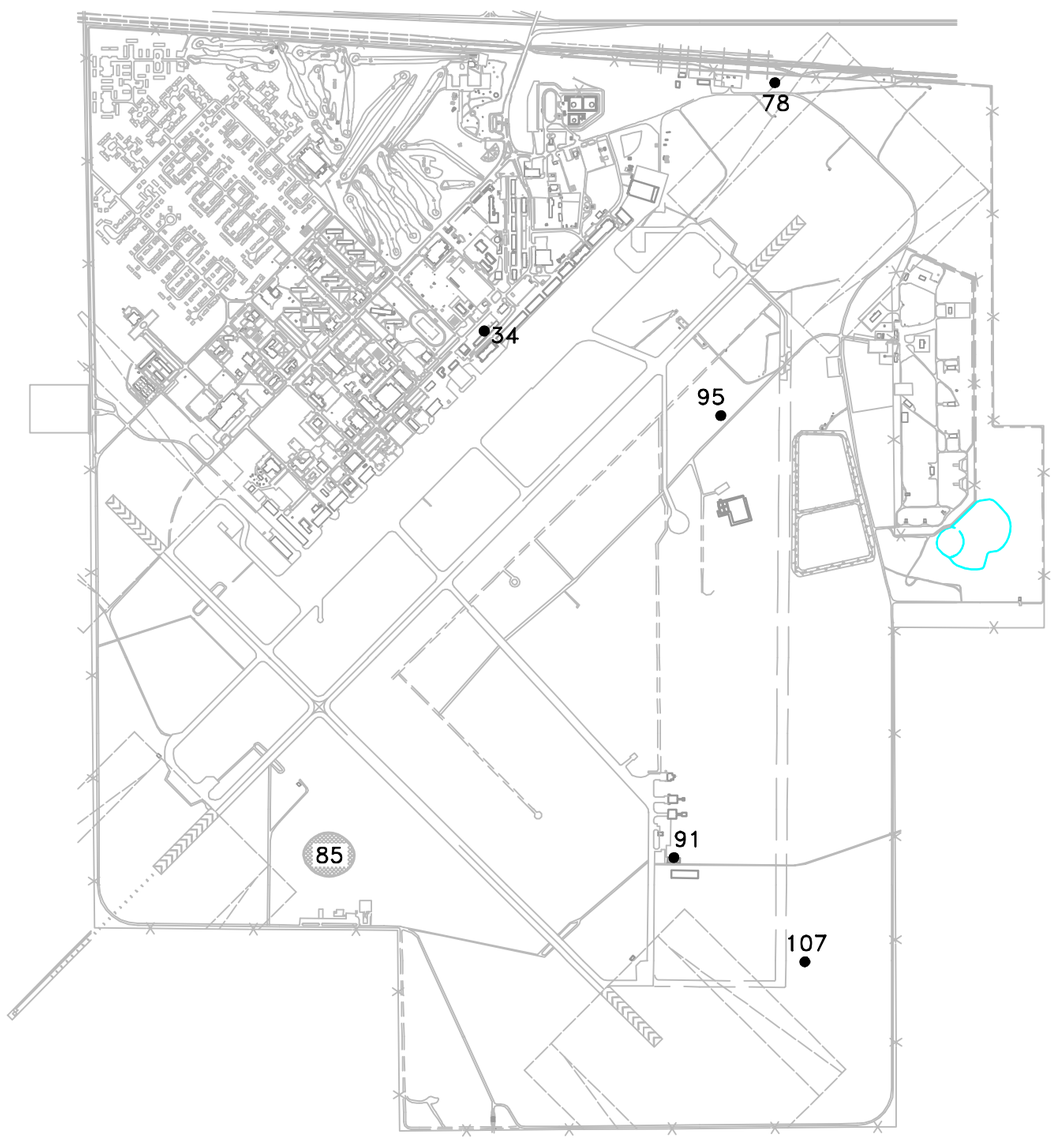
CMS = Corrective Measure Study

AGE = Aerospace Ground Equipment

USGS = United States Geological Survey

No. = Number

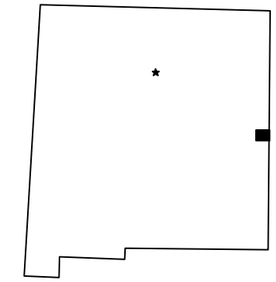
RFI = Resource Conservation and Recovery Act Facility Investigation



LEGEND:

3 SOLID WASTE MANAGEMENT UNIT
● (SWMU) LOCATION AND NUMBER

SWMU No.	NAME
34	SD-15, AGE DRAINAGE DITCH
78	FT-06, FIRE DEPARTMENT TRAINING AREA No. 1
85	SD-12, STORMWATER COLLECTION POINT
91	RECOVERED FUEL TANK No. 5114
95	SD-20, NE STORMWATER DRAINAGE AREA
107	FT-08, FIRE DEPARTMENT TRAINING AREA No. 3



SITE LOCATION MAP

N

2000 1000 0 2000

SCALE IN FEET

January 30, 2009 9:01:56 a.m.
Drawing: T:\CANNON\16169930\300\1-1.dwg

LOCATION MAP, SWMUs FOR RFI ADDENDUM EVALUATION
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 01/22/09	PROJECT NO. 16169930	FIG. NO. 1-1
CHK'D. BY: JLV	DATE: 01/22/09		

2.1 SETTING – PHYSICAL GEOGRAPHY

Cannon AFB is situated in the Southern High Plains Physiographic Province in the Llano Estacado subprovince. The Llano Estacado is a nearly flat plain sloping gently (10 to 15 feet per mile) to the east and southeast. Elevations in the eastern New Mexico portion of the Llano Estacado exceed 4,000 feet above mean sea level (msl). In the vicinity of Cannon AFB, elevations range from 4,250 feet to 4,350 feet above msl.

The most prominent geomorphic features in the vicinity of Cannon AFB are blowouts and broad, widely spaced valleys. Less common landforms are relict sand dunes located along the northern side of the Portales Valley to the south. Relict dunes are not found on or near Cannon AFB.

Blowouts are broad, shallow depressions that form as the result of soil eroded by wind. Blowouts commonly collect surface runoff from small to moderate sized drainage areas. During periods of rainfall, runoff collects in blowouts to form ephemeral playa lakes. Playas have no external surface drainage. Water is lost by infiltration to the soil and evaporation; without recharge, playa lakes persist for only a few days or weeks. Three playas are located within Cannon AFB, and several more are found to the north and east of Cannon AFB.

Stream valleys tend to be fairly broad and widely spaced. Streams are ephemeral and drainages are poorly developed. No streams exist on or near Cannon AFB. Running Water Draw and Frio Draw, located about 10 and 20 miles, respectively, north of Cannon AFB, are the nearest streams. These are second-order streams. Both streams are very straight, flow southeast, and have rectilinear drainage patterns with short laterals (W-C 1991).

2.2 DEMOGRAPHICS AND LAND USE NEAR CANNON AFB

Cannon AFB is located just west of the City of Clovis, New Mexico and just south of U.S. Highway 60-84 in a farming and ranching area. The majority of the land surrounding Cannon AFB is productive, irrigated farmland or grassland. The major crops are wheat, sorghum, sugar beets, corn, cotton, alfalfa, barley, and peanuts. The land is also used for cattle grazing, both beef and dairy, and Clovis is considered the "Cattle Capital of the Southwest." There were 33,063 people living in Clovis in 2004 according to U.S. Census data, while the Cannon AFB population was estimated to be 2500 in 2008 (Cannon AFB 2008).

2.3 CLIMATOLOGY

The climate of east-central New Mexico is classified as tropical semi-arid, with summer temperature and precipitation maxima. Average monthly temperatures range from a January low of 12 degrees Celsius (°C) (39 degrees Fahrenheit [°F]) to a July high of 26°C (78°F). Extreme daily temperatures range from –24°C (-11°F) to 41°C (106°F) (Lee Wan 1990). Average monthly precipitation ranges from 1 centimeter (cm) (0.4 inch) in winter to 6.9 cm (2.7 inches) in July. The maximum-recorded 24-hour rainfall was 12.2 cm (4.8 inches), which occurred in the month of August. Rainfall occurs on eight or more days per month during the summer precipitation maximum. Mean annual precipitation is approximately 41 cm (16 inches). The

mean annual evapotranspiration rate is 181.4 centimeters per year (cm/yr) (71.4 inches per year [in/yr]) (Lee Wan 1990). Prevailing winds are from the west at an average of 5 kilometers per hour (km/hr) (3.1 miles per hour [mph]) during fall, winter, and spring. During the summer, winds are from the south at an average of 3.7 km/hr (2.3 mph).

The atmosphere around the area of Cannon AFB is generally well mixed. The seasonal and annual average mixing heights can vary from 400 meters (m) in the morning to 4,000 m in the afternoon. The afternoon mixing heights are typically greater during the spring and fall. The morning mixing heights are usually low due to nighttime heat loss from the ground, producing surface-based temperature inversions. After sunrise, these inversions break up, and solar heating of the earth's surface causes vertical mixing in the atmosphere.

Dust is frequently entrained into the atmosphere in this region of the country because of gusty winds and the semi-arid climate. The Texas Panhandle-eastern New Mexico area is considered the worst area in the United States for windblown dust. Occasionally, this windblown dust is of sufficient quantity to restrict visibility. Most of the seasonal dust storms occur in March and April, when the wind speeds are typically high (i.e., average 5 km/hr) (W-C 1991).

2.4 GEOLOGY

A generalized geologic section at Cannon AFB is shown in **Figure 2-1**. The near-surface stratigraphic units of interest at Cannon AFB are the Late Miocene-Late Pliocene-age Ogallala Formation and the Early Triassic Dockum Group.

The Dockum Group consists of three formations. The stratigraphically lowest unit is the Santa Rosa Sandstone. Overlying the Santa Rosa Sandstone are the Chinle and Redonda Formations. The Chinle and Redonda Formations are composed mainly of red shales with lesser interbedded sands and are known locally as "redbeds." The top of the Dockum Group is marked by an erosional nonconformity having relief of up to several hundred feet (Lee Wan 1990).

Overlying the Dockum Group redbeds is the Ogallala Formation. The Ogallala Formation extends from eastern New Mexico and Colorado into Texas, Oklahoma, Kansas, Nebraska, and South Dakota. According to Lee Wan and Associates (1990), drillers' logs from Cannon AFB indicate that the Ogallala Formation varies from 360 feet to 415 feet in thickness. The incised upper surface of Triassic redbeds strongly influences Ogallala thickness. Paleo valleys in the post-Triassic nonconformity are deep and trend dominantly east to west. Ogallala thickness may thus vary significantly over short north-to-south distances.

The Ogallala Formation is erosionally truncated to the south along the abandoned Portales Valley, to the west along the Pecos River Valley, and to the north in a series of ephemeral stream valleys. The Ogallala Formation extends more than 125 miles to the east before terminating as an escarpment in Briscoe County, Texas. Springs and seeps are common along the erosional margins of the Ogallala.

The Ogallala Formation dips gently and monoclinally to the southeast in the vicinity of Cannon AFB. As reported by Lee Wan and Associates (1990), data suggest that some quaternary

warping may have occurred; however, most of these structures are located well to the northwest and southwest of Cannon AFB. No faults or buried structural lineaments are known to exist in the vicinity of Cannon AFB.

The Ogallala Formation is composed of unconsolidated, poorly sorted gravel, sand, silts, and clays. The base of the Ogallala is generally marked by a gravel, cobble, and boulder deposit. This basal member contains sediments derived from igneous and sedimentary rocks transported from the mountains to the west. The Ogallala Formation was laid down as stream and overbank deposits formed within coalescing alluvial fans. These fans form a broad pediment along the eastern flank of the Rocky Mountains. As is typical of alluvial deposits, Ogallala Formation internal stratigraphy varies vertically and horizontally over short distances.

Except where strongly cemented by calcium carbonate (caliche), the sediments of the Ogallala Formation are loose and friable. Authigenic and allogenic clays are found as a trace to abundant matrix mineral (Lee Wan 1990). As reported by Lee Wan and Associates (1990), five zones have been distinguished within the Ogallala Formation of east-central New Mexico on the basis of clay minerals. Smectites (montmorillonites) and attapulgite (with sepeotite) are the dominant clays throughout the Ogallala. Illite is a lesser but persistent clay, as is kaolinite. Smectite is a swelling clay, causing deep cracks to form in dry surface soils. Smectite in particular and, to a lesser extent, attapulgite and illite, are clays with moderate to high cation exchange capacities (CEC). The formation as a whole should, therefore, have a relatively high CEC, which should inhibit the migration of charged contaminants and especially ionic forms of metals.

Caliche is a major feature of the Ogallala Formation, occurring as nearly continuous to discontinuous layers throughout. Caliche is hard, white to pale tan on fresh surfaces, weathering to gray, and has a chalky appearance. Caliche forms as calcium carbonate, leached from overlying sediments, and precipitates in the pore space of the host sediments. Precipitation is caused by the evaporation of downward percolating water. The caliche may thus mark the position of ancient vadose zones. As reported by Lee Wan and Associates (1990) radiocarbon dates for the upper “climax” caliche range from approximately 27,000 years Before Present (B.P.) to approximately 42,000 years B.P.

Caliche is relatively soluble in acidic water (i.e., water with a pH less than 7) or in waters containing dissolved carbon dioxide. The top surface of the uppermost or “climax” caliche in a fresh outcrop typically shows solution etching.

The Ogallala Formation has numerous continuous to discontinuous caliche layers throughout its thickness. The climax caliche is pisolitic (i.e., consisting of spherical concentrically laminated aggregates 1 to 10 millimeters [mm] in diameter) (Lee Wan 1990). The pisolites are thought to have formed as the caliche was repeatedly chemically weathered and brecciated during Pleistocene pluvials (wet climate episodes) and later recemented during drier intervals. This upper caliche crops out around playas and the bounding escarpments of the Ogallala Formation, and is locally termed “caprock.” The climax caliche is typically 3 to 5 feet thick. Caliches that occur lower in the Ogallala Formation are platy and harder. Caliche may be thin or absent below playas (W-C 1991).

2.5 HYDROGEOLOGY

The lower portion of the Ogallala Formation is the primary regional aquifer for both potable and irrigation water. No deeper aquifers are utilized in the vicinity of Cannon AFB. The Ogallala aquifer is part of the High Plains Aquifer that extends continuously from Wyoming and South Dakota into New Mexico and Texas. In east-central New Mexico, the Ogallala aquifer rests on Dockum Group redbeds that serve as the basal confining layer. The Ogallala aquifer is a water table, or unconfined, aquifer (Lee Wan 1990). The Ogallala aquifer has a southeasterly regional gradient of about 17 feet per mile (ft/mi) (0.0032 meters per meter [m/m]) (see **Figure 2-2**). Well yields vary from less than 1 gallon per minute (gpm) in thin silts and sands and up to 1,600 gpm in thick sands and gravels (Lee Wan 1990). Water quality is generally good, with hardness and fluorides being somewhat high (Lee Wan 1990).

Beneath the eastern portion of Cannon AFB, the depth to groundwater has been measured between 270 and 300 feet below ground surface (bgs). Saturated thickness of the Ogallala aquifer ranges from 93 to 143 feet and is influenced by the configuration of the erosional nonconformity surface marking the top of the Dockum Group. The local groundwater gradient is southeasterly at 7.5 ft/mi (Lee Wan 1990). Yields in tests of Cannon AFB water wells have ranged from 776 liters per minute (L/min) (205 gpm) to 4,353 L/min (1,150 gpm). Specific capacities range from 0.14 cubic meters per meter (m^3/m) (11.4 gallons per foot [gal/ft]) to 0.35 m^3/m (27.9 gal/ft) (Lee Wan 1990).

Very rough estimates of hydraulic conductivity were made from well pump tests in water wells 5 and 9 (**Figure 2-3**) using the Theis equation. An estimate of hydraulic conductivity for water well 8 was based on water level recovery data using the Bouwer and Rice approach (Lee Wan 1990). The data used in these calculations were obtained to evaluate pump rates, efficiency, and well yield and were not intended for use in calculating aquifer properties. The results of these calculations should therefore be considered as first approximations.

Hydraulic conductivity values for water wells 5 and 9 were found to be approximately 2.0×10^{-3} centimeters per second (cm/sec). Calculations for water well 8 resulted in a hydraulic conductivity of 2.0×10^{-2} cm/sec. In addition, slug testing of two monitoring wells (MW-O and MW-N) was completed by Woodward-Clyde Consultants, Inc. (W-C) in February 1995 (W-C 1995). The estimated hydraulic conductivities from these slug tests were both 3×10^{-3} cm/sec. These estimates appear to be low when compared to published hydraulic conductivity data for sands and gravels. As reported by Lee Wan and Associates (1990), a groundwater flow velocity of about 45 meters per year (m/yr) (150 feet per year [ft/yr]) has been estimated. This calculates out to a hydraulic conductivity of approximately 1.4×10^{-4} cm/sec. Again, this appears to be low when compared with published data (Freeze and Cherry 1979).

The presence of interstitial clays may account for both the variability and the low values of hydraulic conductivities. Boring logs from Cannon AFB Installation Restoration Program (IRP) projects and published reports (Lee Wan 1990) indicated that interstitial and interstratified clays are abundant in the Ogallala Formation.

Recharge to the Ogallala aquifer is primarily through precipitation. A recharge rate of 0.5 in/yr was calculated using the Theis equation, and the recharge rate may be as much as 1.0 in/yr (Lee Wan and Associates 1990). Due to the high evapotranspiration rate and low precipitation, recharge probably occurs only during heavy rainfall events in which the infiltration capacity of the soil is exceeded and runoff occurs, or during cool months when precipitation exceeds evapotranspiration. Excess runoff flows to playas, and the presence of water in playas may allow deep percolation to the aquifer. The occurrence of this process is evidenced by the presence of clay deposits in, and thin or nonexistent caliche layers directly below, playas. Caliche is soluble in acidic rain waters, and is leached over time to form percolation pathways.

Discharge from the Ogallala aquifer occurs through well pumping and springs along the eroded margins of the formation. Spring discharge does not occur on or near Cannon AFB. However, domestic and irrigation water wells are common on and around Cannon AFB. The rate of discharge exceeds the rate of recharge. Water levels in the Ogallala aquifer have declined steadily from the 1930s to the present. A decline of 50 to 100 feet has been observed in the area around Clovis, New Mexico for the period from the 1930s to 1980. Lee Wan and Associates (1990), states "the largest area of water level decline exceeding 100 feet occurs south of the Canadian River extending from Curry County, New Mexico to Crosby County, Texas."

The dominant uses of groundwater in the Cannon AFB area are as potable and irrigation water. Numerous wells are found in the Cannon AFB area, most of which provide only irrigation water.

The Ogallala aquifer will continue to be used as the primary source of potable and irrigation water for eastern New Mexico. The New Mexico State Engineer designated Curry County as a Water Basin in 1989. This designation allows for regulation of water rights, usage, and well drilling (W-C 1991).

2.6 SOILS

2.6.1 Cannon AFB Vicinity

Soils in the vicinity of Cannon AFB are classified as SM to SC under the Unified Soil Classification System (USCS), and as aridisols (calciorthids) under the Soil Conservation Service Comprehensive Soil Classification System. The following summary is based on the Soil Conservation Service Curry County Soil Survey as reported by Lee Wan and Associates (1990).

The most common soil type on Cannon AFB is Amarillo fine sandy loam, 0- to 2-percent slope phase (map symbol Ab on **Figure 2-4**). This soil consists of a thin sandy A horizon, well-defined clayey B_{1-3} horizons, with a calcic B_3 horizon at depths below 40 inches. The calcic B_3 horizon lies on a calcic C horizon or on caliche. The Amarillo fine sandy loam is present on all relatively flat surfaces at Cannon AFB but is also found on slopes associated with playas (map symbol Ac).

Clovis fine sandy loams, 0- to 2-percent slope phase (map symbol Cb) and 2- to 5-percent slope phase (map symbol Cc) are very similar to Amarillo fine sandy loams. In the Clovis soils, the

depth to the calcic C horizon ranges from 28 to 56 inches. The depth to caliche exceeds 56 inches. Clovis and Amarillo fine sandy loams occur in close association.

In a few limited areas, particularly along the steeper slopes around playas, Mausker fine sandy loam, 0- to 2-percent slope phase (map symbol Ma), and 2- to 5-percent phase (map symbol M6) are found. Mausker fine sandy loams have no B horizons and are very calcareous. The calcic C horizon is within 2 feet of the surface.

The A and B horizons of Amarillo and Clovis fine sandy loams are rapidly to moderately permeable. Mausker fine sandy loam A and Ac horizons are rapidly permeable. Permeabilities in calcic B and C horizons are moderate (Lee Wan 1990).

2.6.2 Investigated RFI Addendum Sites

The surficial stratigraphy (to 2 feet bgs) encountered during the RFI Addendum at SWMUs 34 and 78 and stratigraphy (to 15 feet bgs) at SWMUs 85, 91, 95 and (to 30 feet bgs) at SWMU 107 for stratigraphy below 15 feet bgs (i.e., to 30 feet bgs) was very similar. The surficial stratigraphy typically consisted of 4 to 8 feet of silty clay (USCS symbol CL) fill, and was underlain by native soil consisting of sandy silt (USCS symbol ML) to silty sand (USCS symbol SM). The stratigraphy below eight feet bgs consisted of sandy silt (ML) with layers of silty sand (SM) and well-cemented but fractured caliche nodules. The soils encountered were generally soft to hard, dry, tan to light pinkish-tan, with fine sand and well-cemented caliche nodules. Occasional well-cemented caliche layers were encountered. Detailed boring logs for each soil boring are included in **Appendix A**.

2.7 BACKGROUND METALS CONCENTRATIONS IN SOIL

The natural soils in the vicinity of Cannon AFB are alkaline and generally rich in metals. Typically high concentrations of aluminum, iron, magnesium, manganese, and potassium combine with elevated levels of many other metals in the natural soils. Calcium is naturally present in the soils at levels up to nearly 200,000 milligrams per kilogram (mg/kg). Tightly cemented layers of "caliche" are present in several horizons in the natural soils and the Ogallala aquifer below. As stated in **Section 2.4**, the Ogallala Formation as a whole should have a relatively high CEC, which should, in turn, inhibit the migration of charged contaminants, especially the ionic forms of metals.

The background levels of inorganic compounds in surface and subsurface soil at Cannon AFB are presented in **Table 2-1** in the form of a mean value and statistical information on the ranges encountered for each element. **Table 2-1** has been adapted from a final report by W-C dated September 1997 entitled "Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico." This report summarizes background data for soil from numerous past investigations in the vicinity.

The mean values and upper tolerance limits (UTLs) presented in **Table 2-1** are the background levels used in the screening of soil chemical results for this RFI. In addition to comparison to the UTL of base-wide background data (which is necessarily from a limited data set), other sources

of naturally occurring metals concentrations, such as the United States Geological Survey (USGS) (1984), were considered when determining whether metals concentrations are within background levels.

2.8 WATER QUALITY

The groundwater quality at Cannon AFB is generally good, with dissolved solids ranging from 250 to 500 milligrams per liter (mg/L) (Gutentag and Wells 1984) and fluorides ranging from 2.2 to 2.7 mg/L (William Matotan and Associates, Inc. 1985).

TABLE 2-1
SUMMARY OF BACKGROUND ELEMENTAL CONCENTRATIONS[1] IN SOIL SAMPLES[2]
CANNON AFB, NEW MEXICO

	Mean (x)		Standard Deviation (s)		95% Upper Tolerance Limit (UTL) of Background Concentrations	
Element	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil	Surface Soil	Subsurface Soil
Aluminum	5,508	5,932	1,964	2,183	8,950	12,214
Antimony	ND (3)	ND (3)	ND (3)	ND (3)	3.15 (3)	16 (3)
Arsenic	2.1	2.1 (4)	0.48	0.96 (4)	3.6	4.3 (4)
Barium	100	210	165	199	670	890
Beryllium	0.35 (4)	0.35 (4)	0.13 (4)	0.17 (4)	0.78 (4)	0.73 (4)
Cadmium	ND (3)	ND (3)	ND (3)	ND (3)	0.435 (3)	1.3 (3)
Calcium	5,645	89,410	11,366	64,611	44,800	237,498
Chromium (total)	7.1	5.6	1.3	2.3	11	13
Cobalt	2.9	2.6 (4)	1	1.4 (4)	6.6	4.7 (4)
Copper	6.8	3.8 (4)	4.6	2.0 (4)	18.3	8.3 (4)
Iron	6,458	5,148	1,349	2,262	10,100	13,148
Lead	6.8	4.7	1.6	1.7	12	8.7
Magnesium	1,066	4,260	390	3,856	1,930	19,300
Manganese	139	83	51	50	307	333
Mercury	0.025 (4)	ND (3)	0.016 (4)	ND (3)	0.056 (4)	0.019 (3)
Nickel	5.5	5.9 (4)	1.6	2.4 (4)	11	15 (4)
Potassium	1,345	1,222	413	417	2,691	2,512
Selenium	ND (3)	0.47 (4)	ND (3)	0.31 (4)	0.26 (3)	1.1 (4)
Silver	-5	ND (3)	-5	ND (3)	0.4 (5)	2.7 (3)
Sodium	91	351 (4)	10	253 (4)	102	1,227 (4)
Thallium	ND (3)	ND (3)	ND (3)	ND (3)	0.6 (3)	2.65 (3)
Vanadium	15	16	2.8	5.2	23	33
Zinc	15	12	5.2	4.8	32	31

Notes:

(1) All concentrations are in milligrams per kilogram (mg/kg).

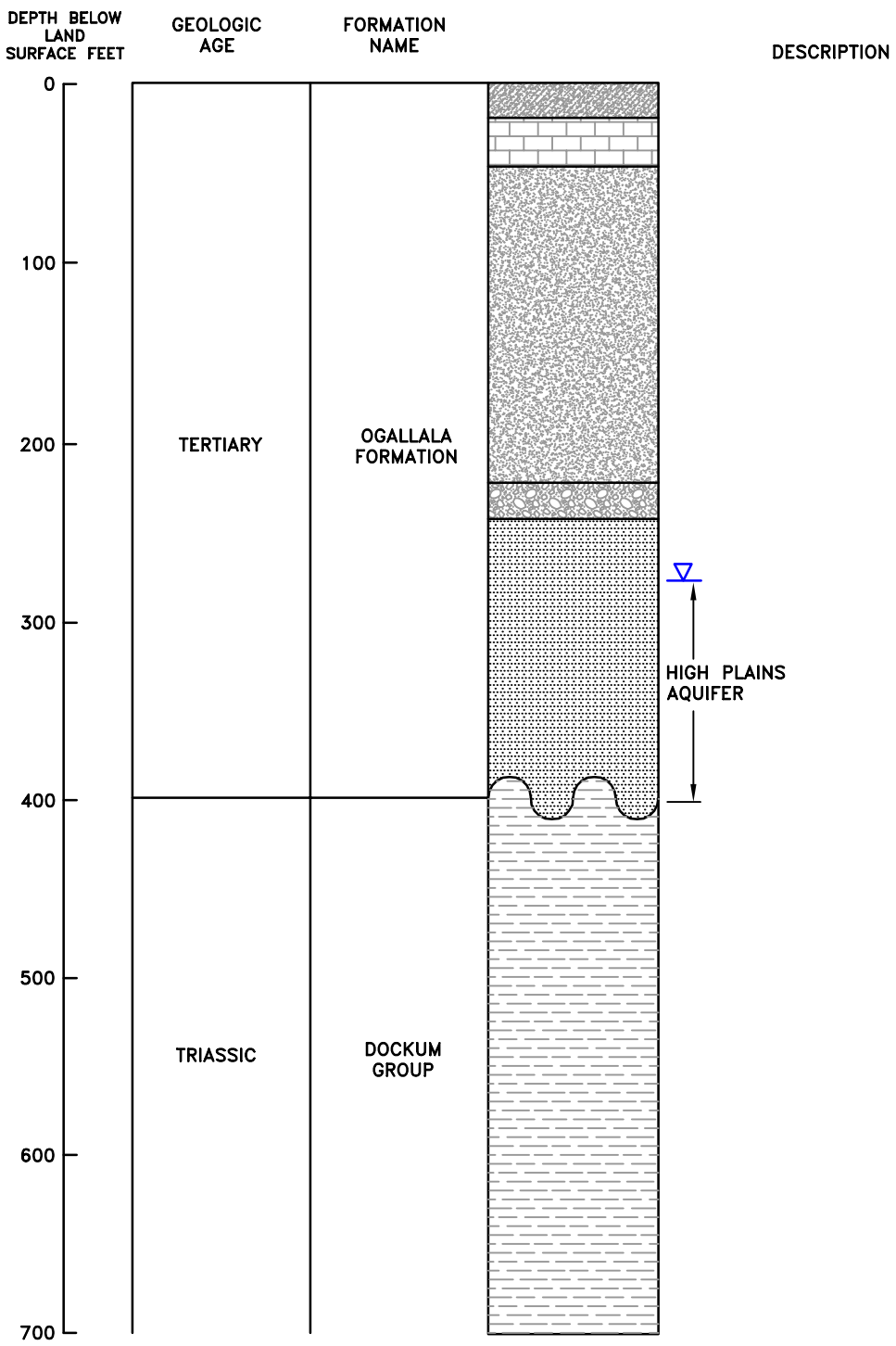
(2) From report entitled "Naturally Occurring Concentrations of Inorganics and Background Concentrations of Pesticides at Cannon Air Force Base, New Mexico" (W-C 1997).

(3) All analytical samples were nondetect; therefore, a mean and standard deviation was not calculated. One-half the highest reporting limit is used as the 95% UTL. The actual mean, standard deviation, and UTL may be less than these values.

(4) Values determined from a data set including one-half of the reporting limits for nondetects.

(5) Silver was detected in only one sample; therefore, a mean and standard deviation was not calculated. The single detected concentration is used as the 95% UTL.

ND = nondetect



LEGEND

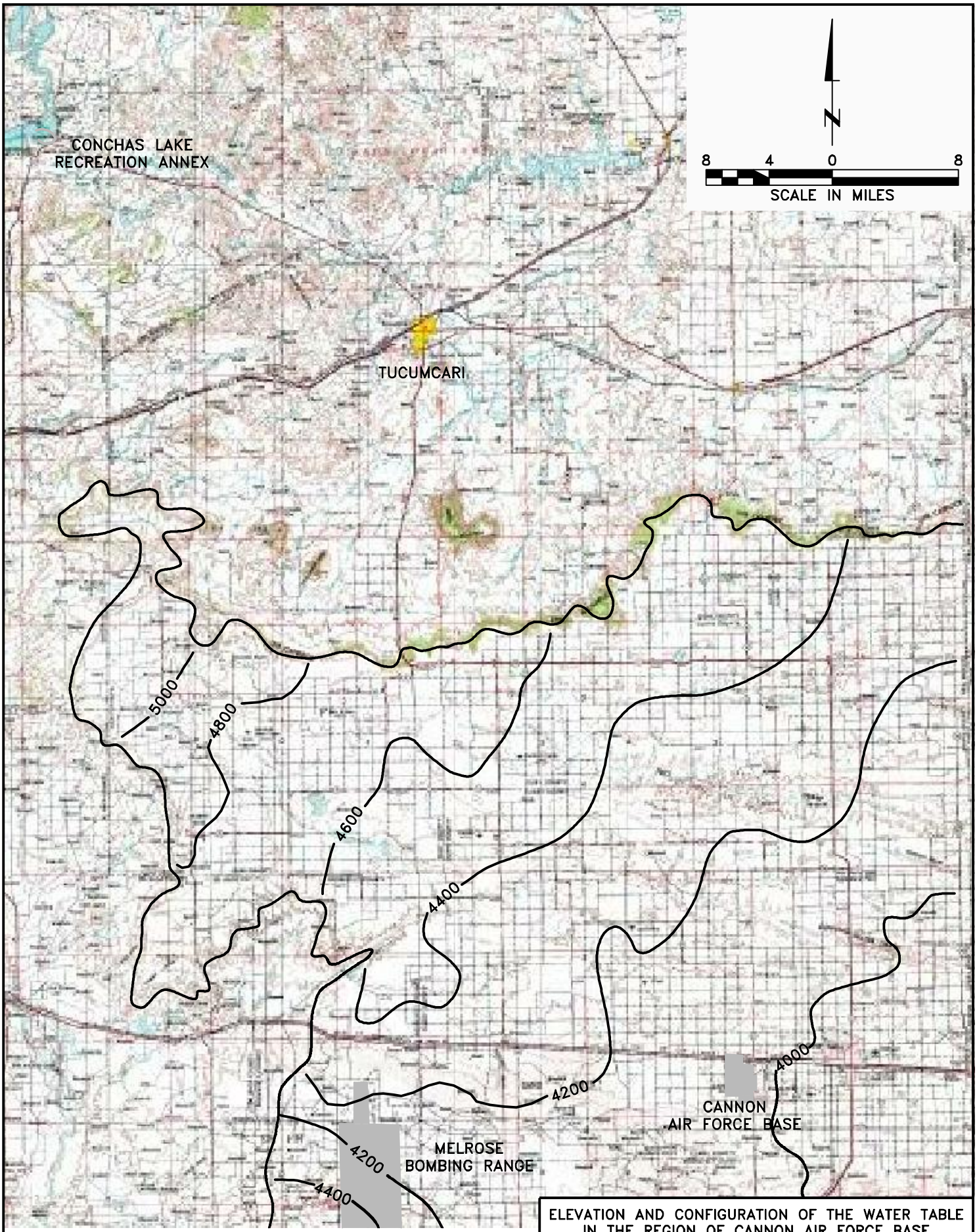
- SILTY SAND WITH CALICHE
- CALICHE
- SAND AND SILTY SAND
- SANDY GRAVEL
- SAND
- SANDSTONE (RED BEDS)
- LITHOLOGIC CONTACT
- EROSIONAL UNCONFORMITY
- WATER LEVEL

SOURCE: MODIFIED FROM GUTENTAG ET.AL., 1984

GENERALIZED GEOLOGIC STRATA AT
CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 01/22/09	PROJECT NO. 16169930	FIG. NO. 2-1
CHK'D. BY: JLV	DATE: 01/22/09		

January 30, 2009 9:02:38 a.m.
Drawing: T:\CANNON\16169930\600\fig 2-1.dwg

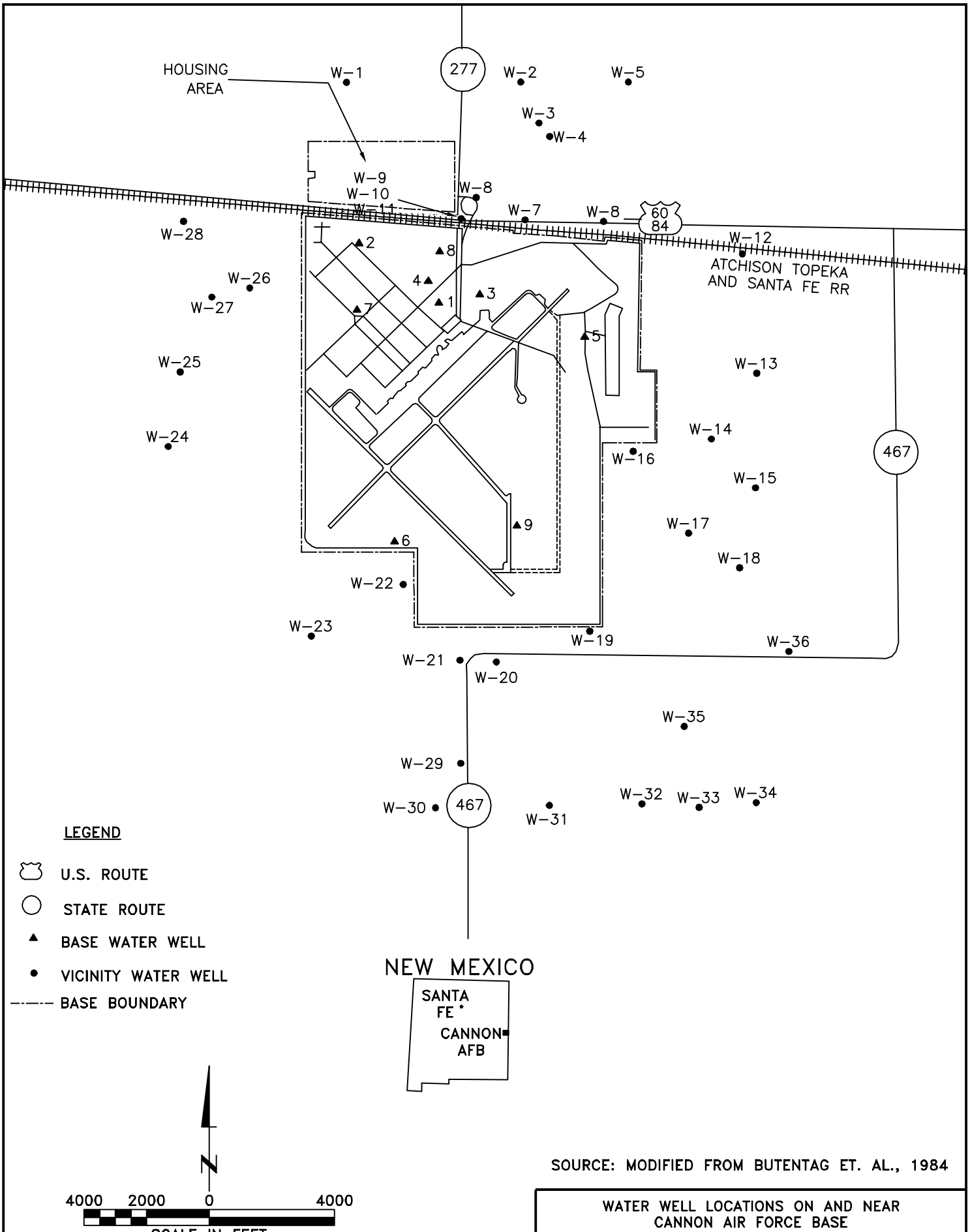


NOTE: ADAPTED FROM LEE WAN AND ASSOCIATES 1990
ORIGINAL SOURCE: USGS

January 30, 2009 9:03:10 a.m.
Drawing: T:\CANNON\16169930\600\fig 2-2.dwg

ELEVATION AND CONFIGURATION OF THE WATER TABLE
IN THE REGION OF CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 01/22/09	PROJECT NO. 16169930	FIG. NO. 2-2
CHK'D. BY: JLV	REVISION: 0		

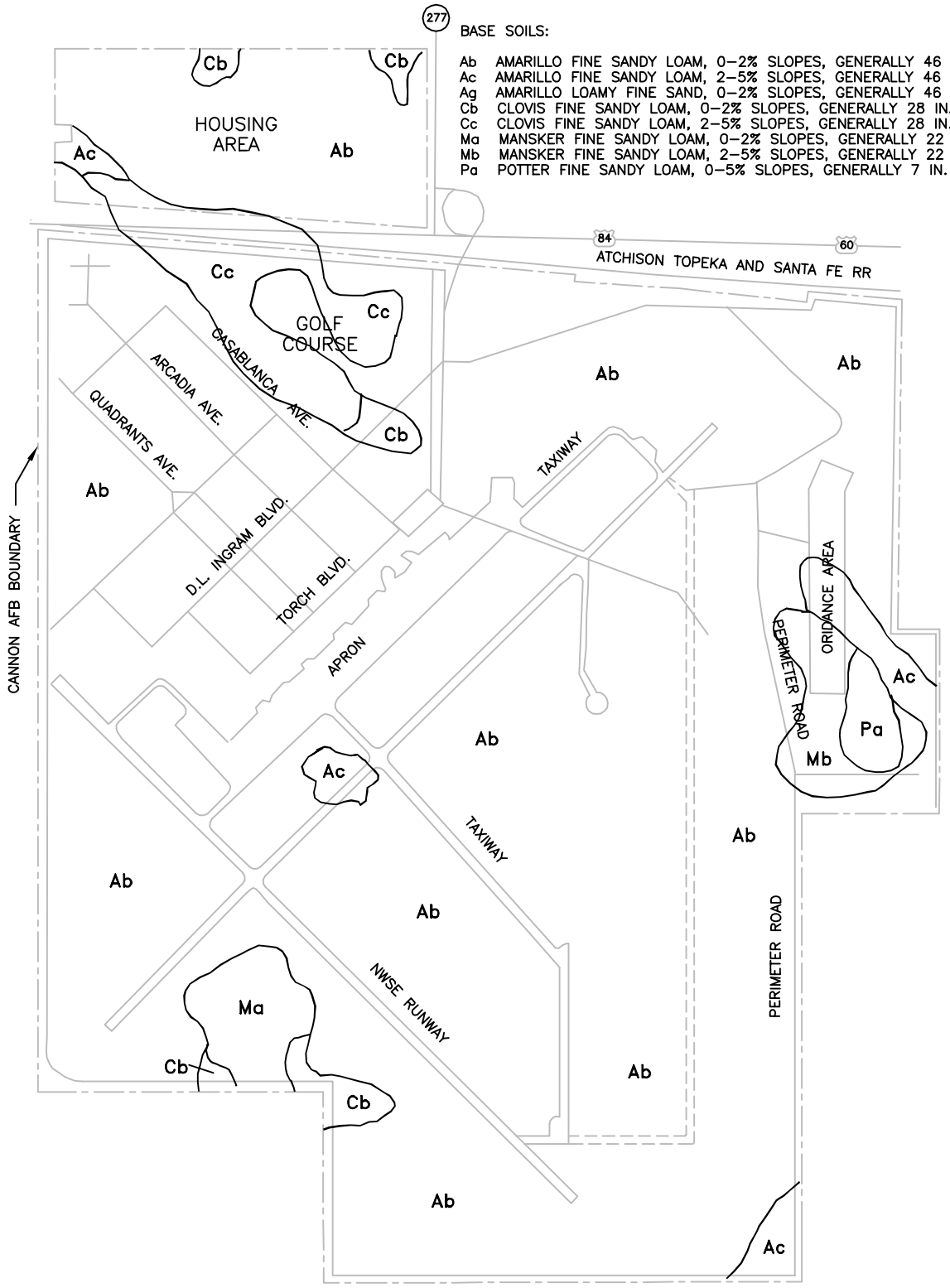


SOURCE: MODIFIED FROM BUTENTAG ET. AL., 1984

WATER WELL LOCATIONS ON AND NEAR
CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 01/22/09	PROJECT NO. 16169930	FIG. NO. 2-3
CHK'D. BY: JLV	DATE: 01/22/09		

January 30, 2009 9:03:36 a.m.
Drawing: T:\CANNON\16169930\600\fig 2-3.dwg



BASE SOILS:

Ab AMARILLO FINE SANDY LOAM, 0–2% SLOPES, GENERALLY 46 IN. THICK
Ac AMARILLO FINE SANDY LOAM, 2–5% SLOPES, GENERALLY 46 IN. THICK
Ag AMARILLO LOAMY FINE SAND, 0–2% SLOPES, GENERALLY 46 IN. THICK
Cb CLOVIS FINE SANDY LOAM, 0–2% SLOPES, GENERALLY 28 IN. THICK
Cc CLOVIS FINE SANDY LOAM, 2–5% SLOPES, GENERALLY 28 IN. THICK
Ma MANSKER FINE SANDY LOAM, 0–2% SLOPES, GENERALLY 22 IN. THICK
Mb MANSKER FINE SANDY LOAM, 2–5% SLOPES, GENERALLY 22 IN. THICK
Pa POTTER FINE SANDY LOAM, 0–5% SLOPES, GENERALLY 7 IN. THICK

N

2000 1000 0 2000
SCALE IN FEET

SOURCE: USDA–S.C.S., SOIL SURVEY OF CURRY COUNTY N.M., 1958

DISTRIBUTION OF SOILS BY TYPE AT
CANNON AIR FORCE BASE
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 01/22/09	PROJECT NO. 16169930	FIG. NO. 2–4
CHK'D. BY: JLV	DATE: 01/22/09		

January 30, 2009 9:04:03 a.m.
Drawing: T:\CANNON\16169930\600\fig 2–4.dwg

This section presents the results of the Daily Quality Objectives (DQOs) process for the RFI Addendum sites at Cannon AFB. The objectives presented in this section are primarily project-specific. Site-specific objectives are presented in **Sections 6** through **11**.

3.1 ELEMENTS OF THE DQO PROCESS

DQOs are qualitative and quantitative statements that specify the quality of data and define the level of certainty required to support remedial decisions. The seven steps of the DQO development process are (USEPA 2000):

State the Problem: Concisely describe the problem to be studied. Review prior studies and existing information to gain a sufficient understanding to define the problem.

Identify the Decision: Identify the questions that the study will attempt to resolve, and the actions that may result.

Identify Inputs to the Decision: Identify the information that needs to be obtained and the measurements that need to be taken to resolve the decision statement.

Define the Study Boundaries: Specify the time periods and spatial area to which decisions will apply. Determine when and where data should be collected.

Develop a Decision Rule: Define the statistical parameter of interest, specify the action level, and integrate the previous DQO outputs into a single statement that describes the logical basis for choosing from alternative actions.

Specify Limits on Decision Errors: Define the decision maker's tolerable decision error rates based on consideration of the consequences of making an incorrect decision.

Optimize the Design: Evaluate information from the previous steps and generate alternative data collection designs. Choose the most resource-effective design that meets all DQOs.

The Cannon AFB project management team implemented the above process to identify the data needed to support decisions for the SWMUs addressed by this RFI Addendum report. Each DQO step, as it relates to the RFI Addendum, is further described in the following sections.

3.2 THE PROBLEM

All the SWMUs addressed in this RFI Addendum report were proposed for NFA status based on existing information (URS 2000b). Based on a regulatory review (NMED 2004a), it was determined that insufficient data or documentation existed for these SWMUs to qualify for NFA status. Existing characterization data for some SWMUs required reevaluation following current NMED guidance. Site conditions needed to be documented for a few SWMUs, and characterization data needed to be obtained for one SWMU. A summary of samples collected during the RFI Addendum is presented in **Table 3-1**.

3.3 THE DECISION

For five SWMUs, existing data needed to be reviewed to determine whether documented chemical concentrations exceed current NMED soil screening criteria:

- SWMU 34
- SWMU 78
- SWMU 85
- SWMU 95
- SWMU 107

For the remaining SWMU, site data needed to be collected and compared to current NMED soil screening criteria to determine if the criteria have been exceeded:

- SWMU 91

3.4 INPUTS TO THE DECISION

For SWMUs that have undergone an RI or an RI/Baseline Risk Assessment (BRA), existing data were reviewed and compared to current NMED soil screening criteria. For sites that lacked documentation of site characterization (e.g., storage tank or soil removal actions), an effort was made to locate documentation (e.g., closure reports). If sufficient information existed to characterize these sites, it was included in the final RFI for 21 SWMUs report and compared to NMED soil screening criteria. If data from previous investigations exceeded NMED soil screening criteria, additional data was collected to characterize the sites SWMUs with no data were also sampled for site characterization purposes (i.e., soil samples were collected, see **Section 4**), and the resultant data were compared to current NMED SSLs.

3.5 THE STUDY BOUNDARIES

The spatial boundaries of each SMWU are discussed in **Sections 6** through **11**. Media of concern are surface and subsurface soils. Field activities were completed in October 2008.

3.6 DECISION RULE

The primary decision rule for the RFI Addendum is: Do concentrations of chemicals released for each of the SWMUs exceed NMED screening criteria? If they do not, a recommendation for NFA will be made. If one or more concentrations exceed NMED screening criteria, Corrective Actions with Controls will be recommended. For SWMUs which there is no evidence of possible chemical releases, this information has been documented in this RFI Addendum report and a recommendation to remove the SWMU from the Cannon AFB RCRA Part B Permit is included in **Section 12**.

In addition, the SWMUs that contained habitat capable of supporting ecological resources (i.e., SWMU 85 and SWMU 95) were screened for ecological risk by comparing the maximum detected chemical concentrations to USEPA Eco-SSLs (USEPA 2009).

3.7 LIMITS ON DECISION ERRORS

For existing data from SWMUs that have been evaluated in a previous RI or removal action, quality assurance/quality control (QA/QC) criteria were reviewed to assure that the data were usable for site characterization and decision-making purposes. For data that were collected as part of this RFI Addendum, the probability of making an incorrect decision using the collected data, which may contain sampling design or measurement errors, could be controlled by following standard procedures as described in Appendix C of the Quality Assurance Project Plan (QAPP) (URS 2006). Data quality evaluation procedures and determination of usability were defined in the QAPP. The results of QA/QC efforts during sample collection and analysis, in combination with professional judgment, were used to evaluate the usability of chemical data for making decisions.

3.8 THE DESIGN

The project team developed the proposed actions for the SWMUs addressed by the RFI Addendum using the DQO process. The data collection design used for this RFI Addendum was based on these proposed actions and on evaluation of existing data. The project team was provided opportunities for input through regular project updates during data collection activities, analysis of data, and preparation of this report.

TABLE 3-1
SUMMARY OF SAMPLES COLLECTED DURING THE RFI ADDENDUM
AT SMWUs 34, 78, 85, 91, 95 AND 107
CANNON AFB, NEW MEXICO

SWMU	Boring Location	Field ID	Depth Interval (feet)	Date Lab Received	Matrix	Investigative	Duplicate	MS/MSD	BTEX (8260B)	Lead (6010B)	Arsenic (6010B)	TPH-GRO (8015B)	TPH-DRO (8015B)	Sample Date
	SS01	C34-SS01-000	0-0.5	10/21/2008	Soil	x						x	x	10/18/2008
	SS01	C34-SS01-006	0.5-1	10/21/2008	Soil	x				x				10/18/2008
	SS02	C34-SS02-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/18/2008
	SS03	C34-SS03-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/18/2008
	SS03	C34-SS03-100	0-0.5	10/21/2008	Soil	x		x		x		x	x	10/18/2008
34	SS04	C34-SS04-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/18/2008
	SS05	C34-SS05-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/18/2008
	SS05	C34-SS05-006	0.5-1	10/21/2008	Soil	x				x				10/18/2008
	SS06	C34-SS06-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/18/2008
	SS06	C34-SS06-200	0-0.5	10/21/2008	Soil		x			x		x	x	10/18/2008
	SS01	C78-SS01-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/20/2008
	SS01	C78-SS01-200	0-0.5	10/21/2008	Soil		x			x		x	x	10/20/2008
78	SS02	C78-SS02-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/20/2008
	SS03	C78-SS03-000	0-0.5	10/21/2008	Soil	x				x		x	x	10/20/2008
	SS03	C78-SS03-106	0.5-1	10/21/2008	Soil	x		x				x	x	10/20/2008
	SB01	C85-SB01-000	0-4	10/23/2008	Soil	x					x			10/22/2008
	SB01	C85-SB01-008	8-12	10/23/2008	Soil	x					x			10/22/2008
	SB01	C85-SB01-012	12-16	10/23/2008	Soil	x					x			10/22/2008
	SB01	C85-SB01-108	8-12	10/23/2008	Soil	x		x			x			10/22/2008
85	SB02	C85-SB02-000	0-4	10/23/2008	Soil	x					x			10/22/2008
	SB02	C85-SB02-008	4-8	10/23/2008	Soil	x					x			10/22/2008
	SB02	C85-SB02-012	8-12	10/23/2008	Soil	x					x			10/22/2008
	SB02	C85-SB02-200	0-4	10/23/2008	Soil		x				x			10/22/2008
	SS01	C85-SS01-000	0-4	10/21/2008	Soil	x					x			10/18/2008
	SB01	C91-SB01-000	0-4	10/24/2008	Soil	x						x	x	10/23/2008
	SB01	C91-SB01-008	8-12	10/24/2008	Soil	x						x	x	10/23/2008
	SB01	C91-SB01-012	12-16	10/24/2008	Soil	x						x	x	10/23/2008
	SB02	C91-SB02-000	0-4	10/24/2008	Soil	x						x	x	10/23/2008
91	SB02	C91-SB02-008	8-12	10/24/2008	Soil	x						x	x	10/23/2008
	SB02	C91-SB02-012	12-16	10/24/2008	Soil	x						x	x	10/23/2008
	SB03	C91-SB03-000	0-4	10/24/2008	Soil	x						x	x	10/23/2008
	SB03	C91-SB03-008	8-12	10/24/2008	Soil	x						x	x	10/23/2008
	SB03	C91-SB03-012	12-16	10/24/2008	Soil	x						x	x	10/23/2008
	SB01	C95-SB01-000	0-4	10/23/2008	Soil	x					x			10/22/2008
	SB01	C95-SB01-008	8-12	10/23/2008	Soil	x					x			10/22/2008
	SB01	C95-SB01-012	12-16	10/23/2008	Soil	x					x			10/22/2008
	SB01	C95-SB01-200	0-4	10/23/2008	Soil		x				x			10/22/2008
95	SB02	C95-SB02-000	0-4	10/23/2008	Soil	x					x			10/21/2008
	SB02	C95-SB02-006	4-8	10/23/2008	Soil	x					x			10/21/2008
	SB02	C95-SB02-015	12-16	10/23/2008	Soil	x					x			10/21/2008
	SB03	C95-SB03-000	0-4	10/23/2008	Soil	x					x			10/22/2008
	SB03	C95-SB03-008	8-12	10/23/2008	Soil	x					x			10/22/2008
	SB03	C95-SB03-012	12-16	10/22/2008	Soil	x					x			10/22/2008
	SB04	C95-SB04-000	0-4	10/22/2008	Soil	x					x			10/22/2008

TABLE 3-1
SUMMARY OF SAMPLES COLLECTED DURING THE RFI ADDENDUM
AT SMWUs 34, 78, 85, 91, 95 AND 107
CANNON AFB, NEW MEXICO

SWMU	Boring Location	Field ID	Depth Interval (feet)	Date Lab Received	Matrix	Investigative	Duplicate	MS/MSD	BTEX (8260B)	Lead (6010B)	Arsenic (6010B)	TPH-GRO (8015B)	TPH-DRO (8015B)	Sample Date
95	SB04	C95-SB04-008	8-12	10/22/2008	Soil	x					x			10/22/2008
	SB04	C95-SB04-012	12-16	10/22/2008	Soil	x					x			10/22/2008
	SB01	C107-SB01-000	0-4	10/23/2008	Soil	x			x			x	x	10/22/2008
	SB01	C107-SB01-012	12-16	10/23/2008	Soil	x			x			x	x	10/22/2008
	SB01	C107-SB01-028	24-28	10/23/2008	Soil	x			x			x	x	10/22/2008
	SB02	C107-SB02-000	0-4	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB02	C107-SB02-012	12-16	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB02	C107-SB02-024	20-24	10/24/2008	Soil	x			x			x	x	10/23/2008
107	SB02	C107-SB02-112	12-16	10/24/2008	Soil	x		x	x					10/23/2008
	SB03	C107-SB03-004	4-8	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB03	C107-SB03-012	8-12	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB03	C107-SB03-024	20-24	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB03	C107-SB03-204	4-8	10/24/2008	Soil		x		x			x	x	10/23/2008
	SB05	C107-SB05-000	0-4	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB05	C107-SB05-012	8-12	10/24/2008	Soil	x			x			x	x	10/23/2008
	SB05	C107-SB05-028	24-28	10/24/2008	Soil	x			x			x	x	10/23/2008

Notes:

Agriculture and Priority Pollutants Laboratory, Inc (APPL) provided analytical services

MS/MSD = Matrix spike/matrix spike duplicate

BTEX = Benzene, toluene, ethylbenzene, total xylenes

TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics

TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organcis

ID = Identification

SWMU = Solid Waste Management Unit

RFI = Resource Consevation and Recovery Act Facility Investigation

According to the applicable standard operating procedures (SOPs), soil sampling was completed using hollow-stem auger and direct push technology. Soil boring locations were finalized based on utility clearances, as well as drill rig and direct push rig access, and were agreed upon by Cannon AFB personnel prior to drilling. Sample designation, sampling equipment and procedures, and sample handling, documentation, and analysis are also presented in this section.

4.1 SAMPLING EQUIPMENT AND PROCEDURES

The sampling equipment and procedures used to collect samples are described in the SOPs contained in Appendix C of the WP (URS 2006). These SOPs are consistent with procedures identified and described by the United States Environmental Protection Agency (USEPA).

The Field Manager was responsible for ensuring that samples were collected with properly decontaminated equipment and containerized as required by the site-specific sampling procedures. Specific responsibilities included:

- Sampling locations, equipment, and requirements
- Number and type of samples
- Sample identification
- Preservation requirements
- Analytical parameters
- Equipment decontamination procedures
- COC requirements

Decontamination procedures were performed in accordance with SOP No. 11 and in a manner consistent with the most recent USEPA guidelines. Procedures included steam cleaning, an Alconox or equivalent wash, then a tap water rinse followed by two deionized water rinses.

4.2 SAMPLE IDENTIFICATION

During the 2008 RFI Addendum fieldwork, 56 soil samples (51 samples and five field duplicates) (see **Table 3-1**) were collected from 23 soil borings, 10 near surface (one sample per boring) completed at SWMUs 34, 78 and 85; 13 subsurface (three samples per boring) completed at SWMUs 85, 91, 95, and 107 and submitted for chemical analysis during the RFI Addendum investigation. Two additional soil samples were submitted for chemical analysis from the same near surface location.

4.3 SAMPLE HANDLING, DOCUMENTATION, AND ANALYSIS

The labeling, preservation, handling, shipping, documentation, and tracking procedures for all samples collected at Cannon AFB were performed in accordance with SOP No. 13, Sample Handling, Documentation, and Tracking.

All sample labels were completed using waterproof ink and numbered. Soil sample labels were supplied by URS. Sample containers were placed in plastic storage bags (double-bagged in zipper-lock bags) and wrapped in protective packing material (i.e., foam liners, bubble packing). Samples were then placed in a cooler with ice (double-bagged using 1-gallon zipper-lock bags) for overnight express carrier shipment to the laboratory. A completed and signed COC was placed in each cooler to be shipped. Samples were shipped to Agriculture and Priority Pollutants Laboratories, Inc. (APPL) by an overnight courier on a daily basis. Following collection, samples remained on site for no more than 48 hours.

Documentation of observations and data acquired in the field provided information on the acquisition of samples and created a permanent record of field activities. The observations and data were recorded in a permanently bound, weatherproof field book with consecutively numbered pages.

To supplement the information in the field book, SCFSs and Architect-Engineer (A-E) DQCRs were also completed and maintained in URS records for every sample location. All analyses were specified on the COC.

The contact information for the analytical chemistry laboratory used for the RFI Addendum is listed below:

Agriculture & Priority Pollutants Laboratories, Inc. (APPL)
Point of Contact: Diane Anderson
4203 West Swift
Fresno, California 93722
Tel: 559-275-2175
Fax: 559-275-4422
Email: danderson@applinc.com

APPL has National Environmental Laboratory Accreditation Program accreditation for all environmental analytes.

Overall, 56 soil samples (51 samples and five field duplicates) were collected and submitted for chemical analysis during the 2008 RFI Addendum fieldwork. All chemical data were reviewed, and 10 percent of the data were validated following procedures identified in the QAPP Addendum (URS 2008). No analytical data were rejected.

Acceptable levels of accuracy and precision were achieved for the RFI Addendum sample data. One hundred percent of the analytical data from the samples collected at SWMUs 34, 78, 85, 91, 95 and 107 were determined to be acceptable for their intended use, including estimated (**J/UJ**) data. A tabular list of qualified data, including QC parameters for which qualifications were made, and a summary of data reviews and validations are presented in **Appendix B**.

Field duplicate samples collected from this site are identified below. Analytical results for field duplicate samples are presented in **Appendix B.**

Field Duplicate	Associated Sample
C34-SS06-200	C34-SS06-000
C78-SS01-200	C78-SS01-000
C85-SB02-200	C85-SB02-000
C95-SB01-200	C95-SB01-000
C107-SB03-204	C107-SB03-004

6.1 SWMU 34 DESCRIPTION

SWMU 34, the AGE Drainage Ditch, originates on the flightline side of the AGE Building, No. 186, and runs parallel to Building Nos. 191 and 193 in a northeast direction. The ditch terminates at a culvert inlet near Argentia Avenue. Storm water runoff from the AGE Drainage Ditch flows under Argentia Avenue via the culvert to a second drainage ditch that then routes the water to the northeast Storm Water Drainage Area (SWMU 95). SWMU 34 is also adjacent to SWMU 31, the AGE Maintenance Shop. A Soil Removal Investigation recommended tilling the soil and planting grass in the visually impacted portion of SWMU 34 (Radian 1987). This activity was subsequently completed in October 1988.

The RI of 18 SWMUs, including SWMU 34, was completed in 1991 (W-C 1992). In addition, soil borings were completed in 2008 (Tetra-Tech 2008). Previous sample locations are shown on **Figure 6-1**. Two soil borings were drilled and samples were collected and analyzed for VOCs, SVOCs, TAL metals, and TPH as part of an RI that included SWMU 34. Two additional borings were later drilled and sampled because the laboratory missed the holding times for the VOC analyses (W-C 1992). Based on the analytical results from the investigation, the RI report included a recommendation that no further investigation or action was required at SWMU 34.

A Baseline Risk Assessment (BRA) was included in the RI. The BRA assessed potential adverse human health and ecological effects by comparing analytical data to risk-based RFI criteria and proposed RCRA action levels, and by calculating site-specific health risks, where appropriate. The BRA identified toluene, lead, selenium, and zinc as chemicals of potential concern (COPCs) for this SWMU, since these metals exceeded site-specific and regional background concentrations and toluene exceeded residential screening levels. The BRA concluded that potential impacts to human health and to the environment were insignificant at SWMU 34.

6.2 RFI ACTIVITIES

6.2.1 Initial RFI Activities

The results and conclusions of the SWMU 34 RI/BRA were reviewed and compared to current NMED soil screening levels. All RI analytical results with a current evaluation were presented to the NMED in the RFI Report. URS completed a preliminary risk screening of this site following current NMED guidance. Preliminary assessments indicate that contaminants present at the site pose an acceptable level of risk for industrial/occupational and construction worker receptors. However, NMED has subsequently requested that all chemical results for Cannon AFB be screened using residential screening levels. The results of this screening were presented in further detail in the RFI report.

The results of previous investigations were reviewed as part of the RFI and the conclusions for SWMU 34 were presented in the RFI report (URS 2007). The RFI review indicated that TPH and lead exceed the current NMED residential soil screening levels. Lead was detected above the NMED screening level in the one near surface soil sample collected as part of an RI previously completed at SWMU 34 (Radian 1987). Additionally, lead was detected above the

site-specific surface background values. Likewise, TPH was detected above the NMED residential soil screening level in one near surface soil sample collected as part of an additional RI investigation at SWMU 34 (W-C 1992). The RFI report was reviewed by NMED and based on NMED comments issued in reference to the above mentioned lead and TPH levels; additional sampling at SWMU 34 was suggested to further characterize the site.

6.2.2 RFI Addendum Activities

Based on the elevated TPH and lead results, near surface soil samples were collected in October 2008. Elevated lead and TPH concentrations were not detected in the subsurface during previous investigations; therefore, only near surface samples were collected. The RFI Addendum fieldwork consisted of collecting near surface soil samples (0 to 2 feet bgs) from six soil borings near the previous sampling locations with TPH or lead levels above NMED soil screening levels.

Soil samples were collected at 0 to 6 (0–6) inch intervals to 2 feet bgs using stainless steel hand augers from six soil borings along the AGE Drainage Area. A total of 20 samples were collected from the six borings, with four samples per boring unless refusal was encountered. Seven samples were collected from two soil borings on the south side of the driveway that separates the drainage area and the thirteen were collected from four soil borings on the north side of the driveway within the drainage area. Eight soil samples and one field duplicate were submitted to the laboratory for analysis. Five investigative samples for TPH-DRO, TPH-GRO and lead, one investigative sample for TPH-DRO and TPH-GRO, and two additional samples for lead only analysis.

Samples for TPH-DRO and TPH-GRO analysis were planned to be submitted to the laboratory based on visible staining/odor and elevated PID readings. However, visible staining/odors were not present in any samples collected and no elevated PID readings were encountered. Therefore, the 0–6-inch sample interval from each soil boring was submitted to the laboratory for TPH-DRO and TPH-GRO analysis.

Samples for lead analysis were submitted to the laboratory based onx– Ray Fluorenscence (XRF) field screening results. All XRF field screening results were below the NMED residential soil screening level (400 mg/kg) for lead. The sample from each soil boring interval with the highest XRF field screening result was submitted to the laboratory for lead analysis. Based on the XRF field screening results, five samples from the 0–6 inch interval and two samples from the 6–12 inch interval were submitted to the laboratory for lead analysis.

Hand auger refusal was encountered at three sample locations: SS02, SS03 and SS04. Hand auger refusal was encountered at 17 inches at sample location SS02, 16 inches at sample location SS03 and 12 inches at sample location SS04. Boring logs were completed for all soil borings and are presented in **Appendix A**. Sampling and XRF field screening was completed in accordance with the original RFI WP (URS 2005) and RFI WP Addendum (URS 2008). A summary of samples collected at SWMU 34 are shown on **Table 3-1**.

6.3 RFI RESULTS

6.3.1 Previous Investigation Results

Maximum soil concentrations for all detected chemicals were compared with NMED SSLs. The maximum TPH concentration in near surface (1,180 mg/kg) exceeded the residential screening guideline for kerosene and jet fuel (760 mg/kg) but not the industrial (1,810 mg/kg); however, a residential scenario was considered highly unlikely given the industrial nature of this portion of Cannon AFB. The maximum manganese concentration (173 mg/kg) exceeded the construction worker SSL (151 mg/kg); and arsenic, iron, and mercury exceeded the soil-to-groundwater SSLs; but all fell below the background levels for Cannon AFB. The maximum lead concentration in near surface soil (500 mg/kg) also exceeded the residential SSL (400 mg/kg) but not the industrial and construction worker SSLs (both 800 mg/kg). The average lead concentration (66 mg/kg) and 95-percent UCL (152 mg/kg) were below the lowest direct contact SSL but exceed the soil-to-groundwater SSL (9.17 mg/kg). However, the soil-to-groundwater exposure pathway was not considered relevant at this site, because in this area the depth to groundwater is greater than 250 feet, the infiltration rate is approximately 1.5 feet/year, and the rate of evapotranspiration generally exceeds precipitation.

While not detected in any of the samples, it should be noted that the reporting limits for dibromochloromethane, trans-1,3-dichloropropene, and 1,1,2,2-tetrachloroethane slightly exceeded the corresponding soil-to-groundwater SSLs. However, again, the soil-to-groundwater exposure pathway was not considered relevant at this site.

6.3.2 RFI Addendum Results

TPH-DRO and lead were detected in all samples. The maximum TPH-DRO concentration was compared to NMED SSLs. The maximum TPH-DRO concentration in near surface soils (62 mg/kg) was below the NMED residential screening guideline for unknown oil (800 mg/kg). The maximum lead concentration in near surface soil (682 mg/kg) exceeded the NMED residential SSL (400 mg/kg) but not the industrial and construction worker SSLs (both 800 mg/kg). The sample with elevated lead was collected from the 6–12 inch interval from soil boring SS01. TPH-GRO was nondetect in all samples; therefore, results were not compared to NMED SSLs. Chemical concentrations and frequency of detection for all RFI Addendum and previous RFI investigation results are shown in **Table 6-1**. Maximum concentrations compared to NMED SSLs and Cannon AFB background levels (as applicable) are shown on **Table 6-2**. Sampling locations are shown on **Figure 6-1** and sampling locations with analytical results are shown on **Figure 6-2**.

6.3.3 Data Review and Validation

All chemical data were reviewed using Automated Data Review (ADR) Version 8.1 and following the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008), and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and validation, data were qualified **J** (estimated) based on low MS recovery of lead.

No data was rejected. The analytical data for samples collected at SWMU 34 were determined to be acceptable (including estimated data) for their intended use.

6.3.4 Conceptual Site Model

A conceptual site model (CSM) was developed based on historical site information. The most significant exposure pathways include inhalation of volatile organic compounds (VOCs) or fugitive dust and direct contact with soil, resulting in incidental ingestion or dermal absorption of chemicals from soil. Human receptors for these pathways include adult general duty workers and construction workers. Future residential exposure is unlikely due to the shape of the site and its location in a natural topographical depression. The site is greater than 0.5 acre in size, so limited future intrusive activity was assumed.

Based on interviews with base personnel, the potential general duty worker would be primarily located in Building 191 and subject to very limited surface soil exposure while crossing the AGE Drainage Ditch during travel to and from the building (W-C 1992). The findings of the 2008 RFI Addendum fieldwork support the above mentioned rationale. One lead result collected from the 6–12 inch sample interval was above the NMED residential SSL, but below the NMED industrial SSL. The soil exposure pathway was potentially complete for the adult general duty worker and the construction worker. However, the maximum lead concentration (682 mg/kg) fell below the industrial/occupational and construction worker SSLs (800 mg/kg), which indicated that the site does not pose a significant risk to workers. The maximum lead concentration (682 mg/kg) did exceed the residential SSL (400 mg/kg), but the average lead concentration at the site (77.4 mg/kg) did not. In addition, based on the depth of the maximum lead concentration (the 6- to 12-inch interval), as well as the site's configuration and location in a depression, exposure of future residents was considered an incomplete pathway. TPH results were all below the NMED residential SSLs, therefore an exposure above the NMED residential TPH SSLs is unlikely.

6.4 SWMU 34 SUMMARY

RFI Addendum fieldwork was completed, which consisted of collecting eight near surface soil samples (0 to 2 feet) from SWMU 34 to further characterize the lateral extent of elevated TPH and lead concentrations. With the exception of lead which exceeded residential screening levels in the 6- to 12-inch interval at near surface soil location SS01, no additional elevated lead or TPH levels were identified based on the analytical results. Based on the findings of the 2008 RFI Addendum fieldwork, the elevated TPH that were identified by previous investigations were no longer observed at SWMU 34. The decrease in the TPH levels at SWMU 34 can likely be attributed to natural attenuation of TPH in the soil. Elevated lead was observed above the NMED residential SSL, but below the industrial NMED SSLs in two soil samples (500 and 682 mg/kg) collected during all investigations. Because lead was not detected above industrial screening levels, Corrective Action Complete with Controls is appropriate for SWMU 34. However, Cannon AFB plans to complete additional soil investigation and limited investigation-derived waste disposal so that SWMU 34 may qualify for Corrective Action Complete without Controls. This additional fieldwork will be addressed under a separate work plan.

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			C34-SS01-000				C34-SS01-006				C34-SS02-000				C34-SS03-000				C34-SS04-000			
DATE COLLECTED			October 18, 2008				October 18, 2008				October 18, 2008				October 18, 2008				October 18, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26																				
Diesel Range Organics	6.20E+01	6 / 6	6.20E+01	1.00E+00	1.00E+01						5.40E+01	1.00E+00	1.00E+01		4.30E+01	1.00E+00	1.00E+01		3.80E+01	1.00E+00	1.00E+01	
METALS (mg/kg)																						
Lead	6.82E+02	32 / 32					6.82E+02	4.50E-01	2.50E+01		1.02E+02	9.00E-02	5.00E+00		9.24E+01	9.00E-02	5.00E+00	J	4.70E+01	9.00E-02	5.00E+00	

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			C34-SS05-000				C34-SS05-006				C34-SS06-000				1-1				1-2			
DATE COLLECTED			October 18, 2008				October 18, 2008				October 18, 2008				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26													2.00E+.02 *	5.00E+00	N/A		<	5.00E+.00	N/A	U
Diesel Range Organics	6.20E+01	6 / 6	1.50E+01	1.00E+00	1.00E+01						1.40E+01	1.00E+00	1.00E+01									
METALS (mg/kg)																						
Lead	6.82E+02	32 / 32	2.18E+01	9.00E-02	5.00E+00		2.57E+01	9.00E-02	5.00E+00		2.31E+01	9.00E-02	5.00E+00		1.10E+02	3.00E-01	N/A		8.60E+00	3.00E-01	N/A	

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			2-1				2-2				3-1				4-1				5-1			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	1.20E+02 *	5.00E+00	N/A		6.60E+00 *	5.00E+00	N/A		5.40E+02 *	5.00E+00	N/A		2.80E+02 *	5.00E+00	N/A		5.70E+01 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6																				
METALS (mg/kg)																						
Lead	6.82E+02	32 / 32	5.00E+02	3.00E-01	N/A		6.60E+00	3.00E-01	N/A		1.20E+02	3.00E-01	N/A		2.60E+01	3.00E-01	N/A		6.70E+01	3.00E-01	N/A	

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			5-2				6-1				6-2				7-1				8-1			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	<	5.00E+00	N/A	U	1.50E+01 *	5.00E+00	N/A		<	5.00E+00	N/A	U	<	5.00E+00	N/A	U	1.20E+02 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6																				
METALS (mg/kg)																						
Lead	6.82E+02	32 / 32	5.60E+00	3.00E-01	N/A		2.50E+01	3.00E-01	N/A		8.20E+00	3.00E-01	N/A		6.20E+01	3.00E-01	N/A		3.20E+01	3.00E-01	N/A	

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			9-1				9-2				10-1				11-1				12-1			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	1.20E+02 *	5.00E+00	N/A		<	5.00E+00	N/A	U	9.10E+02 *	5.00E+00	N/A		2.80E+02 *	5.00E+00	N/A		3.20E+02 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6																				
METALS (mg/kg)																						
Lead	6.82E+02	32 / 32	3.20E+01	3.00E-01	N/A		7.60E+00	3.00E-01	N/A		6.20E+01	3.00E-01	N/A		8.00E+01	3.00E-01	N/A		9.00E+01	3.00E-01	N/A	

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			13-1				13-2				15-1				20-1				0341-0000			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 13, 1987				March 13, 1987				October 24, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	1.50E+02 *	5.00E+00	N/A		<	5.00E+00	N/A	U	1.20E+02 *	5.00E+00	N/A		7.5E+01 *	5.00E+00	N/A		1.180E+03 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6																				
METALS (mg/kg)																						
Lead	6.82E+02	32 / 32	3.50E+01	3.00E-01	N/A		1.60E+01	3.00E-01	N/A		5.50E+01	3.00E-01	N/A		4.50E+01	3.00E-01	N/A		4.07E+01	3.00E-01	N/A	

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT
SWMU 34 – AGE DRAINAGE DITCH
CANNON AFB, NEW MEXICO

FIELD ID			0341-0001				0342-0001				0342-0005				0342-0009			
DATE COLLECTED			December 8, 1991				October 22, 1991				October 22, 1991				October 22, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																		
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	3.97E+02 *	5.00E+00	N/A		<	5.00E+00	N/A	U	<	5.00E+00	N/A	U	<	5.00E+00	N/A	U
Diesel Range Organics	6.20E+01	6 / 6																
METALS (mg/kg)																		
Lead	6.82E+02	32 / 32	3.81E+01	3.00E-01	N/A		6.50E+00	3.00E-01	N/A		5.10E+00	3.00E-01	N/A					

Notes:
* Historical results, TPH levels have likely naturally attenuated based on recent analytical results
RLs were unavailable for all data collected in 1987 and 1991.
J = Estimated
mg/kg = milligrams per kilogram
N/A = Not Applicable
U = Nondetect

TABLE 6-2
COMPARISON OF SWMU 34 - AGE DRAINAGE DITCH MAXIMUM SOIL CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
CANNON AFB, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	Residential SSL/TPH Screening Guideline (mg/kg) [1,2]	Industrial SSL/TPH Screening Guideline (mg/kg) [1,2]	Background Concentration (mg/kg)	Exceeds Residential SSL/TPH Screening Guideline [1,2] ?	Exceeds Industrial SSL/TPH Screening Guideline [1,2] ?	Exceeds Background ?
PETROLEUM HYDROCARBONS								
Diesel Hydrocarbons	6.20E+01		8.00E+02	2.00E+03	-	NO	NO	-
METALS								
Lead	6.82E+02		4.00E+02	8.00E+02	8.70E+00	YES	NO	YES

Notes:

A dash indicates that a value is not available

[1] NMED Soil Screening Levels Revision-5.0 (December 2009)

[2] Table 2b. NMED TPH Soil Screening Guidelines (June 2006)

mg/kg = milligrams per kilogram

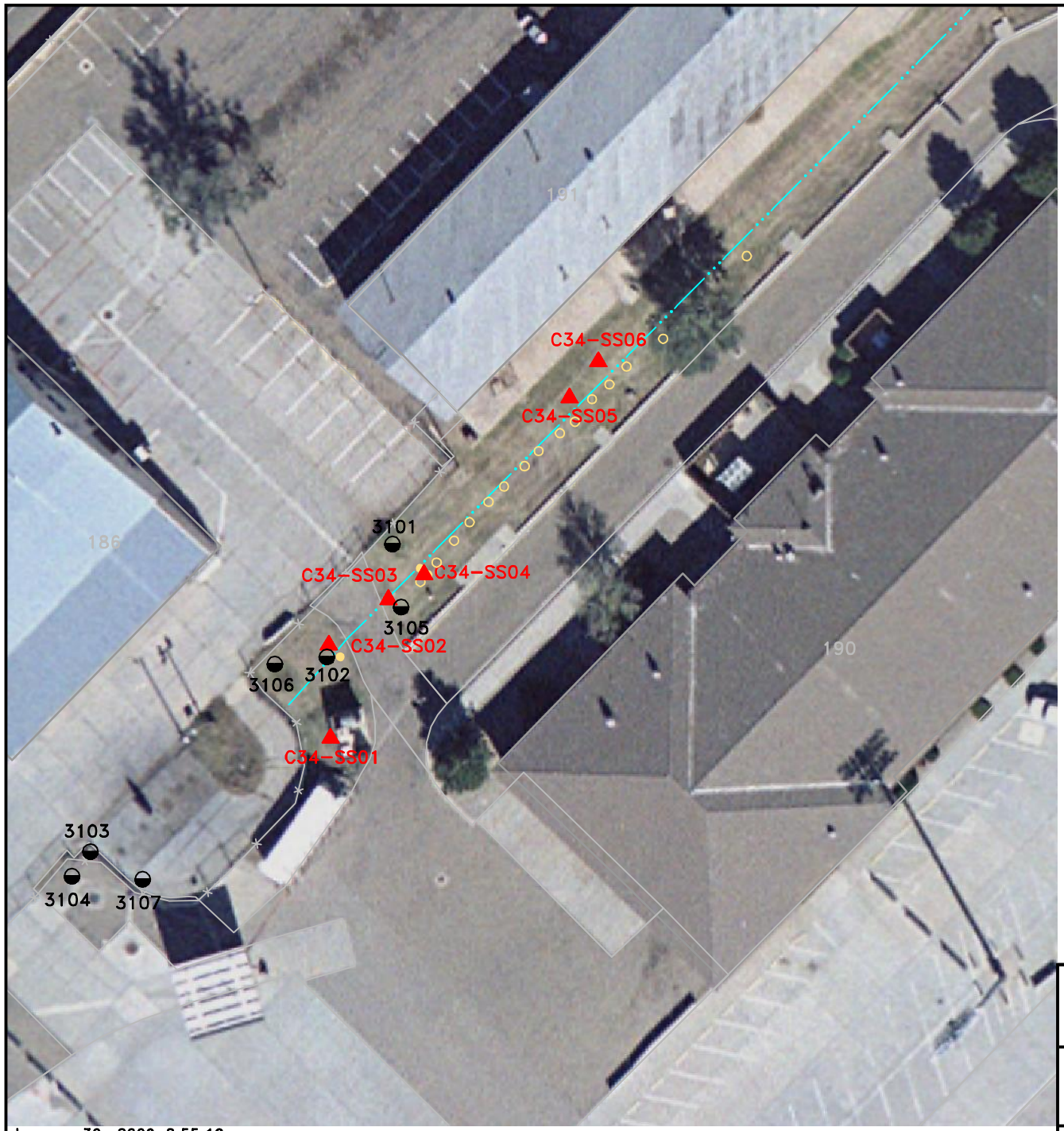
N/A = Not Applicable

NMED = New Mexico Environment Department

Qual = Qualifier

SSL = Soil Screening Level

TPH = Total Petroleum Hydrocarbons



LEGEND:

- RFI ADDENDUM SURFACE SOIL LOCATION
- TETRA TECH SOIL BORING LOCATIONS (SWMU 31)
- DITCH
- RADIAN 1987 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SURFACE SOIL SAMPLE LOCATION

N

50 0 50

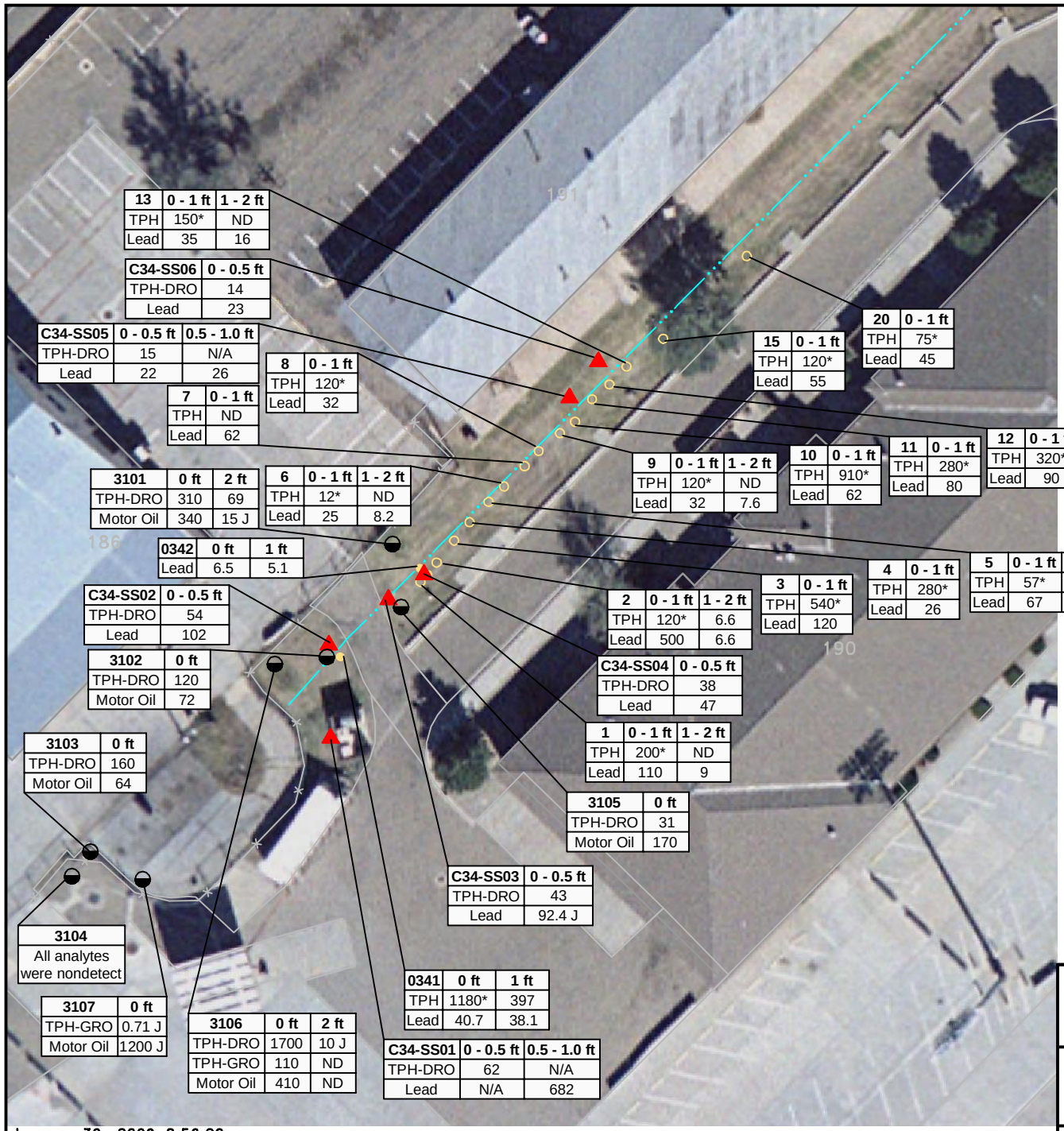
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING LOCATIONS AT SWMU 34 – AGE DRAINAGE DITCH
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO. 16169930	FIG. NO. 6-1
CHK'D. BY: JLV	REVISION: 0		

January 30, 2009 8:55:19 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg



LEGEND:

- RFI ADDENDUM SURFACE SOIL LOCATION
- TETRA TECH SOIL BORING LOCATIONS (SWMU 31)
- DITCH
- RADIAN 1987 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION

NOTE: SAMPLE RESULTS ARE IN mg/kg
TPH = TOTAL PETROLEUM HYDROCARBONS
DRO = DIESEL RANGE ORGANICS
GRO = GASOLINE RANGE ORGANICS
ND = NONDETECT
J = ESTIMATED
FT = FEET
N/A = NOT APPLICABLE OR NOT ANALYZED

* HISTORICAL RESULT, TPH LEVELS HAVE LIKELY NATURALLY ATTENUATED BASED ON RECENT ANALYTICAL RESULTS

N

50 0 50
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING RESULTS AT SWMU 34 – AGE DRAINAGE DITCH
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:56:20 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 01/07/09	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	6–2

7.1 SWMU 78 DESCRIPTION

SWMU 78 is located in the northeast corner of the Base, south of the railroad tracks and northeast of Perimeter Road. The training area is an unlined circular surface approximately 100 feet in diameter. Between 1959 and 1968, the site was used twice monthly when approximately 300 gallons of waste oils, solvents, and fuels were poured on the ground surface to create fires.

An RI/BRA was completed for the site (W-C 1992). Two soil borings were completed at the site (**Figure 7-1**). Soil samples were collected at depths of 4, 10, 20, 30, 40, 50, 60, 70, 75, and 100 feet bgs. In general, the samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and TPH. In addition, samples from one soil boring were also analyzed for total organic carbon (TOC). One additional boring was later drilled and sampled because the analytical laboratory missed holding times for the VOCs and/or TPH. Six surface soil samples were also collected at this later date and analyzed for the same parameters as the subsurface samples. The risk assessment identified dichlorodiphenyldichloroethane (DDD), dichlorodiphenyldichloroethylene (DDE), TPH, lead, and zinc as COCs for this SWMU since these chemicals exceeded site-specific and regional background concentrations. Based on the results of the BRA, no unacceptable human health or ecological risks due to chemical releases were expected from SWMU 78.

7.2 RFI ACTIVITIES

7.2.1 Initial RFI Activities

The results and conclusions of the SWMU 78 RI/BRA were reviewed and compared to current NMED soil screening levels. All of the RI analytical results with a current evaluation were presented to the NMED RCRA section in the RFI Report. URS had completed a preliminary risk screening of this site following current NMED guidance. Preliminary assessments indicated that contaminants present at the site pose an acceptable level of risk for industrial/occupational and construction worker receptors. The results of this screening were presented in further detail in the RFI report. However, NMED has subsequently requested that all chemical results for Cannon AFB be screened using residential screening levels.

The results of previous investigations were reviewed as part of the RFI and the conclusions for SWMU 78 were presented in the RFI report (URS 2007). The RFI review indicated that TPH and lead exceed the current NMED residential soil screening levels. TPH and lead were detected above the NMED screening level in the one shallow soil sample collected as part of an RI previously completed at SWMU 78 (W-C 1992). The RFI report was reviewed by NMED and based on NMED comments issued in reference to the above mentioned lead and TPH levels; additional sampling at SWMU 78 was suggested to further characterize the site.

7.2.2 RFI Addendum Activities

Elevated lead and TPH concentrations were not detected in the subsurface during previous investigations; therefore, only near surface samples were collected. The investigation consisted of collecting three near surface soil borings (0 to 2 feet bgs) near the previous sampling locations with TPH or lead levels above NMED soil screening levels.

Soil samples were collected at 0–6 inch intervals to 2 feet bgs using stainless steel hand augers from three soil borings within SWMU 78. A total of 12 samples were collected from three borings, with four samples per boring. Three soil samples and one duplicate field sample were submitted to the laboratory for analysis for TPH-DRO, TPH-GRO and lead.

Samples for TPH-DRO and TPH-GRO analysis were submitted to the laboratory based on visible staining/odor and elevated PID readings. Visible staining was present from 0 to 2 inches in all three soil borings. No odors were present and no elevated PID readings were encountered at the three soil borings. Based on the visible staining the 0–6 inch sample interval from each soil boring was submitted to the laboratory for TPH-DRO and TPH-GRO analysis. Samples were also collected from each soil boring for lead analysis.

Lead samples were submitted to the laboratory based on XRF field screening results. All XRF field screening levels were below the NMED residential soil screening level (400 mg/kg) for lead with the exception of the 0–6 inch sample interval from SS01. The average field XRF lead analysis for the 0–6 inch interval for sample SS01 was 408 parts per million (ppm). The sample from each soil boring interval with the highest XRF field screening result was submitted to the laboratory for lead analysis. Based on the XRF field screening results, three samples from the 0-6 inch interval were submitted to the laboratory for lead analysis.

All borings were advanced to 2 feet and boring logs were completed for all soil borings and are presented in **Appendix A**. Sampling was completed in accordance with the original RFI WP (URS 2005) and RFI WP Addendum (URS 2008). A summary of samples collected at SWMU 34 are shown on **Table 3-1**.

7.3 RFI RESULTS

7.3.1 Previous Investigation Results

Maximum soil concentrations for all detected chemicals were compared with NMED SSLs. The maximum TPH concentration (12,500 mg/kg) exceeds the TPH residential and industrial screenings guideline for TPH (both 200 mg/kg) for unknown oils and the industrial screening guideline (both 200 mg/kg). Risks due to TPH cannot be evaluated quantitatively due to the unknown characteristics of the chemical mixture; however, individual organic constituents of petroleum mixtures were not detected above the SSLs in any of the samples.

One surface soil concentration of aluminum (26,000 mg/kg) exceeds the construction worker SSL (14,400 mg/kg). The maximum soil lead concentration (529 mg/kg) exceeds the residential

SSL (400 mg/kg) but not the industrial/construction worker SSL (800 mg/kg). In addition, only one of the samples exceeds the lowest SSL and the average lead concentration is 275 mg/kg. Neither aluminum nor lead exceeds the industrial SSLs, which are the appropriate scenarios for this site, given the current and anticipated future land uses.

The maximum concentrations of vinyl chloride and manganese in surface soil exceed the soil-to-groundwater SSL, but in the case of manganese falls below the background level. Vinyl chloride, arsenic, iron, manganese, and mercury maximum concentrations in combined soil also exceed the soil-to-groundwater or construction worker SSL, but in the case of the metals fall below the background levels. Impacts to groundwater are considered minimal because the depth to groundwater is greater than 250 feet, and in the case of vinyl chloride, the concentrations detected were very low (0.011 mg/kg maximum).

7.3.2 RFI Addendum Results

TPH-DRO and lead were detected in all samples. The maximum TPH-DRO concentration was compared to NMED SSLs. The maximum TPH-DRO concentration in near surface soils (410 mg/kg) was below the NMED residential screening guideline for unknown oil (800 mg/kg). The maximum lead concentration in near surface soil (894 mg/kg) exceeded the NMED residential SSL (400 mg/kg) and the industrial and construction worker SSLs (both 800 mg/kg). The sample in which lead exceeded was collected from the 0–6 inch interval from near surface soil location SS01. TPH-GRO was nondetect in all samples; therefore, results were not compared to NMED SSLs. Detected Chemical concentrations and frequency of detection for all RFI Addendum and previous RFI investigation results are shown in **Table 7-1**. Maximum concentrations compared to NMED SSLs and Cannon AFB background levels (as applicable) are shown on **Table 7-2**. Sampling locations are shown on **Figure 7-1** and sampling locations with analytical results are shown on **Figure 7-2**.

7.3.3 Data Review and Validation

All chemical data were reviewed using Automated Data Review (ADR) Version 8.1 and following the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008), and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and validation, no data was qualified or rejected. The analytical data for samples collected at SWMU 78 were determined to be acceptable for their intended use.

7.3.4 Conceptual Site Model

As part of the RFI, a CSM was developed based on historical site information. The most significant exposure pathways include inhalation of fugitive dust, and direct contact with soil, resulting in incidental ingestion or dermal absorption of chemicals from soil. Human receptors for these pathways include adult general duty workers and construction workers. Future residential exposure is unlikely because of the industrial nature of this site and the surrounding area. In addition, the site is less than one-half acre in size, so the potential for major soil excavation and future construction of residential homes within the area of this SWMU is low.

The adult base worker that potentially visits the site a few days per year for grounds keeping activities and/or a short term excavation worker are expected to be the most significant receptor populations under current and future exposure conditions. One lead result collected from the 0-6-inch sample interval was above the NMED residential and industrial SSL, NMED industrial SSL. It is unlikely that exposure to human receptors of the lead level above the NMED residential and/or industrial SSL would occur due to the heterogeneous distribution of lead particles in soil. The average lead concentration (180 mg/kg) for samples collected during all investigations at SWMU 78 is below the NMED residential SSL (400 mg/kg). TPH results were all below the NMED residential SSLs, therefore an exposure above the NMED residential TPH SSLs is not anticipated.

7.4 SWMU 78 SUMMARY

RFI Addendum fieldwork was completed, which consisted of collecting three near surface soil samples (0 to 2 feet) from SWMU 78 to further characterize the lateral extent of elevated TPH and lead concentrations. With the exception of lead which exceeded residential and industrial screening levels in the 0–6 inch interval at near surface soil boring SS01, no additional elevated lead or TPH levels were determined from analytical results. Based on the findings of the 2008 RFI Addendum fieldwork, the elevated TPH levels that were identified by previous investigations no longer appear to be present at SWMU 78. The decrease in the TPH levels at SWMU 78 can likely be attributed to natural attenuation of TPH in the soil. Elevated lead was observed above the NMED residential SSL (400 mg/kg) in two soil samples (529 and 894 mg/kg) and above the industrial SSL (800 mg/kg) in one soil sample (894 mg/kg) collected during all investigations. Because the average lead concentration at the site is 180 mg/kg, which is below the residential screening level for lead and only a single lead concentration exceeded the industrial SSL, Corrective Action Complete with Controls is appropriate for SWMU 78. However, Cannon AFB plans to complete additional soil investigation and limited IDW disposal so that SWMU 78 may qualify for Corrective Action Complete without Controls. This additional fieldwork will be addressed under a separate work plan.

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			C78-SS01-000				C78-SS02-000				C78-SS03-000			
DATE COLLECTED			October 20, 2008				October 20, 2008				October 20, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12												
Diesel Range Organics	4.10E+02	3 / 3	4.10E+02	5.00E+00	5.00E+01		2.80E+02	5.00E+00	5.00E+01		3.40E+02	5.00E+00	5.00E+01	
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	8.94E+02	9.00E-01	5.00E+01		3.90E+02	4.50E-01	2.50E+01		3.92E+02	4.50E-01	2.50E+01	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			0781-0.5				0781-6				0781-12			
DATE COLLECTED			October 13, 1991				October 12, 1991				October 12, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	2.20E+03 **	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U
Diesel Range Organics	4.10E+02	3 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	3.36E+02	N/A	N/A		1.63E+01	N/A	N/A		6.10E+00	N/A	N/A	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			0782-0.5				0782-6				0782-12			
DATE COLLECTED			October 13, 1991				October 13, 1991				October 13, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	1.97E+03 **	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U
Diesel Range Organics	4.10E+02	3 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	2.92E+02	N/A	N/A		6.80E+00	N/A	N/A		3.80E+00	N/A	N/A	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			0783-0.5				0784-0.5				0785-0.5			
DATE COLLECTED			October 12, 1991				October 13, 1991				October 13, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	4.08E+03 **	N/A	N/A		9.80E+02 **	N/A	N/A		1.25E+04 **	N/A	N/A	J
Diesel Range Organics	4.10E+02	3 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	1.94E+02	N/A	N/A		2.71E+02	N/A	N/A		5.29E+02	N/A	N/A	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			0786-0.5				6A-1				6A-2			
DATE COLLECTED			October 13, 1991				1985 *				1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	<	N/A	N/A	U								
Diesel Range Organics	4.10E+02	3 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	2.56E+01	N/A	N/A		4.50E+00	N/A	N/A		3.20E+00	N/A	N/A	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			6A-3				6B-1				6B-2			
DATE COLLECTED			1985 *				1985 *				1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12												
Diesel Range Organics	4.10E+02	3 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	2.80E+01	N/A	N/A		3.80E+00	N/A	N/A		2.30E+01	N/A	N/A	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AFB, NEW MEXICO

FIELD ID			6B-3			
DATE COLLECTED			1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
Total Petroleum Hydrocarbons	1.25E+04	6 / 12				
Diesel Range Organics	4.10E+02	3 / 3				
METALS (mg/kg)						
Lead	8.94E+02	3 / 3	1.80E+00	N/A	N/A	

Notes:
*Precise date of collection could not be determined.
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
Qual = Qualifier
RL = Reporting Limit
U = Nondetect

TABLE 7-2
COMPARISON OF SWMU 78 - FIRE DEPARTMENT TRAINING AREA NO. 1 MAXIMUM SOIL CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
CANNON AFB, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	Residential SSL/TPH Screening Guideline (mg/kg) [1,2]	Industrial SSL/TPH Screening Guideline (mg/kg) [1,2]	Background Concentration (mg/kg)	Exceeds Residential SSL/TPH Screening Guideline [1,2] ?	Exceeds Industrial SSL/TPH Screening Guideline [1,2] ?	Exceeds Background ?
PETROLEUM HYDROCARBONS								
Diesel Hydrocarbons	4.10E+02		8.00E+02	2.00E+03	N/A	NO	NO	N/A
METALS								
Lead	8.94E+02		4.00E+02	8.00E+02	8.70E+00	YES	YES	YES

Notes:

A dash indicates that a value is not available

[1] NMED Soil Screening Levels Revision-5.0 (December 2009)

[2] Table 2b. NMED TPH Soil Screening Guidelines (June 2006)

mg/kg = milligrams per kilogram

N/A = Not Applicable

NMED = New Mexico Environment Department

Qual = Qualifier

SSL = Soil Screening Level

TPH = Total Petroleum Hydrocarbons

LEGEND:

- RFI ADDENDUM SURFACE SOIL LOCATION
- RADIAN 1984 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY

N

50 0 50

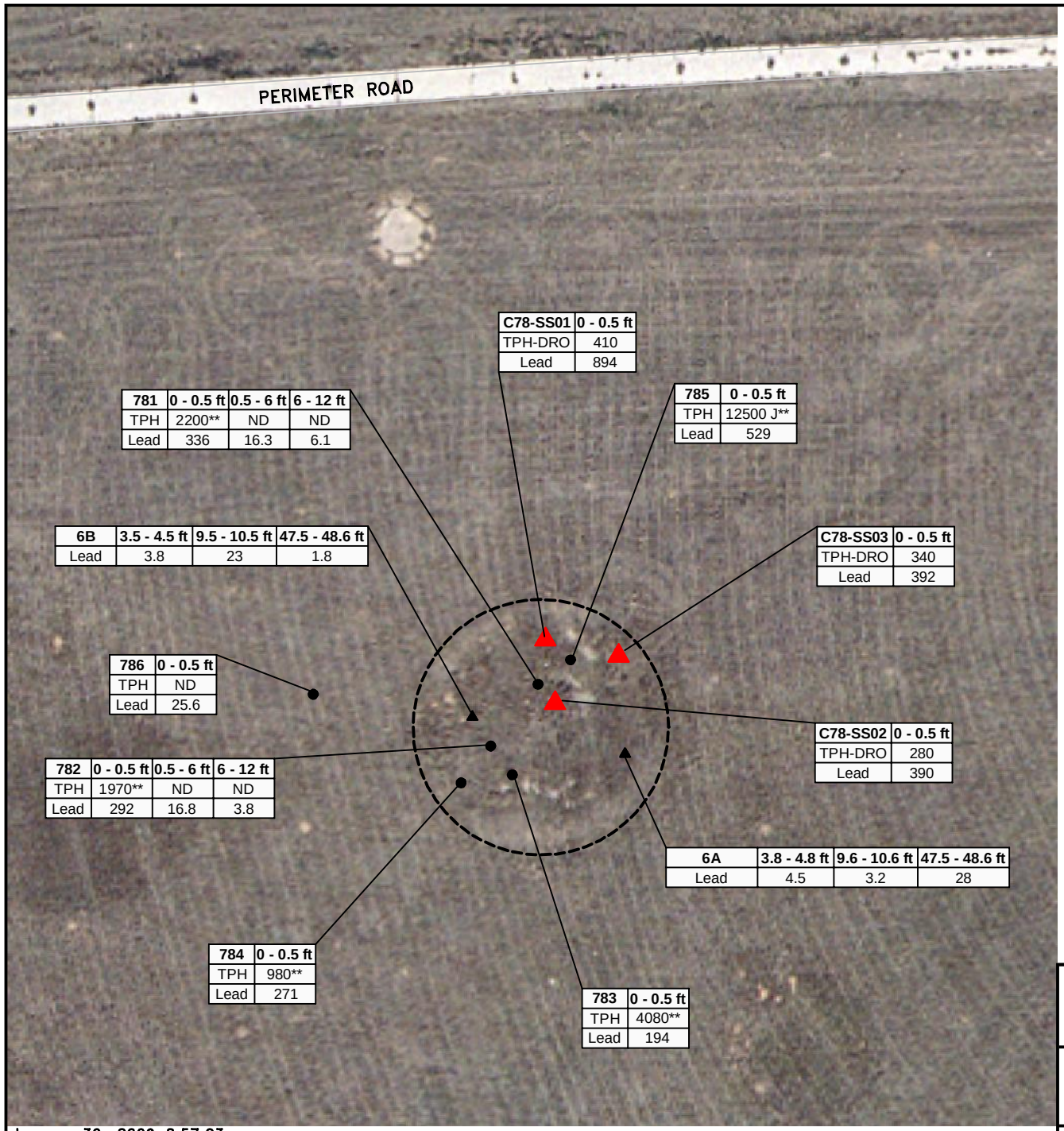
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING LOCATIONS AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:56:43 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	7–1



LEGEND:

- RFI ADDENDUM SURFACE SOIL LOCATION
- RADIAN 1984 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY

NOTE: SAMPLE RESULTS ARE IN mg/kg
TPH = TOTAL PETROLEUM HYDROCARBONS
DRO = DIESEL RANGE ORGANICS
ND = NONDETECT
J = ESTIMATED
FT = FEET

**HISTORICAL RESULT, TPH LEVELS HAVE LIKELY NATURALLY ATTENUATED BASED ON RECENT ANALYTICAL RESULTS

N

50 0 50

SCALE IN FEET

URS

RFI ADDENDUM SAMPLING RESULTS AT SWMU 78 – FIRE DEPARTMENT TRAINING AREA NO. 1
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:57:03 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 01/07/09	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	7–2

8.1 SWMU 85 DESCRIPTION

SWMU 85 is a naturally occurring nine-acre playa lake located in the southwestern part of the Base. Since 1943, stormwater runoff from the flightline has collected in this lake. Stormwater runoff flows toward the center of the site where it either evaporates or percolates into the soil.

In addition to three borings drilled as part of the Installation Restoration Program (IRP) Phase II Stage 1 (**Figure 8-1**) (Radian 1986), the Final IRP RI for SWMU 85 included drilling and sampling eight soil borings (**Figure 8-1**) (Walk Haydel 1990). Soil samples were collected from depths of 5 to 70 feet bgs. Near surface and subsurface samples were analyzed for VOCs, base/neutral extractable compounds, and for total and extraction procedure (EP) toxicity metals. Barium, mercury, and selenium were detected in several samples in concentrations slightly above area background levels during the RI (Walk Haydel 1990).

A human health screening was completed for SWMU 85. The conclusion of the risk screening was that metals concentrations at SWMU 85 are indicative of background metals concentrations (Walk Haydel 1990). Ecological screening at SWMU 85 concluded that selenium was present in concentrations considered toxic to wildlife, but these concentrations are within the range of normal background concentrations (Walk Haydel 1990).

8.2 RFI ACTIVITIES

8.2.1 Initial RFI Activities

The results and conclusions of the SWMU 85 RI and risk screening were reviewed and compared to current NMED soil screening levels. All of the RI analytical results with a current evaluation were presented to the NMED RCRA section in the RFI Report. URS completed a preliminary risk screening of this site following current NMED guidance. The results of this screening were presented in further detail in the RFI report.

The results of previous investigations were reviewed as part of the RFI and the conclusions for SWMU 85 were presented in the RFI report (URS 2007). The RFI review indicated that arsenic results exceeded the current NMED residential soil screening levels in surface and subsurface soil samples. However, it is plausible that the elevated concentrations and elevated reporting limits associated with the arsenic data in the RI (Walk-Haydel 1990) may be attributable to inter-element interference that was not properly accounted for during laboratory analysis and may not be representative of site conditions. The RFI report was reviewed by NMED, and based on NMED comments regarding arsenic levels, additional sampling at SWMU 85 was suggested to further characterize the site.

8.2.2 RFI Addendum Activities

One surface soil sample and two soil borings were completed. The surface soil sample was collected from 0 to 6 inches with a stainless steel hand auger near the large concrete pile in the middle of the stormwater collection point due to approximately 10 to12 inches of water covering the collection point. At the time of field activities both soil borings were advanced to depths of

15 feet bgs. The two soil borings were first attempted with the drill rig. The drill rig hit refusal at approximately 1 foot at soil boring SB01. The drill rig was offset approximately 2 feet north with the same result. The drill rig was then offset approximately 30 feet west and refusal was encountered at 3.8 feet with only 1 foot of sample recovery. After hitting refusal at 3.8 feet, a Geoprobe rig was used for SB01.

The drill rig was moved and setup to drill at sample location SB02. Meanwhile, the Geoprobe set up and pushed to a depth of 15 feet at the initial SB01 sample location. The drill rig hit refusal at 3 feet at boring location SB02. Upon completion of SB01, the Geoprobe was moved to SB02 and pushed to a depth of 15 feet. Samples were collected in four foot intervals and submitted to the laboratory for arsenic analysis. Three samples from each soil boring and one sample from the surface soil location were submitted based on XRF field screening analysis. All XRF field screening results were nondetect (i.e., ND < 11 ppm) based on the field instrument detection limits. Boring logs were completed for all soil borings and are presented in **Appendix A**. Sampling was completed in accordance with the original RFI WP (URS 2005) and RFI WP Addendum (URS 2008). A summary of samples collected at SWMU 34 are shown on **Table 3-1**.

8.3 RFI RESULTS

8.3.1 Previous Investigation Results

Maximum soil concentrations for all detected chemicals were compared with NMED SSLs. No VOCs or base/neutral extractable compounds were detected above the reporting limits in the Phase II or RI reports. A low concentration of oil and grease (40 mg/kg) was detected below screening levels in one near surface sample in the Phase II analytical results. The maximum concentrations of arsenic in surface soil (50.3 mg/kg) and combined surface and subsurface soils (112.4 mg/kg) exceed the residential, industrial, and soil-to-groundwater SSLs but not the construction worker SSL (85 mg/kg). The maximum iron, mercury (combined soils only), and selenium concentrations in surface soils and/or combined surface and subsurface soils also exceed the soil-to-groundwater SSLs; however, SSL leaching values are not considered applicable for this SWMU because soil sampling results demonstrate that contaminants are not being transported significantly in a vertical direction and depth to groundwater is greater than 250 feet.

Even if site concentrations were to exceed the construction worker SSL, exposure to subsurface soil is highly unlikely due to the presence of a naturally occurring playa lake. This scenario would require direct contact with subsurface soils beneath the nine-acre lake and/or beneath approximately 10 feet of the fill area containing broken concrete from apron and runway demolitions.

8.3.2 RFI Addendum Results

Arsenic was detected in all samples. The maximum arsenic concentration was compared to NMED SSLs. The maximum arsenic concentration in near surface soils (6 mg/kg) exceeded both the NMED residential screening guideline for arsenic (3.9 mg/kg) and the Cannon AFB

background levels for arsenic (4.3 mg/kg). The maximum arsenic concentration in subsurface soil (i.e., greater than 2 feet bgs) (3.3 mg/kg) was below the NMED residential SSL (3.9 mg/kg). The sample in which arsenic exceeded the residential SSL was collected from the 0–6 inch interval at SS01. Chemical concentrations and frequency of detection for all RFI Addendum and previous RFI investigation results are shown in **Table 8-1**. Maximum concentrations compared to NMED SSLs and background results are shown on **Table 8-2**. Sampling locations are shown on **Figure 8-1** and sampling locations with analytical results are shown on **Figure 8-2**. Based on the arsenic analytical results from the RFI Addendum fieldwork in October 2008 the arsenic data from the samples collected during the IRP RI (Walk Haydel 1990) is considered as not valid data. The IRP RI data was generated during the inception of inductively coupled plasma technology for metals analysis, in which interelemental interference may have been present; therefore, the IRP RI data generated is considered not valid.

8.3.3 Data Review and Validation

All chemical data were reviewed using Automated Data Review (ADR) Version 8.1 and following the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008), and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and validation, no data was qualified or rejected. The analytical data for samples collected at SWMU 85 were determined to be acceptable (including estimated data) for their intended use.

8.3.4 Conceptual Site Model

A CSM was developed based on historical site information. The Stormwater Collection Point is a naturally occurring playa lake located in the southwestern portion of Cannon AFB. Since Cannon AFB's activation in 1943, stormwater runoff from the flightline has collected in this nine-acre lake. Stormwater runoff flows toward the center of the site where it either evaporates or percolates into the soil. Various metals were detected in the Phase II (W-C 1997) report and concentrations appeared to increase toward the center of the playa lake's basin. An IRP RI (Walk Haydel 1990) was completed to further delineate soils beneath the SWMU and determine if subsurface soils have been impacted. While the Phase II report suggested that potentially significant concentrations of heavy metals appeared to increase toward the center of the lake's basin, the more extensive RI found this to be untrue.

The primary release mechanisms by which chemicals of concern could potentially be released from SWMU 85 are by direct contact during soil disturbance or excavation activities and by infiltration to groundwater affecting the potable water supply.

Under current use, direct contact with subsurface soils is an incomplete exposure pathway because no contact occurs due to the presence of significant amounts of water. It is unlikely that future construction would occur in this area due to 1) the location of the Stormwater Collection Point (proximity to runways), and 2) the presence of a naturally occurring playa lake which makes the area unsuitable for building construction. The most significant potential exposure pathways include direct contact with soil, resulting in incidental ingestion or dermal absorption of chemicals from soil over a short duration and frequency. Human receptors for these pathways

are limited to construction workers. Future industrial or residential exposure is unlikely because the potential for major soil excavation and future construction of buildings or residential homes within this SWMU, a playa lake, is low. One arsenic result collected from the 0–6 inch sample interval was above the NMED residential SSL, but was below the NMED industrial SSL. A concrete rubble pile near sample C85-SS01 may have contributed to the elevated arsenic concentration in sample C85-SS01; therefore, this concentration may not fully be representative of arsenic levels within the play lake basin. It is unlikely that exposure to human receptors of the arsenic level above the NMED residential would occur due to the location of the elevated sample result. The result was from a sample collected from within the playa lake, in which is not easily assessable to human receptor and is often underwater for long periods of time after a rain event. The arsenic levels from the other samples collected at SWMU were below the NMED residential SSLs and Cannon AFB background levels for arsenic, therefore an exposure above the NMED residential arsenic SSLs is not anticipated.

8.4 SWMU 85 SUMMARY

RFI Addendum fieldwork was completed, which consisted of collecting one surface soil sample and completing two soil borings. The lone surface soil sample was collected from 0 to 6 inches bgs with a stainless steel hand auger near the large concrete pile in the middle of the stormwater collection point due the presence of water. The two soil borings were advanced to depths of 15 feet bgs. Samples were collected and analyzed for arsenic to determine if the elevated concentrations and elevated reporting limits associated with the arsenic data in the RI (Walk-Haydel 1990) may be attributable to inter-element interference that was not properly accounted for during laboratory analysis and may not be representative of site conditions. With the exception of one arsenic level (6.0 mg/kg), which slightly exceeded Cannon AFB background levels (4.3 mg/kg), and the residential SSL (3.9 mg/kg) in the 0–6 inch interval at near surface soil location SS01 (collected under water), no elevated arsenic concentrations were identified. Based on the RFI Addendum 2008 sample results, the RI data is considered invalid since the arsenic data in the RI (Walk–Haydel 1990) may be attributable to inter-element interference. Because the maximum arsenic concentration detected during the RFI (6.0 mg/kg) is above the residential NMED SSL, but below the industrial NMED SSL (17.7 mg/kg) Corrective Action Complete with Controls is appropriate for SWMU 85. However, Cannon AFB plans to complete additional soil investigation at SWMU 85. This additional fieldwork will be addressed under a separate work plan.

TABLE 8-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 85 – STORMWATER COLLECTION POINT CANNON AFB, NEW MEXICO

FIELD ID			C85-SS01-000				C85-SB01-000				C85-SB01-008			
DATE COLLECTED			October 18, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	6.00E+00	10 / 10	6.00E+00	9.00E-02	6.00E-01		3.30E+00	9.00E-02	6.00E-01		2.80E+00	9.00E-02	6.00E-01	

Notes:
* Precise dat of collection could not be determined
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 8-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 85 – STORMWATER COLLECTION POINT CANNON AFB, NEW MEXICO

FIELD ID			C85-SB01-012				C85-SB02-000				C85-SB02-008			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	6.00E+00	10 / 10	2.00E+00	9.00E-02	6.00E-01		2.80E+00	9.00E-02	6.00E-01		1.60E+00	9.00E-02	6.00E-01	

Notes:
* Precise dat of collection could not be determined
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 8-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 85 – STORMWATER COLLECTION POINT CANNON AFB, NEW MEXICO

FIELD ID			C85-SB02-012				ST-1				ST-2			
DATE COLLECTED			October 22, 2008				1985 *				1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	6.00E+00	10 / 10	2.00E+00	9.00E-02	6.00E-01		1.60E+00	N/A	N/A		1.80E+00	N/A	N/A	

Notes:
* Precise dat of collection could not be determined
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 8-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 85 – STORMWATER COLLECTION POINT CANNON AFB, NEW MEXICO

FIELD ID			ST-3			
DATE COLLECTED			1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual
METALS (mg/kg)						
Arsenic	6.00E+00	10 / 10	1.50E+00	N/A	N/A	

Notes:
* Precise dat of collection could not be determined
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 8-2
COMPARISON OF SWMU 85 - STORMWATER COLLECTION POINT MAXIMUM SOIL CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
CANNON AFB, NEW MEXICO

Chemical	Maximum Surface Soil Detected Concentration (mg/kg)	Maximum Subsurface Soil Detected Concentration (mg/kg)	Qual	Residential SSL (mg/kg) [1]	Industrial SSL (mg/kg) [1]	Background Concentration (mg/kg)	Ecological Risk Screening Concentration[2] (mg/kg)	Exceeds Residential SSL[1] ?	Exceeds Industrial SSL[1] ?	Exceeds Background ?	Exceeds Ecological Risk Screening Concentration[2]
METALS											
Arsenic	6.00E+00	3.30E+00		3.90E+00	1.77E+01	4.30E+00	1.80E+01	YES[3]	NO	YES	NO

Notes:

[1] NMED Soil Screening Levels Revision 5.0 (December 2009)

[2] USEPA Eco-SSL (2009)

[3] Surface soil only

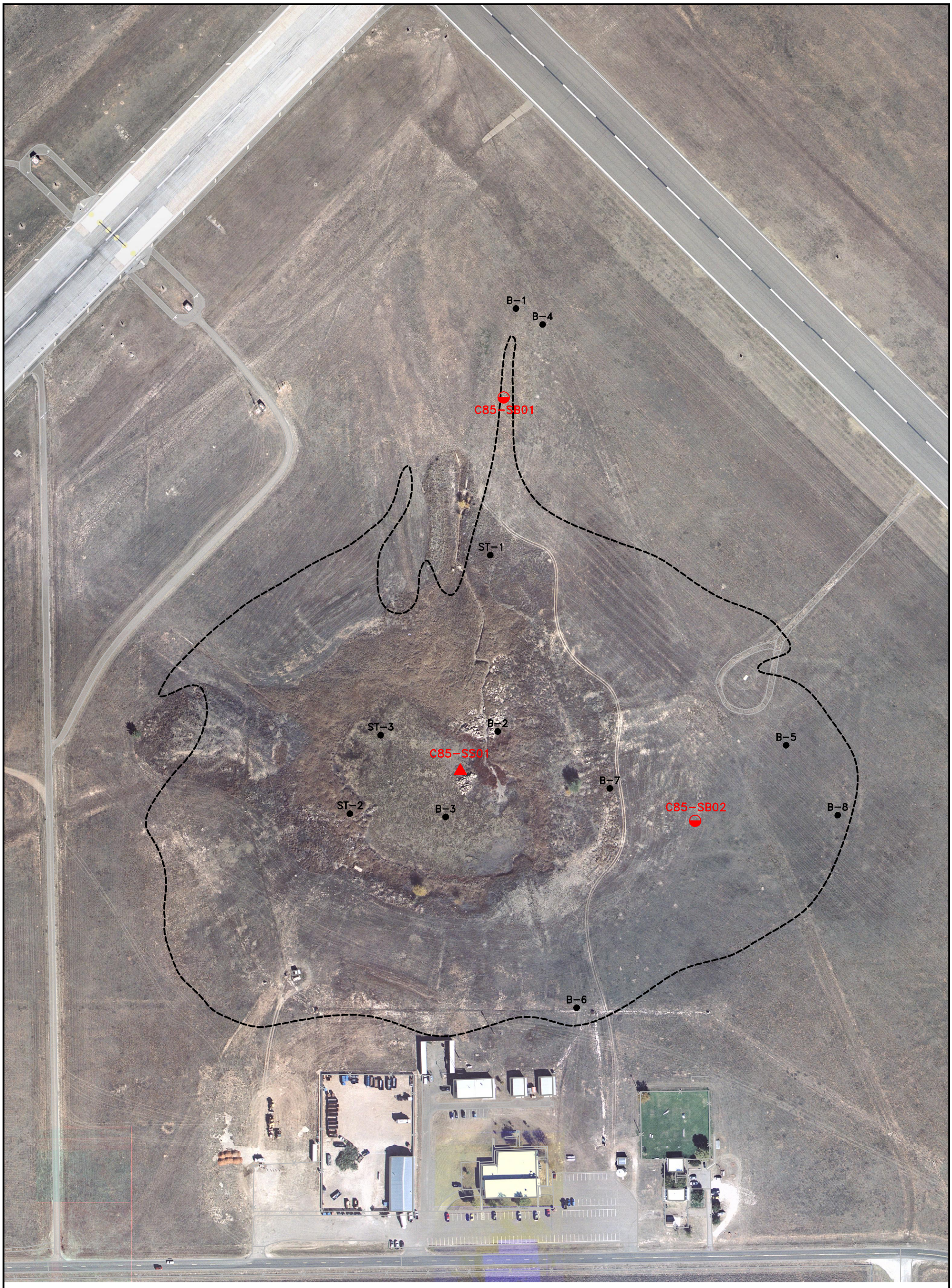
mg/kg = milligrams per kilogram

N/A = Not Applicable

NMED = New Mexico Environment Department

Qual = Qualifier

SSL = Soil Screening Level



LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- RFI ADDENDUM SURFACE SOIL LOCATION
- PREVIOUS FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY

N

200 100 0 200

SCALE IN FEET

January 30, 2009 8:57:25 a.m.
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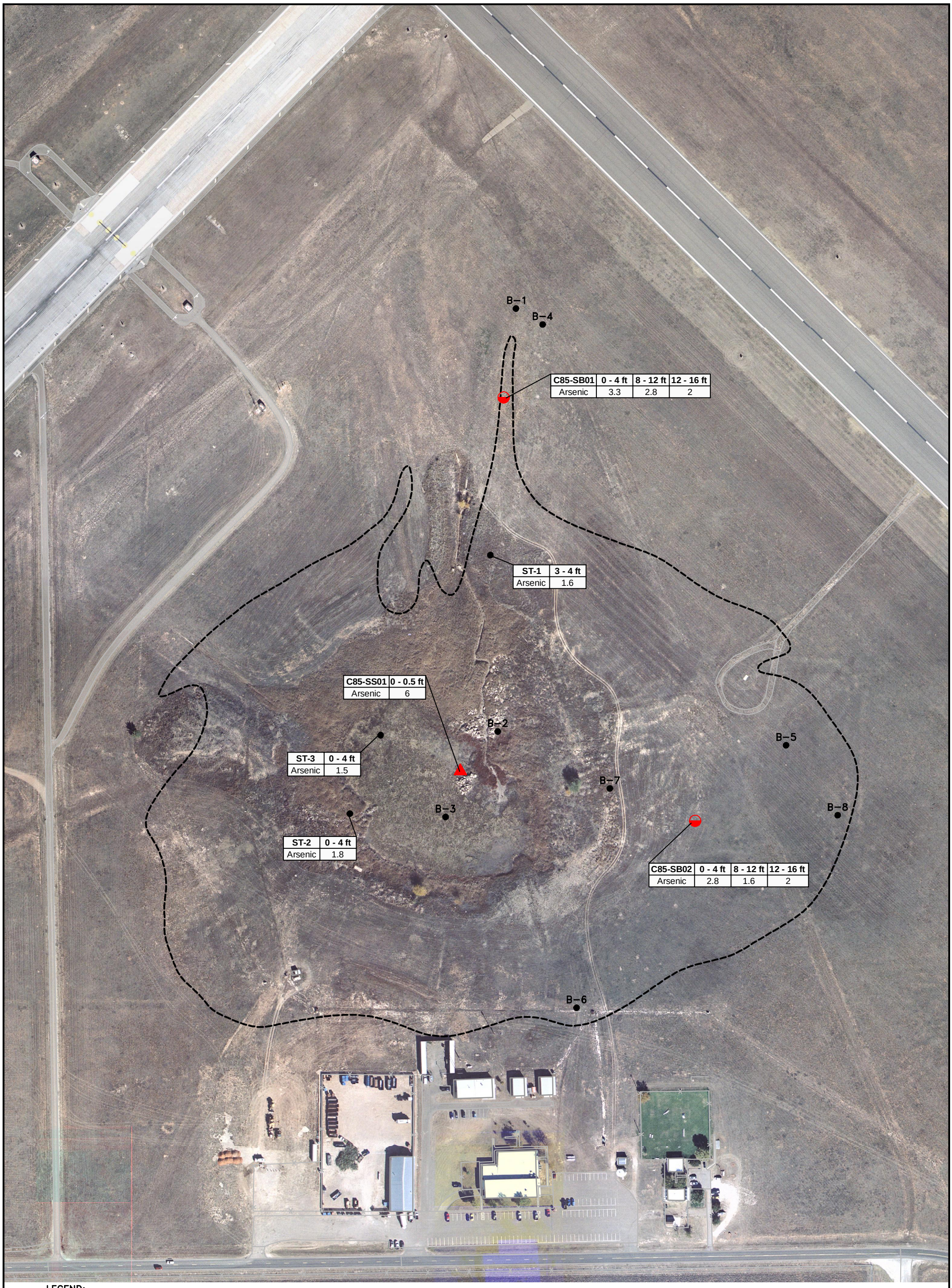
URS

RFI ADDENDUM SAMPLING LOCATIONS
AT SWMU 85 – STORMWATER COLLECTION POINT
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	8-1



LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- RFI ADDENDUM SURFACE SOIL LOCATION
- PREVIOUS FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY

NOTE: SAMPLE RESULTS ARE IN mg/kg.
FT = FEET
BASED ON THE RFI 2008 RESULTS. RI DATA FOR SOIL BORINGS B-1 THROUGH B-8 ARE CONSIDERED INVALID.

N

200 100 0 200
SCALE IN FEET

January 30, 2009 8:57:59 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

URS

RFI ADDENDUM SAMPLING RESULTS AT SWMU 85 – STORMWATER COLLECTION POINT
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	8-2

9.1 SWMU 91 DESCRIPTION

An RCRA Facility Assessment (RFA) (A.T. Kearney 1987) misidentified the suspected SWMU 91 location as having an above ground storage tank (AST) to store fuel recovered from OWS 5114 (SWMU 86). The tank was actually a 5,000-gallon aboveground JP-4 bulk storage tank associated with Test Stand No. 5114 (**Figure 9-1**). The tank was removed in 1988 when the test stand was demolished.

Although no sampling directly related to SWMU 91 was completed, this site is encompassed by SD-11, Engine Test Cell Area (SWMUs 86 through 90). SD-11 has been the subject of numerous investigations including an IRP Phase II Stage 1 (Radian 1986), two RIs (Walk Haydel 1990 and W-C 1992), a Phase III RFI (W-C 1997c), a CMS (W-C 1999), additional sampling (USGS 2000 and 2001) and Corrective Measures Implementation (CMI) (URS 2007).

9.2 RFI ACTIVITIES

9.2.1 Initial RFI Activities

URS personnel inspected this site in June 2005. The inspection confirmed that no signs of staining or significant cracks are present in the diked containment area where the 5,000-gallon AST was formerly located (see Photographs 1 and 2 in **Appendix F**).

Sampling results from SD-11 that are most closely related to the AST at SWMU 91 (i.e., results from samples locations near the AST that were also analyzed for fuel constituents including VOCs, SVOCs, and TPH) were compared to NMED soil screening levels, and if these levels were exceeded, a site-specific BRA was completed using USEPA methodology. In addition, for this SWMU, an ecological risk screening was completed according to NMED recommendations. The results of these risk evaluations were included in the RFI report. If risk to human health or the environment was determined to be unacceptable, a CMS was completed for the site.

The results of previous investigations were reviewed as part of the RFI and the conclusions for SWMU 91 were presented in the RFI report (URS 2007). The RFI report was reviewed by NMED, and NMED indicated that samples collected and analyzed from SWMUs 86-90 could not accurately characterize SWMU 91. Based on NMED comments on the RFI report for SWMU 91, sampling was to be conducted to better characterize the site.

9.2.2 RFI Addendum Activities

Three soil borings were completed in the vicinity of the former AST. At the time of the RFI Addendum fieldwork the former test cell and former AST dike had been removed and a portion of the area was under approximately 8- to 10-inches of water. The entire area was also in the process of being re-graded with approximately 12 inches of fill material. The three borings were advanced to 15 feet bgs at four foot intervals. Three samples from each sample location were submitted to the laboratory for TPH-DRO and TPH-GRO analysis. Visible staining and odors

were not present in the samples collected and no elevated PID readings were encountered. Based on this, the 0–6 inch sample interval from each sample location was submitted to the laboratory for TPH-DRO and TPH-GRO analysis. Boring logs were completed for all soil borings and are presented in Appendix A. Sampling was completed in accordance with the original RFI WP (URS 2005) and RFI WP Addendum (URS 2008). A summary of samples collected at SWMU 34 are shown on **Table 3-1**.

9.3 RFI RESULTS

9.3.1 Previous Investigation Results

The RFI Addendum fieldwork was the first investigation of SMWU 91. Therefore, no previous data was available for comparison to NMED SSLs.

9.3.2 RFI Addendum Results

TPH-DRO and TPH-GRO were nondetect in all samples as shown in **Table 9-1**. Sampling locations are shown on **Figure 9-1** and sampling locations with analytical results are shown on **Figure 9-2**.

9.3.3 Data Review and Validation

All chemical data were reviewed using Automated Data Review (ADR) Version 8.1 and following the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008), and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and validation, no data was qualified or rejected. The analytical data for samples collected at SWMU 91 were determined to be acceptable (including estimated data) for their intended use.

9.3.4 Conceptual Site Model

A CSM was developed based on historical site information. SWMU 91 is the former location of a 5,000-gallon aboveground JP-4 bulk storage tank associated with Test Stand No. 5114 located in the eastern portion of Cannon AFB. The diked containment is in good condition with no signs of staining or significant cracks. SWMU 91 is encompassed by SD-11, which includes SWMUs 86 through 90. SD-11 has been the subject of a number of investigations. The most significant exposure pathways include inhalation of fugitive dust, and direct contact with soil, resulting in incidental ingestion or dermal absorption of chemicals from soil. Human receptors for these pathways include adult general duty workers and construction workers. Future residential exposure is unlikely because of the site's location near the flightline. The adult base worker that potentially visits the site a few days per year for grounds keeping activities and/or a short term excavation worker are expected to be the most significant receptor populations under current and future exposure conditions. However, all exposure pathways are incomplete since no chemicals of concern were detected at SWMU 91.

9.4 SWMU 91 SUMMARY

Three soil borings were completed in the vicinity of the former AST dike to determine if a release had occurred. The three borings were advanced to 15 feet bgs at four-foot intervals. Three samples from each boring were submitted to the laboratory for TPH-DRO and TPH-GRO analyses. All TPH results were nondetect. Therefore, Corrective Action Complete without Controls is recommended for SWMU 91.

TABLE 9-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 91 – RECOVERED FUEL TANK NO. 5114
CANNON AFB, NEW MEXICO

FIELD ID			C91-SB01-000				C91-SB01-008				C91-SB01-012			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
All analytes were nondetect	ND	0 / 9												

Notes:
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 9-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 91 – RECOVERED FUEL TANK NO. 5114
CANNON AFB, NEW MEXICO

FIELD ID			C91-SB02-000				C91-SB02-008				C91-SB02-012			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
All analytes were nondetect	ND	0 / 9												

Notes:
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 9-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 91 – RECOVERED FUEL TANK NO. 5114
CANNON AFB, NEW MEXICO

FIELD ID			C91-SB03-000				C91-SB03-008				C91-SB03-012			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
All analytes were nondetect	ND	0 / 9												

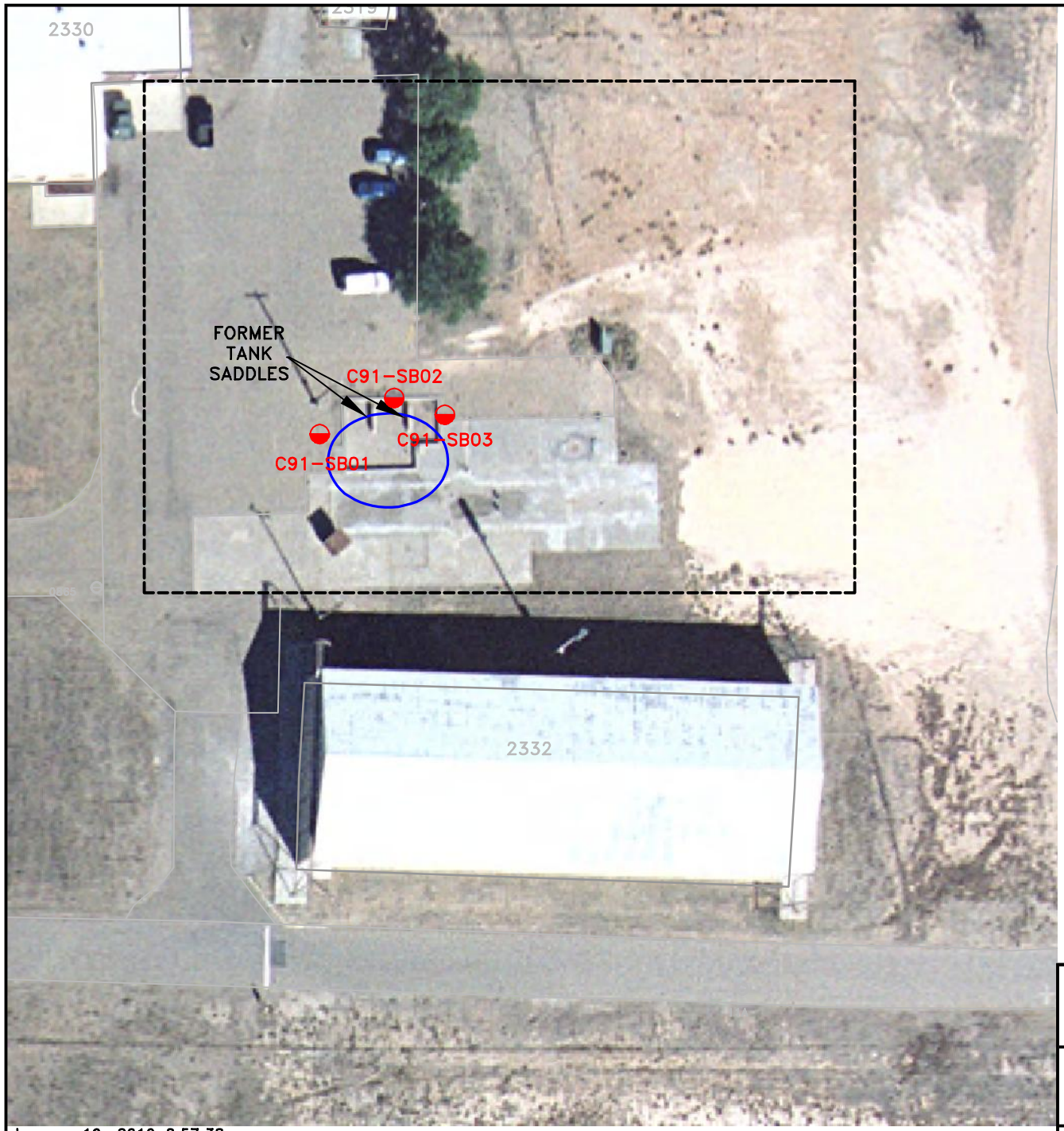
Notes:
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
ID = Identification

TABLE 9-2
COMPARISON OF SWMU 91 - RECOVERED FUEL TANK NO. 5114 MAXIMUM SOIL CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
CANNON AFB, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	Residential SSL/TPH Screening Guideline (mg/kg) [1]	Industrial SSL/TPH Screening Guideline (mg/kg) [1]	Background Concentration (mg/kg)	Exceeds Residential SSL/TPH Screening Guideline [1] ?	Exceeds Industrial SSL/TPH Screening Guideline [1] ?	Exceeds Background ?
PETROLEUM HYDROCARBONS								
All Petroleum Hydrocarbons were nondetect	ND		8.00E+02	2.00E+03	-	NO	NO	-

Notes:

[1] Table 2b. NMED TPH Soil Screening Guidelines (June 2006)
mg/kg = milligrams per kilogram
N/A = Not Applicable
ND = Nondetect
NMED = New Mexico Environment Department
Qual = Qualifier
SSL = Soil Screening Level
TPH = Total Petroleum Hydrocarbons



LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- APPROXIMATE AREA UNDER 8-10 INCHES OF WATER
- APPROXIMATE BOUNDARY OF AREA THAT WAS RE-GRADED

N

50 0 50

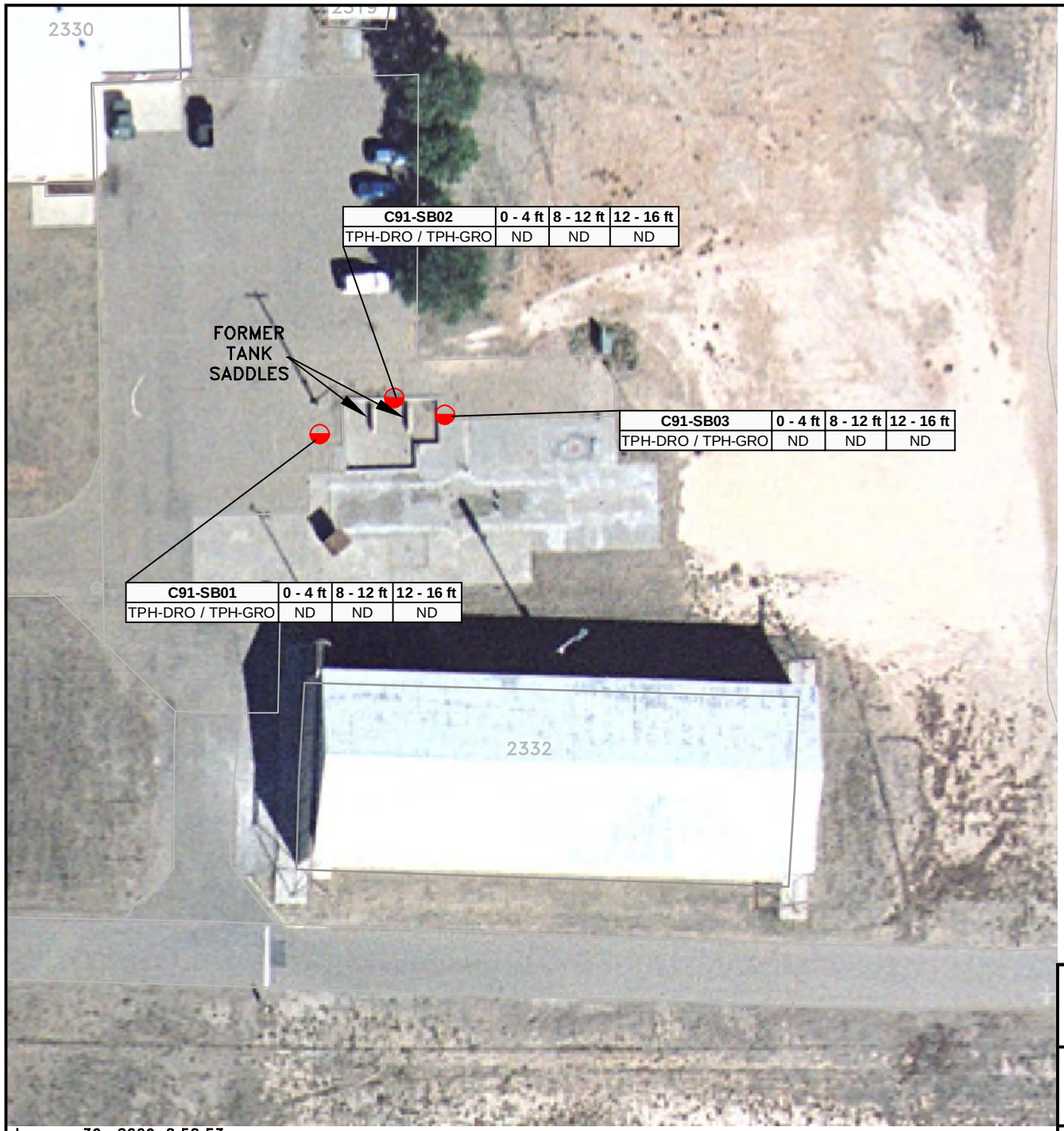
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING LOCATIONS
AT SWMU 91 – RECOVERED FUEL TANK NO. 5114
CANNON AIR FORCE BASE, NEW MEXICO

January 19, 2010 8:57:38 a.m.
Drawing: T:\CANNON\16169930\300\9-1.dwg

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	9-1



C91-SB02	0 - 4 ft	8 - 12 ft	12 - 16 ft
TPH-DRO / TPH-GRO	ND	ND	ND

C91-SB03	0 - 4 ft	8 - 12 ft	12 - 16 ft
TPH-DRO / TPH-GRO	ND	ND	ND

C91-SB01	0 - 4 ft	8 - 12 ft	12 - 16 ft
TPH-DRO / TPH-GRO	ND	ND	ND

LEGEND:

RFI ADDENDUM SOIL BORING LOCATION

NOTE: SAMPLE RESULTS ARE IN mg/kg
TPH = TOTAL PETROLEUM HYDROCARBONS
DRO = DIESEL RANGE ORGANICS
ND = NONDETECT
FT = FEET

N

50 0 50

SCALE IN FEET

URS

RFI ADDENDUM SAMPLING RESULTS AT SWMU 91 – RECOVERED FUEL TANK NO. 5114
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:58:53 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 01/07/09	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	9–2

10.1 SWMU 95 DESCRIPTION

SWMU 95 is a shallow, open ditch that begins near the end of the northeastern runway, Runway 4/22, and extends to the southeast under an access road before emptying into an open field. The northwest end of the ditch is marked by a concrete culvert and is surrounded by heavy vegetation. The drainage ditch is approximately 40 feet wide and runs for approximately 550 feet until it reaches the field.

The site was investigated during a Final IRP RI (Walk Haydel 1990). The investigation included drilling and sampling of 11 soil borings (**Figure 10-1**). Soil samples were collected to maximum depths that ranged from 5 to 61.5 feet. Samples were analyzed for total metals, EP toxicity characteristics, VOCs, and base/neutral extractable compounds. Long chain organic compounds were detected at a shallow depth in one soil boring near the northwest end of the drainage ditch. Selenium and barium were detected in concentrations above area background concentrations, but within the range of concentrations typical of area soils.

An RI (W-C 1992) was completed at SWMU 95. Two soil borings were drilled and sampled to maximum depths of 10 feet bgs. The soil borings were located near the upstream end of SWMU 95 to evaluate possible contaminant contributions from areas upstream of the already sampled reach of the ditch. Samples were analyzed for VOCs, SVOCs, total analyte list (TAL) metals and TPH. A BRA was completed based on data collected during the RI (W-C 1992). Lead and zinc were identified as the only COCs for human health risk evaluation. Calculations of risk to human health for non-carcinogenic and carcinogenic risks indicated no unacceptable risk. No unacceptable ecological risks were identified.

10.2 RFI ACTIVITIES

10.2.1 Initial RFI Activities

The results and conclusions of the SWMU 95 RI/BRA were reviewed and compared to current NMED soil screening levels. All of the RI analytical results with a current evaluation were presented to the NMED RCRA section in the RFI Report. URS completed a preliminary risk screening of this site following current NMED guidance. The results of this screening were presented in further detail in the RFI report.

The results of previous investigations were reviewed as part of the RFI and the conclusions for SWMU 95 were presented in the RFI report (URS 2007). The RFI review indicated that arsenic results exceeded the current NMED residential soil screening levels in surface and subsurface soil samples. However, it is plausible that the elevated concentrations and elevated reporting limits associated with the arsenic data in the RI (Walk-Haydel 1990) may be attributable to inter-element interference that was not properly accounted for during laboratory analysis and may not be representative of site conditions. The RFI report was reviewed by NMED, and based on NMED comments regarding arsenic levels, additional sampling at SWMU 95 was suggested to further characterize the site.

10.2.2 RFI Addendum Activities

Four soil borings were advanced to 15 feet bgs in two foot intervals using the drill rig and four foot intervals using the Geoprobe in the northeast stormwater drainage area. Sample location SB02 was drilled by hollow-stem auger and samples were collected using continuous sampling.

Refusal was encountered near 5 feet bgs at soil boring SB01 with the hollow-stem auger; therefore, boring SB01 was advanced using a Geoprobe rig. The sample collected from the drill rig was discarded as IDW and the laboratory sample was submitted from samples collected using the Geoprobe. Soil borings SB01, SB03 and SB04 were advanced to 15 feet bgs using the Geoprobe.

One issue was encountered during the advancement of soil boring SB03. The top of the concrete storm sewer that runs through SWMU 95 was punctured by the Geoprobe. Upon puncturing the storm sewer, the Geoprobe was offset approximately 15 to 20 feet south and the boring was advanced to 15 feet without further issue. Cannon AFB water distribution utility clearance was obtained prior to advancement of soil borings at SWMU 95. URS contacted water distribution base employee Phil Carr and met him at Site 95 to discuss the cause of the puncture. In addition, URS contacted the base environmental flight ERP Manager about the concrete storm sewer.

Samples were submitted to the laboratory based on XRF field screening results. Three samples from each sample location were submitted to the laboratory for arsenic. All XRF field screening results were nondetect (i.e., ND < 11 ppm) based on the field instrument detection limits with the exception of SB01. The 0-4 foot interval had readings of 12 and 15 which indicated that arsenic was detected in the sample. Boring logs were completed for all soil borings and are presented in Appendix A. Sampling was completed in accordance with the original RFI WP (URS 2005) and RFI WP Addendum (URS 2008). A summary of samples collected at SWMU 95 are shown on **Table 3-1**.

10.3 RFI RESULTS

10.3.1 Previous Investigation Results

Maximum soil concentrations for all detected chemicals were compared with NMED SSLs. None of the VOCs that were detected above the reporting limits exceed the SSLs. One SVOC (2-methylnapthalene) and several metals (arsenic, barium, iron, and selenium) in surface and combined soils exceed the soil-to-groundwater SSLs; however, SSL leaching values are not considered applicable for this SWMU because soil sampling results demonstrated that contaminants are not being transported significantly in a vertical direction and depth to groundwater is greater than 250 feet. TPH was detected above the residential action level but below the industrial soil action level.

The maximum concentrations of arsenic in surface soil (80.3 mg/kg) and combined soil (152 mg/kg) exceed the construction worker SSL (85.2 mg/kg) and/or soil-to-groundwater SSL

(0.292 mg/kg); however, the average arsenic concentration (53 mg/kg) in combined soil is less than the construction worker SSL. The elevated arsenic data collected from previous investigations is questionable due to the potential inter-element interference due to the inception of ICP technology and analysis of samples using this new technology and may not be representative of site conditions.

10.3.2 RFI Addendum Results

Arsenic was detected in all samples. The maximum arsenic concentration was compared to NMED SSLs. The maximum arsenic concentration in near surface soils (4.6 mg/kg) exceeded both the NMED residential SSL for arsenic (3.9 mg/kg) and the Cannon AFB background level (4.3 mg/kg). The maximum arsenic concentration in subsurface soil (i.e., greater than 2 feet bgs) (3.8 mg/kg) was below the NMED residential SSL (3.9 mg/kg). The sample in which arsenic exceeded the residential SSL was collected from the 0- to 4-foot interval from soil boring SB01. Chemical concentrations and frequency of detection for all RFI Addendum and previous RFI investigation results are shown in **Table 10-1**. Maximum concentrations compared to NMED SSLs and background results are shown on **Table 10-2**. Sampling locations are shown on **Figure 10-1** and sampling locations with analytical results are shown on **Figure 10-2**.

10.3.3 Data Review and Validation

All chemical data were reviewed using Automated Data Review (ADR) Version 8.1 and following the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008), and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and validation, no data was qualified or rejected. The analytical data for samples collected at SWMU 95 were determined to be acceptable (including estimated data) for their intended use.

10.3.4 Conceptual Site Model

A CSM was developed based on historical site information. The primary chemical sources at the Northeast Stormwater Drainage Area include fuel-related hydrocarbons and metals. Both the metals and long chain organic compounds are basically insoluble and do not leach significantly. In addition, hydrogeological and soil/metal interactions are such that significant movement of metals are not anticipated. The site is a naturally occurring drainage area in an isolated, vegetated area outside of traffic pathways.

The only potential human exposure pathways are for low frequency visits by the industrial (maintenance) worker and excavation worker. Even though the site is greater than one-half acre, construction of residential homes in this area is highly unlikely given that the area is a natural drainage ditch and it would require a major earthmoving effort to divert the natural runoff pattern in order to allow construction of residential homes. The primary release mechanisms by which chemicals of concern could potentially be released from SWMU 95 are by direct contact during soil disturbance or excavation activities and by infiltration to groundwater affecting the potable water supply. Even though exposure to the subsurface soil is unlikely, it should be evaluated in

the unlikely event that the subsurface soils are disturbed and/or mixed with surface soils. The data used for screening against SSLs was limited to samples collected from the 0 through 10 feet bgs intervals. The most significant potential exposure pathway is direct contact with soil, resulting in incidental ingestion or dermal absorption of chemicals from soil over a short duration and frequency. Inhalation is not a likely exposure pathway because the area is vegetated and soils are saturated much of the time. Human receptors for this pathway are limited to maintenance workers and construction workers. Future industrial or residential exposure is unlikely because the potential for major soil excavation and future construction of buildings or residential homes within this SWMU, a drainage area, is low.

The site is well vegetated, is not part of a traffic pathway, and will remain a stormwater collection point. Surface runoff is not considered a pathway and because evapotranspiration is greater than precipitation no water is expected to infiltrate the ground except during storm events. Therefore, contaminated soil as a release source will not be evaluated. The distribution of metals does not reflect trends associated with introduced contamination, but may be related to an accumulation of metals in the culvert that collects surface runoff. Based on this, only the leaching of metals from soil to groundwater warrants evaluation.

10.4 SWMU 95 SUMMARY

RFI Addendum fieldwork was completed, which consisted of the completion of four soil borings. Four soil borings were advanced to 15 feet bgs. Samples were collected and analyzed for arsenic to determine if the elevated concentrations and elevated reporting limits associated with the arsenic data in the RI (Walk-Haydel 1990) may be attributable to inter-element interference that was not properly accounted for during laboratory analysis and may not be representative of site conditions. With the exception of one arsenic level (4.6 mg/kg), which slightly exceeded Cannon AFB background levels (4.3 mg/kg) and the residential SSL (3.9 mg/kg) in the 0–4 foot interval at soil location SB01, no elevated arsenic concentrations were identified. Based on the RFI Addendum 2008 sample results, the RI data are considered invalid, since the arsenic data from the RI (Walk-Haydel 1990) may be attributable to inter-element interference. Because the maximum arsenic concentration detected during the RFI (4.6 mg/kg) is above the residential SSL (3.9 mg/kg), but below the industrial SSL (17.7 mg/kg), Corrective Action Complete with Controls is recommended for SWMU 95.

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			C95-SB01-000				C95-SB01-008				C95-SB01-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	4.60E+00	9.00E-02	6.00E-01		2.70E+00	9.00E-02	6.00E-01		3.00E+00	9.00E-02	6.00E-01	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			C95-SB02-000				C95-SB02-006				C95-SB02-015			
DATE COLLECTED			October 21, 2008				October 21, 2008				October 21, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.70E+00	9.00E-02	6.00E-01		3.70E+00	9.00E-02	6.00E-01		2.40E+00	9.00E-02	6.00E-01	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			C95-SB03-000				C95-SB03-008				C95-SB03-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.50E+00	9.00E-02	6.00E-01		3.80E+00	9.00E-02	6.00E-01		2.60E+00	9.00E-02	6.00E-01	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			C95-SB04-000				C95-SB04-008				C95-SB04-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.70E+00	9.00E-02	6.00E-01		2.80E+00	9.00E-02	6.00E-01		2.60E+00	9.00E-02	6.00E-01	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			0951-0.5 (0953)				0951-04 (0953)				0951-06 (0953)			
DATE COLLECTED			December 7, 1991				December 7, 1991				December 7, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.90E+00	N/A	N/A		1.50E+00	N/A	N/A		2.30E+00	N/A	N/A	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			0951-10 (0953)				0952-0.5 (0954)				0952-04 (0954)			
DATE COLLECTED			December 7, 1991				December 8, 1991				December 8, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	1.30E+00	N/A	N/A		2.20E+00	N/A	N/A		1.90E+00	N/A	N/A	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI ADDENDUM AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE CANNON AFB, NEW MEXICO

FIELD ID			0952-06 (0954)				0952-10 (0954)			
DATE COLLECTED			December 8, 1991				December 8, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)										
Arsenic	4.60E+00	20 / 20	1.80E+00	N/A	N/A		1.90E+00	N/A	N/A	

Notes:
ID = Identification
MDLs and RLs were unavailable for MDLs and RLs with N/A
mg/kg = milligrams per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE 10-2
COMPARISON OF SWMU 95 - NORTHEAST STORMWATER DRAINAGE AREA MAXIMUM SOIL CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
CANNON AFB, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	Residential Soil Screening Levels (mg/kg) [1]	Industrial Soil Screening Levels (mg/kg) [1]	Background Concentration (mg/kg)	Ecological Risk Screening Concentration[2] (mg/kg)	Exceeds Residential SSL[1] ?	Exceeds Industrial SSL[1] ?	Exceeds Background ?	Exceeds Ecological Risk Screening Concentration[2]
METALS										
Arsenic	4.60E+00		3.90E+00	1.77E+01	4.30E+00	1.80E+01	YES	NO	YES	NO

Notes:

[1] NMED Soil Screening Levels Revision 5.0 (December 2009)

[2] USEPA Eco-SSL (2009)

mg/kg = milligrams per kilogram

N/A = Not Applicable

NMED = New Mexico Environment Department

Qual = Qualifier

SSL = Soil Screening Level

LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- PREVIOUS FIELD INVESTIGATION SOIL BORING LOCATION

N

50 0 50

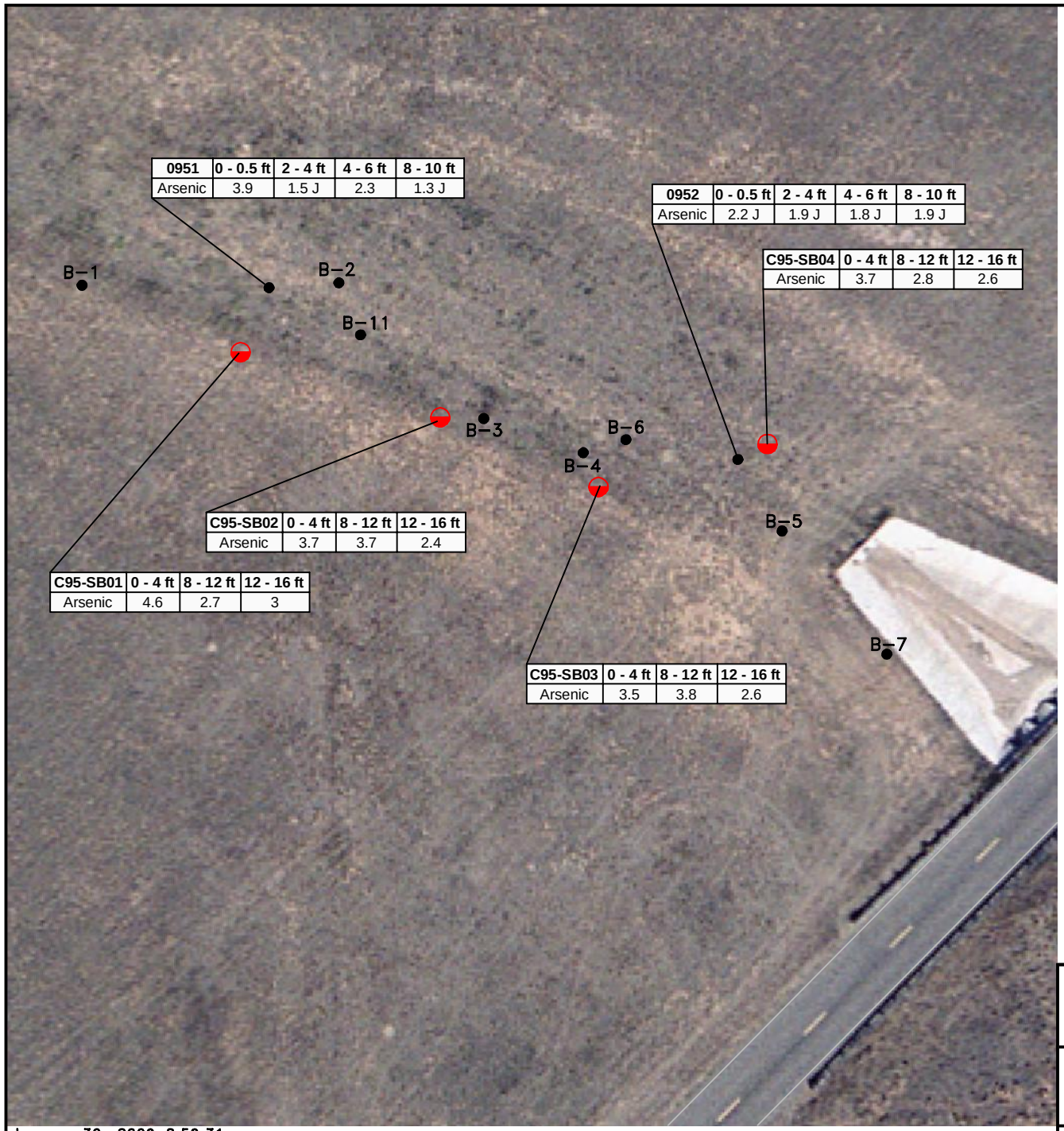
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING LOCATIONS AT
SWMU 95 – NORTHEAST STORMWATER DRAINAGE AREA
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:59:12 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	10-1



0951	0 - 0.5 ft	2 - 4 ft	4 - 6 ft	8 - 10 ft
Arsenic	3.9	1.5 J	2.3	1.3 J

0952	0 - 0.5 ft	2 - 4 ft	4 - 6 ft	8 - 10 ft
Arsenic	2.2 J	1.9 J	1.8 J	1.9 J

C95-SB04	0 - 4 ft	8 - 12 ft	12 - 16 ft
Arsenic	3.7	2.8	2.6

C95-SB02	0 - 4 ft	8 - 12 ft	12 - 16 ft
Arsenic	3.7	3.7	2.4

C95-SB01	0 - 4 ft	8 - 12 ft	12 - 16 ft
Arsenic	4.6	2.7	3

C95-SB03	0 - 4 ft	8 - 12 ft	12 - 16 ft
Arsenic	3.5	3.8	2.6

LEGEND:

RFI ADDENDUM SOIL BORING LOCATION

PREVIOUS FIELD INVESTIGATION SOIL BORING LOCATION

NOTE: SAMPLE RESULTS ARE IN mg/kg
FT = FEET
BASED ON ADDITIONAL RFI 2008 SAMPLE RESULTS RI DATA FOR SOIL BORINGS B-1 THROUGH B-11 IS CONSIDERED INVALID.

N

50 0 50

SCALE IN FEET

URS

RFI ADDENDUM SAMPLING RESULTS AT SWMU 95 – NORTHEAST STORMWATER DRAINAGE AREA
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:59:31 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 01/07/09	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	10-2

11.1 SWMU 107 DESCRIPTION

SWMU 107 is located in the southeast corner of the Base, adjacent to and east of abandoned north-south taxiway T-5. The training area consists of an unlined surface area in a half-moon shape that is approximately 100 feet in length. The site has little surface vegetation, but was littered with numerous empty storage containers of various sizes at the time of the RI sampling event (W-C 1992). From 1968 to 1974, the SWMU was used concurrently with SWMU 106, Fire Department Training Area No. 2. During training exercises, the ground was saturated with water, and JP-4 jet fuel was introduced and ignited for training purposes. Approximately 300 gallons of fuel were burned during each training exercise. The exercises occurred about eight times per year. According to the 1995 RFI (W-C 1995), the area of SWMU 107 also has been used for activities associated with the adjacent ordnance training site.

An RI/BRA (W-C 1992) was completed for the site. Four soil borings were drilled and sampled (**Figure 11-1**) to depths of 31 feet bgs in three borings and to 67 feet bgs in the fourth. Samples were collected at 5, 10, 20, and 29.5 feet bgs in the first three soil borings and at 4, 10, 20, 30, 45, 50 and 60 feet bgs in the fourth. The samples were analyzed for VOCs, TPH, and lead/chromium. Four surface soil samples collected from the soil borings were analyzed for BTEX, TPH and lead/chromium.

The chemicals of concern identified for the combined risk assessment area, which included SWMU 107, were: benzene, ethylbenzene, toluene, xylenes, trichloroethene, chromium, and lead. None of the compounds exceeded the 1995 RFI's soil/criteria/proposed RCRA levels. The BRA concluded that no unacceptable risk of non-carcinogenic or carcinogenic effects was expected at SWMU 107. The ecological risk evaluation concluded that none of the chemicals at the site pose a significant risk to small mammalian populations or other biota.

11.2 RFI ACTIVITIES

11.2.1 Initial RFI Activities

The results and conclusions of the SWMU 107 RI/BRA were reviewed and compared to current NMED soil screening levels. All of the RI analytical results with a current evaluation were presented in the RFI Report. URS completed a preliminary risk screening of this site following current NMED guidance. Preliminary assessments indicate that any contaminants present at the site pose an acceptable level of risk for industrial/occupational and construction worker receptors. However, NMED has subsequently requested that all chemical results for Cannon AFB be screened using residential screening levels. The results of this screening were presented in further detail in the RFI report.

The results of previous investigations were reviewed as part of the RFI and the conclusions for SWMU 107 were presented in the RFI report (URS 2007). The RFI review indicated that TPH and xylene results exceed the current NMED residential soil screening levels in several surface

and subsurface soil samples. NMED requested additional sampling at SWMU 107 to determine if TPH and xylene levels are below residential screening levels.

11.2.2 RFI Addendum Activities

Five soil borings were completed at SWMU 107 and samples were collected in acetate liners in a macro core sampler with the geoprobe. The three proposed soil borings were completed and two additional borings were completed due to strong odor in soil boring SB03 from 4 to 28 feet. Soil borings were advanced to 30 feet bgs, unless refusal was encountered. Three samples from each sample location were submitted to the laboratory for TPH-DRO, TPH-GRO and BTEX analysis with the exception of SB04. Soil boring SB04 was offset approximately 13 feet east of sample location SB03. Samples were not collected or submitted to the laboratory for analysis. SB04 was advanced to 16 feet and then abandoned due to a confirmation of strong fuel odor in the soil. Soil boring SB04 was advanced to determine the presence of odor which indicated potential contamination due to a release.

Soil boring SB05 located approximately 30 feet east of SB04 was advanced to 30 feet bgs. No visible staining, odor or elevated PID readings were encountered at SB05. Samples from SB05 were submitted to the laboratory for analysis to confirm that fuel constituents were not present in the soil. Soil borings SB03 and SB04 were the only soil borings with visible staining, strong odor and elevated PID readings. In addition, boring logs were completed for all soil borings and are presented in Appendix A. Sampling was completed in accordance with the original RFI WP (URS 2005) and RFI WP Addendum (URS 2008). A summary of samples collected at SWMU 34 are shown on **Table 3-1**.

11.3 RFI RESULTS

11.3.1 Previous Investigation Results

Maximum soil concentrations for all detected chemicals were compared with NMED SSLs. The maximum site surface soil concentrations of chromium (11.1 mg/kg) and lead (322 mg/kg) exceed the background upper tolerance limits for chromium (10.5 mg/kg) and lead (12 mg/kg). TPH concentrations exceed the residential, industrial, or construction worker screening guidelines for TPH. The TPH detected at the site represents the less volatile, long chain, aged, weathered petroleum fraction which presents the relatively nontoxic component of petroleum. Xylenes in subsurface soil (maximum 94 mg/kg) exceed the residential SSL (82 mg/kg). Low concentrations of other individual fuel constituents (i.e., ethylbenzene and toluene) were detected below the applicable SSL.

11.3.2 RFI Addendum Results

BTEX and TPH-GRO were detected in three samples at soil boring location SB03. TPH-DRO was detected in eight samples. The maximum concentration was compared to NMED SSLs. The maximum BTEX concentrations were below the NMED residential screening guideline for

BTEX. The maximum TPH-DRO concentration (7,800 mg/kg) and TPH-GRO (650 mg/kg) exceeded the NMED waste oil (520 mg/kg). Chemical concentrations and frequency of detection for all RFI Addendum and previous RFI investigation results are shown in **Table 11-1**. Maximum concentrations compared to NMED SSLs and background results (if applicable) are shown on **Table 11-2**. Sampling locations are shown on **Figure 11-1**, and sampling locations with analytical results are shown on **Figure 11-2**.

11.3.3 Data Review and Validation

All chemical data were reviewed using Automated Data Review (ADR) Version 8.1 and following the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008), and Department of Defense Quality Systems Manual (DoD QSM), Final Version 3. Based on the data review and validation, data was qualified **J** (estimated) and **UJ** (estimated nondetect) due low surrogate recovery. The analytical data for samples collected at SWMU 107 were determined to be acceptable (including estimated data) for their intended use.

11.3.4 Conceptual Site Model

As part of this RFI, a CSM was developed based on historical site information. The primary chemical sources are residual fuels, waste oils, and solvents that were burned during fire training purposes in the fire training areas. The primary release mechanism is mixing and infiltration of chemicals into the soils. A secondary release mechanism from the soil includes the potential leaching of chemicals to groundwater. The fire training area sites occupy areas greater than 0.5 acre and are considered large enough to consider exposure for the site worker and construction worker. In these areas, it was also assumed that excavation for general maintenance or repair of underground structures was plausible. Future residential exposure is unlikely because of the industrial nature of this site and the surrounding area. Although emission of VOCs from soil is plausible, the quantities are expected to be minute due to mixing and dilution with ambient air. Fugitive dust emissions in the form of dust/particulates may contain site-related chemicals from surface and subsurface soil.

Exposure to site chemicals via ingestion through the food chain is possible. However this exposure pathway is judged to be insignificant because of the expected distribution and metabolism of COPCs in plants and animals. VOCs are expected to be metabolized rapidly in animals and are expected to be metabolized and volatilize (through the cuticle and stoma cells) in plants. Atmospheric deposition of airborne particulates on edible crops is possible; however, this exposure pathway is not expected to be significant based on the low concentrations of metals and VOCs detected in soils.

The TPH-DRO results from the RFI Addendum fieldwork completed in October 2008, where above the residential and industrial NMED TPH SSLs. Exposure to the human receptor is most likely if the area is disturbed through excavation. The area where TPH-DRO results were above NMED TPH SSLs is limited in size; therefore, the likelihood of exposure by the human receptor is low.

11.4 SWMU 107 SUMMARY

RFI Addendum fieldwork was completed, which consisted of the completion of five soil borings. The three proposed soil borings were completed and two additional borings were also completed due to strong odor in soil boring SB03 from 4 to 28 feet. Soil borings were advanced to 30 feet bgs, unless refusal was encountered. Three samples from each boring with the exception of SB04 were submitted to the laboratory for TPH-DRO, TPH-GRO and BTEX analysis. No samples from boring SB04 were submitted for laboratory analysis based on elevated PID readings; instead this location is assumed to contain elevated TPH levels. The TPH-DRO results were above the residential and industrial NMED TPH screening levels in soil boring SB03 for the 4-foot, 12-foot and 24-foot intervals. Based on the TPH-DRO results from SB03 additional action is recommended for the area where TPH-DRO concentrations exceeded the residential and industrial NMED TPH SSLs. The estimated area of elevated TPH levels is shown in **Figure 11-3**.

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB01-000				C107-SB01-012				C107-SB01-028				C107-SB02-000				C107-SB02-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	7.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	7.00E-04	5.00E-03	U
m,p-Xylenes	1.20E+01 J	3 / 12	<	4.00E-04	5.00E-03	U	<	5.00E-04	6.00E-03	U	<	4.00E-04	5.00E-03	U	<	4.00E-04	6.00E-03	U	<	4.00E-04	5.00E-03	U
o-Xylene	6.50E+00 J	3 / 12	<	7.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	7.00E-04	5.00E-03	U
Toluene	6.90E+00 J	7 / 38	<	7.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	7.00E-04	5.00E-03	U
Xylene	9.40E+01	5 / 33																				
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12	1.40E+01	1.00E+00	1.00E+01		<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U	8.80E+00	1.00E+00	1.00E+01	J	<	1.00E+00	1.00E+01	U
Gasoline Range Organics	6.50E+02 J	3 / 12	<	3.30E-01	1.10E+00	U	<	3.40E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U
Total Petroleum Hydrocarbons	1.83E+04	10 / 23																				

Notes:

* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).

** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.

mg/kg = milligrams per kilogram

J = estimated

MDL = Method Detection Limit

N/A = not applicable

ND = not detected

Qual = qualifier

RL = reporting limit

U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT
SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB02-024				C107-SB03-004				C107-SB03-012				C107-SB03-024				C107-SB05-000			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	7.00E-04	5.00E-03	U	2.00E+00	2.30E-02	5.80E-01	J	1.80E+00	2.30E-02	5.70E-01		1.00E-01	1.10E-02	2.80E-01	J	<	7.00E-04	6.00E-03	U
m,p-Xylenes	1.20E+01 J	3 / 12	<	4.00E-04	5.00E-03	U	1.20E+01	4.60E-02	5.80E-01	J	7.60E+00	4.50E-02	5.70E-01		3.00E-01	2.30E-02	2.80E-01		<	4.00E-04	6.00E-03	U
o-Xylene	6.50E+00 J	3 / 12	<	7.00E-04	5.00E-03	U	6.50E+00	2.30E-02	5.80E-01	J	3.90E+00	2.30E-02	5.70E-01		1.00E-01	1.10E-02	2.80E-01	J	<	7.00E-04	6.00E-03	U
Toluene	6.90E+00 J	7 / 38	<	7.00E-04	5.00E-03	U	2.00E-01	2.30E-02	5.80E-01	J	5.70E-01	2.30E-02	5.70E-01	J	2.00E-02	1.10E-02	2.80E-01	J	<	7.00E-04	6.00E-03	U
Xylene	9.40E+01	5 / 33																				
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12	<	1.00E+00	1.00E+01	U	7.80E+03	1.00E+02	1.00E+03		3.70E+03	5.00E+01	5.00E+02		4.50E+03	5.00E+01	5.00E+02		1.40E+02	2.00E+00	2.00E+01	
Gasoline Range Organics	6.50E+02 J	3 / 12	<	3.30E-01	1.10E+00	U	6.50E+02	1.40E+01	4.60E+01	J	3.50E+02	1.70E+00	5.70E+00	J	1.80E+02	6.80E+00	2.30E+01	J	<	3.40E-01	1.10E+00	U
Total Petroleum Hydrocarbons	1.83E+04	10 / 23																				

Notes:

* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).

** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.

mg/kg = milligrams per kilogram

J = estimated

MDL = Method Detection Limit

N/A = not applicable

ND = not detected

Qual = qualifier

RL = reporting limit

U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB05-012				C107-SB05-028				8-1-2				8-2-8				8-3-60			
DATE COLLECTED			October 23, 2008				October 23, 2008				1984 *				1984 *				1984 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	6.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U												
m,p-Xylenes	1.20E+01 J	3 / 12	<	4.00E-04	5.00E-03	U	<	4.00E-04	5.00E-03	U												
o-Xylene	6.50E+00 J	3 / 12	<	6.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U												
Toluene	6.90E+00 J	7 / 38	<	6.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U												
Xylene	9.40E+01	5 / 33																				
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12	8.40E+00	1.00E+00	1.00E+01	J	1.01E+01	1.00E+00	1.00E+01													
Gasoline Range Organics	6.50E+02 J	3 / 12	<	3.20E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U												
Total Petroleum Hydrocarbons	1.83E+04	10 / 23																				

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT
SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			1071-0				1071-5				1071-10				1071-20				1071-30			
DATE COLLECTED			October 11, 1991				October 8, 1991				October 8, 1991				October 8, 1991				October 9, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12																				
o-Xylene	6.50E+00 J	3 / 12																				
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12																				
Gasoline Range Organics	6.50E+02 J	3 / 12																				
Total Petroleum Hydrocarbons	1.83E+04	10 / 23	2.87E+03 **	N/A	N/A		7.42E+01	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			1072-0				1072-4				1072-10				1072-20				1072-30			
DATE COLLECTED			October 23, 1991				October 24, 1991				October 24, 1991				October 24, 1991				October 25, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12																				
o-Xylene	6.50E+00 J	3 / 12																				
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12																				
Gasoline Range Organics	6.50E+02 J	3 / 12																				
Total Petroleum Hydrocarbons	1.83E+04	10 / 23	9.63E+02 **	N/A	N/A														<	N/A	N/A	U

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			1073-0				1073-4				1073-10				1073-20				1073-30			
DATE COLLECTED			October 23, 1991				October 25, 1991				October 25, 1991				October 25, 1991				October 25, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12																				
o-Xylene	6.50E+00 J	3 / 12																				
Toluene	6.90E+00 J	7 / 38	7.30E-02	N/A	N/A	J	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12																				
Gasoline Range Organics	6.50E+02 J	3 / 12																				
Total Petroleum Hydrocarbons	1.83E+04	10 / 23	6.08E+03 **	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			1074-0				1074-4				1074-10				1074-20				1074-30			
DATE COLLECTED			October 23, 1991				October 25, 1991				October 25, 1991				October 25, 1991				October 25, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	1.30E+01	N/A	N/A	J	1.50E+01	N/A	N/A	J	5.80E+00	N/A	N/A		<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12																				
o-Xylene	6.50E+00 J	3 / 12																				
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	6.90E+00	N/A	N/A	J	<	N/A	N/A	U	2.70E+00	N/A	N/A	J	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33					9.40E+01	N/A	N/A		8.70E+01	N/A	N/A		2.80E+01	N/A	N/A		4.90E+00	N/A	N/A	J
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12																				
Gasoline Range Organics	6.50E+02 J	3 / 12																				
Total Petroleum Hydrocarbons	1.83E+04	10 / 23	3.61E+03 **	N/A	N/A		1.83E+04	N/A	N/A		9.22E+03	N/A	N/A		1.15E+04	N/A	N/A		4.71E+03	N/A	N/A	

Notes:

* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).

** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.

mg/kg = milligrams per kilogram

J = estimated

MDL = Method Detection Limit

N/A = not applicable

ND = not detected

Qual = qualifier

RL = reporting limit

U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			1074-45				1074-50				1074-60				1075-4				1075-10			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	1.50E+01	N/A	N/A	J
m,p-Xylenes	1.20E+01 J	3 / 12																				
o-Xylene	6.50E+00 J	3 / 12																				
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	4.40E-03	N/A	N/A	J	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	8.70E+01	N/A	N/A	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12																				
Gasoline Range Organics	6.50E+02 J	3 / 12																				
Total Petroleum Hydrocarbons	1.83E+04	10 / 23	4.19E+01	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U								

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

FIELD ID			1075-20				1075-30				1075-40				1075-50				1076-4			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12																				
o-Xylene	6.50E+00 J	3 / 12																				
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	7.80E+03	8 / 12																				
Gasoline Range Organics	6.50E+02 J	3 / 12																				
Total Petroleum Hydrocarbons	1.83E+04	10 / 23																				

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-1
SUMMARY OF CHEMICAL DETECTIONS IN SOIL FOR THE RFI INVESTIGATION ADDENDUM AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AFB, NEW MEXICO

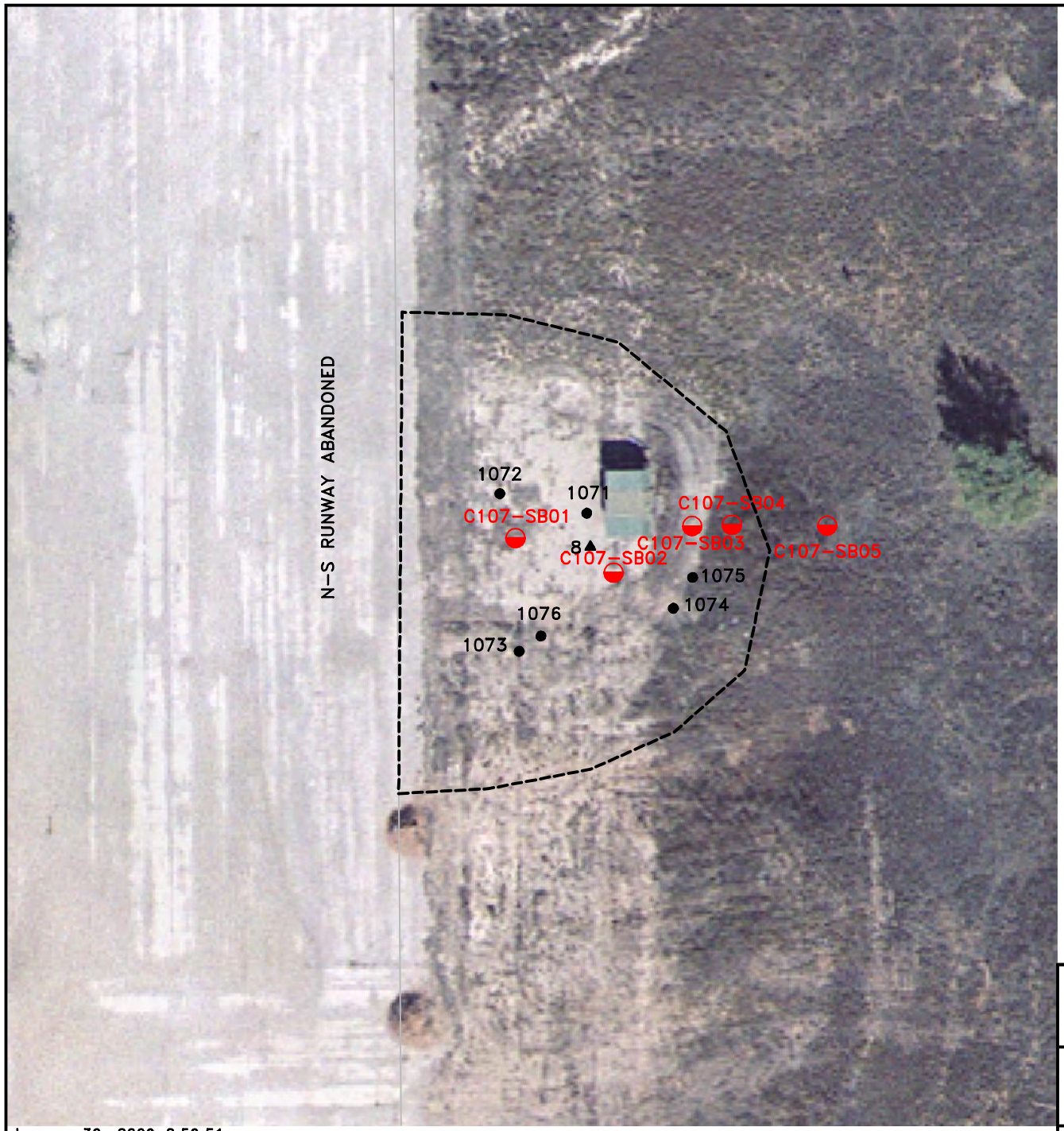
FIELD ID			1076-10				1076-20				1076-30				1076-30.3			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																		
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12																
o-Xylene	6.50E+00 J	3 / 12																
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																		
Diesel Range Organics	7.80E+03	8 / 12																
Gasoline Range Organics	6.50E+02 J	3 / 12																
Total Petroleum Hydrocarbons	1.83E+04	10 / 23																

Notes:
* Precise date of collection could not be determined; samples were analyzed for oil/grease (maximum 3,800 mg/kg) and purgeable organics (all ND).
** Historical result, near surface TPH levels have likely naturally attenuated based on recent analytical results.
mg/kg = milligrams per kilogram
J = estimated
MDL = Method Detection Limit
N/A = not applicable
ND = not detected
Qual = qualifier
RL = reporting limit
U = nondetect

TABLE 11-2
COMPARISON OF SWMU 107 - FIRE DEPARTMENT TRAINING AREA NO. 3 MAXIMUM SOIL CONCENTRATIONS TO NMED SSLs AND BACKGROUND CONCENTRATIONS
CANNON AFB, NEW MEXICO

Chemical	Maximum Detected Concentration (mg/kg)	Qual	Residential SSL/TPH Screening Guideline (mg/kg) [1,2]	Industrial SSL/TPH Screening Guideline (mg/kg) [1,2]	Background Concentration (mg/kg)	Exceeds Residential SSL/TPH Screening Guideline [1,2] ?	Exceeds Industrial SSL/TPH Screening Guideline [1,2] ?	Exceeds Background ?	Cumulative Risk Calculations	
VOLATILE ORGANIC COMPOUNDS (mg/kg)										
Ethylbenzene	2.00E+00		6.97E+01	3.85E+02	N/A	NO	NO	N/A	2.87E-02	nc
m,p-Xylenes	1.20E+01		8.29E+03	2.72E+04	N/A	NO	NO	N/A	1.45E-03	nc
o-Xylene	6.50E+00		9.55E+03	3.15E+04	N/A	NO	NO	N/A	6.81E-04	nc
Toluene	5.70E-01		5.57E+03	5.79E+04	N/A	NO	NO	N/A	1.02E-04	nc
Xylene	9.40E+01		1.09E+03	3.61E+03	N/A	NO	NO	N/A	8.66E-02	nc
TOTAL PETROLEUM HYDROCARBONS (mg/kg)										
Diesel Range Organics	7.80E+03		8.00E+02	2.00E+03	N/A	YES	YES	N/A	-	
Gasoline Range Organics	6.50E+02		8.00E+02	2.00E+03	N/A	NO	NO	N/A	-	
Total Petroleum Hydrocarbons	1.83E+04		8.00E+02	2.00E+03	N/A	YES	YES	N/A	-	
Oil & Grease	3.80E+03		-	-	N/A	-	-	N/A	-	
						Total Noncarcinogenic Cumulative Risk Calculation:			1.17E-01	

Notes:
A dash indicates that a value is not available
[1] NMED Soil Screening Levels Revision 5.0 (December 2009)
[2] Table 2b. NMED TPH Soil Screening Guidelines (June 2006)
mg/kg = milligrams per kilogram
N/A = Not Applicable
NMED = New Mexico Environment Department
Qual = Qualifier
SSL = Soil Screening Level
TPH = Total Petroleum Hydrocarbons



LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- RADIAN 1984 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY

N

50 0 50

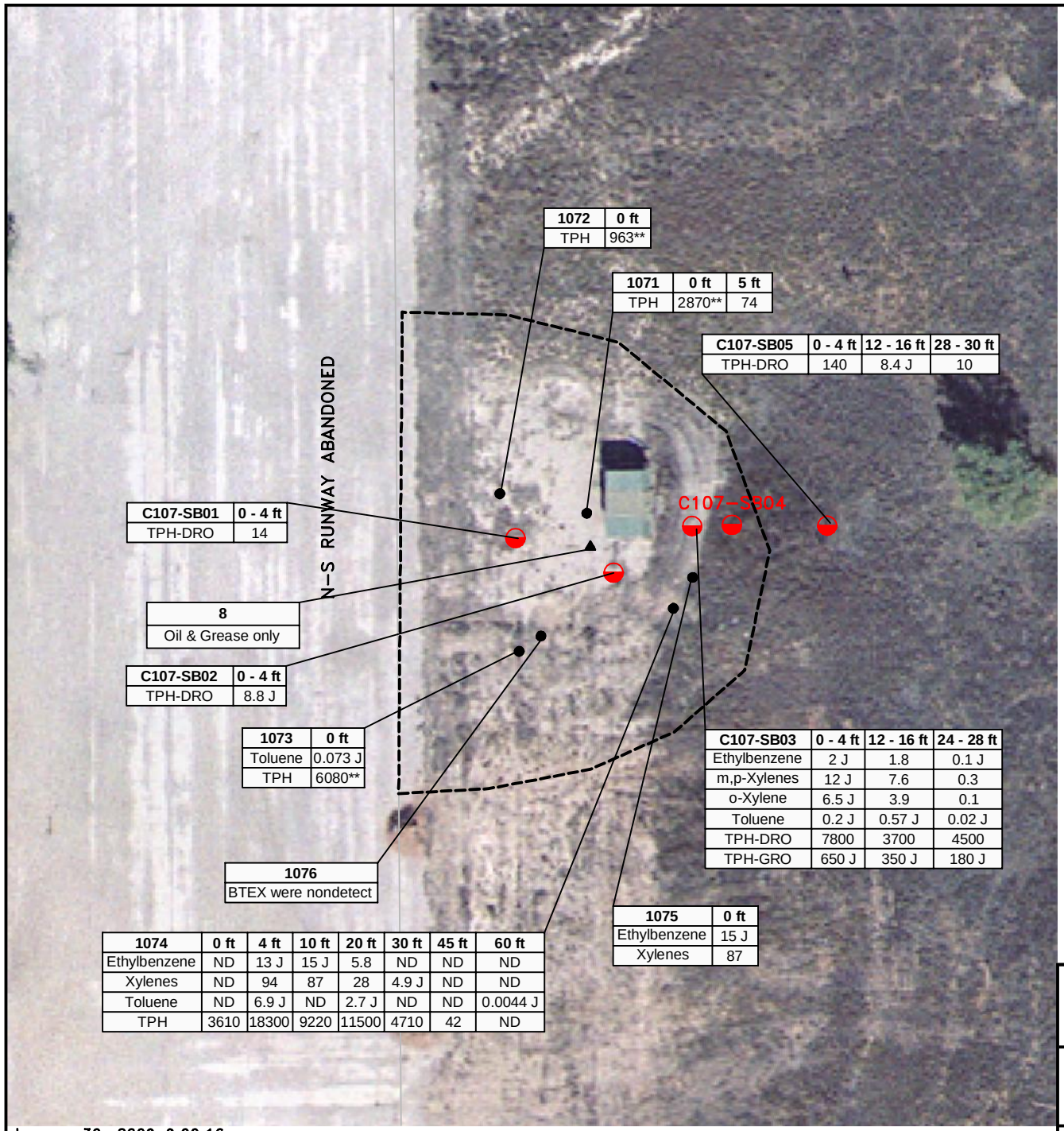
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING LOCATIONS AT SWMU 107
– FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 8:59:51 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 12/03/08	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	11-1



1072	0 ft
TPH	963**

1071	0 ft	5 ft
TPH	2870**	74

C107-SB05	0 - 4 ft	12 - 16 ft	28 - 30 ft
TPH-DRO	140	8.4 J	10

C107-SB01	0 - 4 ft
TPH-DRO	14

8
Oil & Grease only

C107-SB02	0 - 4 ft
TPH-DRO	8.8 J

1073	0 ft
Toluene	0.073 J
TPH	6080**

C107-SB03	0 - 4 ft	12 - 16 ft	24 - 28 ft
Ethylbenzene	2 J	1.8	0.1 J
m,p-Xylenes	12 J	7.6	0.3
o-Xylene	6.5 J	3.9	0.1
Toluene	0.2 J	0.57 J	0.02 J
TPH-DRO	7800	3700	4500
TPH-GRO	650 J	350 J	180 J

1076
BTEX were nondetect

1075	0 ft
Ethylbenzene	15 J
Xylenes	87

1074	0 ft	4 ft	10 ft	20 ft	30 ft	45 ft	60 ft
Ethylbenzene	ND	13 J	15 J	5.8	ND	ND	ND
Xylenes	ND	94	87	28	4.9 J	ND	ND
Toluene	ND	6.9 J	ND	2.7 J	ND	ND	0.0044 J
TPH	3610	18300	9220	11500	4710	42	ND

LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- RADIAN 1984 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY

NOTE: SAMPLE RESULTS ARE IN mg/kg
TPH = TOTAL PETROLEUM HYDROCARBONS
DRO = DIESEL RANGE ORGANICS
GRO = GASOLINE RANGE ORGANICS
ND = NONDETECT
J = ESTIMATED
FT = FEET

** HISTORICAL RESULT, NEAR SURFACE TPH LEVELS HAVE LIKELY NATURALLY ATTENUATED BASED ON RECENT ANALYTICAL RESULTS

N

50 0 50

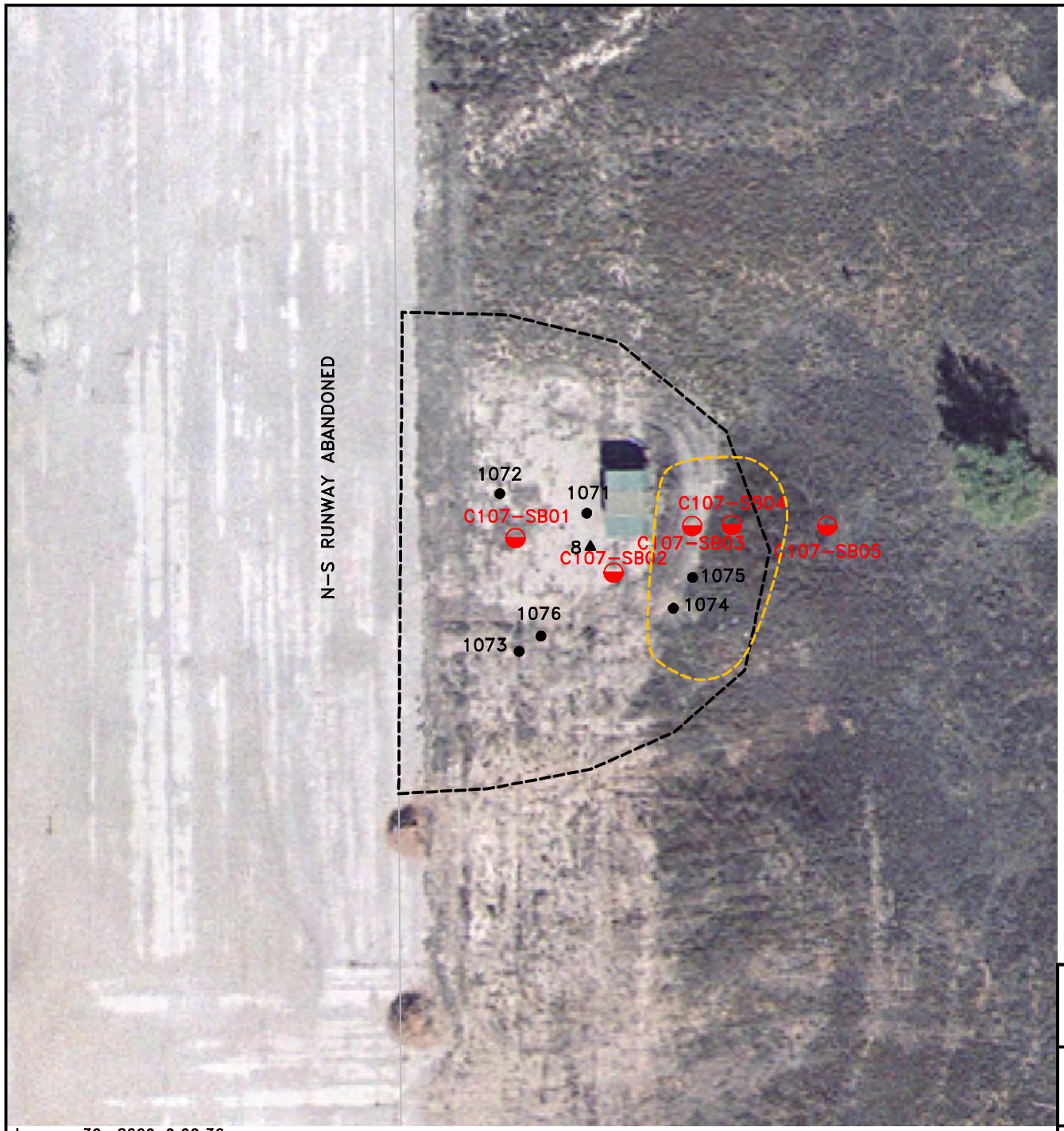
SCALE IN FEET

URS

RFI ADDENDUM SAMPLING RESULTS AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AIR FORCE BASE, NEW MEXICO

January 30, 2009 9:00:16 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

DRN. BY: DPG	DATE: 01/07/09	PROJECT NO.	FIG. NO.
CHK'D. BY: JLV	REVISION: 0	16169930	11–2



LEGEND:

- RFI ADDENDUM SOIL BORING LOCATION
- RADIAN 1984 FIELD INVESTIGATION SOIL BORING LOCATION
- WCC 1991 FIELD INVESTIGATION SOIL BORING LOCATION
- SWMU BOUNDARY
- ESTIMATED AREA OF ELEVATED TPH LEVELS

N

50 0 50

SCALE IN FEET

URS

ESTIMATED AREA OF ELEVATED TPH LEVELS AT SWMU 107 – FIRE DEPARTMENT TRAINING AREA NO. 3
CANNON AIR FORCE BASE, NEW MEXICO

DRN. BY: DPG	DATE: 01/07/09	PROJECT NO. 16169930	FIG. NO. 11-3
CHK'D. BY: JLV	REVISION: 0		

January 30, 2009 9:00:36 a.m.
Drawing: T:\CANNON\16169930\300\new.dwg

This RFI report addendum addresses six SWMUs at Cannon AFB near Clovis, New Mexico. The six SWMUs are listed below.

- SWMU 34 –AGE Drainage Ditch
- SWMU 78 – Fire Department Training Area No. 1
- SWMU 85 – Stormwater Collection Point
- SWMU 91 – Recovered Fuel Tank No. 5114
- SWMU 95 – Northeast Stormwater Drainage Area
- SWMU 107 – Fire Department Training Area No. 3

All the SWMUs addressed by this RFI were previously proposed for no further action (NFA) status (URS 2000b). This project addresses concerns identified by the New Mexico Environment Department (NMED) during their review of the NFA proposals (NMED 2004a). The SWMUs included in this RFI have been investigated previously, with the exception of SWMU 91. The other five SWMUs (SWMUs 34, 78, 85, 95 and 107) required additional characterization. These SWMUs were investigated as part of this RFI Addendum. The scope of the field investigation included the collection of near-surface and subsurface soil samples.

Previous and RFI analytical results were reviewed and reevaluated using current NMED Soil Screening Levels (SSLs). This RFI Addendum report presents analytical results, compares the results to current NMED SSLs, and provides recommendations all six SWMUs

12.1 SETTING

Cannon AFB is situated in the Southern High Plains Physiographic Province in the Llano Estacado subprovince. The Llano Estacado is a nearly flat plain sloping gently (10 to 15 feet per mile) to the east and southeast. Elevations in the eastern New Mexico portion of the Llano Estacado exceed 4,000 feet above msl. In the vicinity of Cannon AFB, elevations range from 4,250 feet to 4,350 feet above msl.

12.2 LAND USE

Cannon AFB is located just west of the City of Clovis, New Mexico and just south of U.S. Highway 60-84 in a farming and ranching area. The majority of the land surrounding Cannon AFB is productive, irrigated farmland or grassland.

12.3 CLIMATOLOGY

The climate of east-central New Mexico is classified as tropical semi-arid, with summer temperature and precipitation maxima. Average monthly temperatures range from a January low of 12°C (39°F) to a July high of 26°C (78°F).

12.4 GEOLOGY

The near-surface stratigraphic units of interest at Cannon AFB are the Late Miocene-Late Pliocene-age Ogallala Formation and the Early Triassic Dockum Group.

12.5 HYDROGEOLOGY

The lower portion of the Ogallala Formation is the primary regional aquifer for both potable and irrigation water. No deeper aquifers are utilized in the vicinity of Cannon AFB. The Ogallala aquifer is part of the High Plains Aquifer that extends continuously from Wyoming and South Dakota into New Mexico and Texas. In east-central New Mexico, the Ogallala aquifer rests on Dockum Group redbeds, which serve as the basal confining layer. The Ogallala is a water table, or unconfined, aquifer (Lee Wan 1990).

12.6 SOILS

12.6.1 Cannon AFB Vicinity

Soils in the vicinity of Cannon AFB are classified as SM to SC under the USCS, and as aridisols (calciorthids) under the Soil Conservation Service Comprehensive Soil Classification System. The following summary is based on the Soil Conservation Service Curry County Soil Survey as reported in Lee Wan and Associates (1990).

12.6.2 Investigated RFI Addendum Sites

The surficial stratigraphy (to 2 feet bgs) encountered during the RFI Addendum at SWMUs 34 and 78 and stratigraphy (to 15 feet bgs) at SWMUs 85, 91, 95 and (to 30 feet bgs) at SWMU 107 for stratigraphy below 15 feet bgs (i.e., to 30 feet bgs) was very similar. The surficial stratigraphy typically consisted of 4 to 8 feet of silty clay (USCS symbol CL) fill, and was underlain by native soil consisting of sandy silt (USCS symbol ML) to silty sand (USCS symbol SM). The stratigraphy below eight feet bgs consisted of sandy silt (ML) with layers of silty sand (SM) and well-cemented but fractured caliche nodules. The soils encountered were generally soft to hard, dry, tan to light pinkish-tan, with fine sand and well-cemented caliche nodules. Occasional well-cemented caliche layers were encountered. Detailed boring logs for each soil boring are included in **Appendix A**.

12.7 BACKGROUND METALS CONCENTRATIONS IN SOIL

The natural soils in the vicinity of Cannon AFB are alkaline and generally rich in metals. Typically high concentrations of aluminum, iron, magnesium, manganese, and potassium combine with elevated levels of many other metals in the natural soils including arsenic (4.3 mg/kg) and lead (8.7 mg/kg).

12.8 WATER QUALITY

The groundwater quality at Cannon AFB is generally good, with dissolved solids ranging from 250 to 500 mg/L (Gutentag et al. 1984) and fluorides ranging from 2.2 to 2.7 mg/L (William Matotan and Associates, Inc. 1985).

12.9 RFI ADDENDUM CHEMICAL DATA

Overall, 56 soil samples (51 samples, plus five field duplicates) were collected and submitted for chemical analysis during the 2008 RFI Addendum fieldwork. Soil samples were analyzed for BTEX, TPH-DRO, TPH-GRO, arsenic and lead. All chemical data were reviewed and 10 percent of the data was validated following procedures identified in the original RFI QAPP (URS 2005) and RFI QAPP Addendum (URS 2008). No analytical data were rejected. Acceptable levels of accuracy and precision were achieved for the RFI Addendum sample data. One-hundred percent of the analytical data from the samples collected at SWMUs 34, 78, 85, 91, 95 and 107 were determined to be acceptable for their intended use, including estimated (**J**) data.

A waste manifest for the disposal of three drums of investigation-derived waste (IDW) is included in **Appendix C**.

12.10 SWMU SUMMARIES

12.10.1 SWMU 34

SWMU 34, the AGE Drainage Ditch (also referred to as SD-15), originates on the flightline side of the AGE Building No. 186, runs parallel to Buildings Nos. 191 and 193 in a northeast direction, and terminates at a culvert inlet near Argentia Avenue. Stormwater runoff from the AGE Drainage Ditch flows under Argentia Avenue via this culvert to a second drainage ditch that then routes the water to the northeast Storm Water Drainage Area (SWMU 95). SWMU 34 is also adjacent to SWMU 31, the AGE Maintenance Shop.

A Soil Removal Investigation Report, which addressed SWMU 34, included the recommendation that tilling the soil and planting grass in the visually impacted portion of the site (Radian 1987). This activity was subsequently completed in October 1988 (W-C 1992).

An RI for 18 SWMUs completed in 1991 included SWMU 34 (W-C 1992). A BRA was completed as part of this RI. The BRA concluded that potential impacts to human health and to the environment were insignificant at SWMU 34. Based on the RI analytical results and the BRA conclusions, the RI report included the recommendation that no further investigation or action was required at SWMU 34.

The results and conclusions of both the Soil Removal Investigation and the RI/BRA were reevaluated using current methods and screening criteria during the RFI.

RFI Addendum fieldwork was completed, which consisted of collecting eight additional near surface soil samples (0 to 2 feet) from SWMU 34 to further characterize the lateral extent of elevated TPH and lead concentrations. With the exception of lead which exceeded residential screening levels in the 6–12 inch interval at near surface soil location SS01, no additional elevated lead or TPH levels were determined from analytical results. Based on the findings of the 2008 RFI Addendum fieldwork, the elevated TPH that were identified by previous investigations were no longer observed at SWMU 34. The decrease in the TPH levels at SWMU 34 can likely be attributed to natural attenuation of TPH in the soil. Elevated lead was observed above the NMED residential SSL, but below the industrial NMED SSLs in two soil samples (500 and 682 mg/kg) collected during all investigations. Because lead was not detected above industrial screening levels, Corrective Action Complete with Controls is appropriate for SWMU 34. However, Cannon AFB plans to complete additional investigation and IDW disposal for this SWMU.

12.10.2 SWMU 78

SWMU 78 is located in the northeast corner of Cannon AFB, south of the railroad tracks and northeast of Perimeter Road. The training area is an unlined surface measuring approximately 100 feet in diameter. Between 1959 and 1968, the site was used twice monthly when approximately 300 gallons of waste oils, solvents, and fuels were poured on the ground surface to create fires.

The Phase I IRP included a review of installation records and existing site conditions to identify and evaluate sites with suspected hazardous waste contamination (CH2M Hill 1983). A Phase II IRP was conducted to define the extent of subsurface contamination due to historical activities at the site (Radian 1987).

An RI of 18 SWMUs completed in 1991 (W-C 1992), included SWMU 78. A BRA was completed as part of the RI. The BRA assessed potential adverse human health and ecological effects by comparing analytical data to risk-based RFI criteria and proposed RCRA action levels, and by calculating site-specific health risks, where appropriate. The BRA concluded that potential impacts to human health and to the environment were insignificant at SWMU 78. Based on the RI analytical results and the BRA conclusions, the RI report included the recommendation that no further investigation or action was required at SWMU 78.

The results and conclusions of Phase I IRP, Phase II IRP, and the RI/BRA were reevaluated using current methods and screening criteria during the RFI.

RFI Addendum fieldwork was completed, which consisted of collecting three additional near surface soil samples (0- to 2-feet) from SWMU 78 to further characterize the lateral extent of elevated TPH and lead concentrations. With the exception of lead which exceeded residential and industrial screening levels in the 0-6 inch interval at near surface soil boring SS01, no additional elevated lead or TPH levels were determined from analytical results. Based on the findings of the 2008 RFI Addendum fieldwork, the elevated TPH levels that were identified by previous investigations no longer appear to be present at SWMU 78. The decrease in the TPH levels at SWMU 78 can likely be attributed to natural attenuation of TPH in the soil. Elevated

lead was observed above the NMED residential SSL (400 mg/kg) in two soil samples (529 and 894 mg/kg) and above the industrial SSL (800 mg/kg) in one soil sample (894 mg/kg) collected during all investigations. Because the average lead concentration at the site is 180 mg/kg, which is below the residential screening level for lead and only a single lead concentration exceeded the industrial SSL, Corrective Action Complete with Controls is appropriate for SWMU 78. However, Cannon AFB plans to complete additional investigation and IDW disposal for this SWMU.

12.10.3 SWMU 85

SWMU 85 is a naturally occurring nine-acre playa lake located in the southwestern part of Cannon AFB. Since 1943, stormwater runoff from the flightline has collected in this lake. Stormwater runoff flows toward the center of the site where it either evaporates or percolates into the soil. The eastern third of the playa has been filled with broken concrete from apron and runway demolition.

As part of the IRP Phase II, samples were collected from three shallow boreholes to determine if runoff from the flightline has impacted the stormwater collection point. One sample per hole was collected for analysis. Samples were analyzed for priority pollutant meals plus iron, nickel, and zinc; oil and grease; and VOCs.

An RI for SWMU 85 included drilling and sampling eight soil borings (Walk, Haydel 1990). Soil samples were collected from depths of 5 to 70 feet bgs. Near surface and subsurface samples were analyzed for VOCs, base/neutral extractable compounds, and for total and extraction procedure (EP) toxicity metals.

A human health screening was completed for SWMU 85. The conclusion of the risk screening was that with the exception of arsenic, metals concentrations at SWMU 85 are indicative of background metals concentrations. Ecological screening at SWMU 85 concluded that selenium was present in concentrations that may be considered toxic to wildlife, but these concentrations are within the range of normal background concentrations (W-C 1997 a and c).

The results and conclusions of the IRP Phase II, the RI and the human health screening were reevaluated using current methods and screening criteria during the RFI.

RFI Addendum fieldwork was completed, which consisted of collecting one surface soil sample and completing two soil borings. The lone surface soil sample was collected from 0 to 6 inches bgs with a stainless steel hand auger near the large concrete pile in the middle of the stormwater collection point due the presence of water. The two soil borings were advanced to depths of 15 feet bgs. Samples were collected and analyzed for arsenic to determine if the elevated concentrations and elevated reporting limits associated with the arsenic data in the RI (Walk-Haydel 1990) may be attributable to inter-element interference that was not properly accounted for during laboratory analysis and may not be representative of site conditions. With the exception of one arsenic level (6.0 mg/kg), which slightly exceeded Cannon AFB background levels (4.3 mg/kg), and the residential SSL (3.9 mg/kg) in the 0–6 inch interval at near surface soil location SS01 (collected under water), no elevated arsenic concentrations were identified.

Based on the RFI Addendum 2008 sample results, the RI data is considered invalid since previous arsenic data in the RI (Walk-Haydel 1990) may be attributeable to inter-element interference. Because the maximum arsenic concentration detected during the RFI (6.0 mg/kg) is above the residential NMED SSL, but below the industrial NMED SSL (17.7 mg/kg) Corrective Action Complete with Controls is appropriate for SWMU 85. However, Cannon AFB plans to complete additional investigation for this SWMU.

12.10.4 SWMU 91

An RFA (A.T. Kearney 1987) misidentified the suspected SWMU 91 location as having an AST for fuel recovered from OWS 5114 (SWMU 86). The tank was actually a 5,000-gallon aboveground JP-4 bulk storage tank associated with Test Stand No. 5114. The tank was removed in 1988 when the test stand was demolished.

Although no sampling results directly related to SWMU 91 exist, this site is encompassed by SD-11, Engine Test Cell Area (SWMUs 86 through 90). SD-11 has been the subject of numerous investigations including an IRP Phase II Stage 1 (Radian 1986), two RIs (Walk Haydel 1990 and W-C 1992), a Phase III RFI (W-C 1997c), a Corrective Measures Study (CMS) (URSGWC 1999), and additional sampling (USGS 2000 and 2001).

The results and conclusions of the previous investigations of nearby SWMUs were reevaluated using current methods and screening criteria during the RFI.

Three soil borings were complete in the vicinity of the former AST dike to determine if a release had occurred. The three borings were advanced to 15 feet bgs at four foot intervals. Three samples from each boring were submitted to the laboratory for TPH-DRO and TPH-GRO analyses. All TPH results were nondetect. Therefore, Corrective Action Complete without Controls is recommended for SWMU 91.

12.10.5 SWMU 95

SWMU 95 is a shallow, open ditch that begins near the end of the northeastern runway, Runway 4/22, and extends to the southeast under an access road before emptying into an open field. The northwest end of the ditch is marked by a concrete culvert and is surrounded by heavy vegetation. The drainage ditch is approximately 40 feet wide and runs for approximately 550 feet until it reaches the field.

The site was investigated during a Final IRP RI (Walk Haydel 1990). The investigation included drilling and sampling of 11 soil borings. Soil samples were collected to maximum depths that ranged from 5 to 61.5 feet. Samples were analyzed for total metals, EP toxicity metals, VOCs, and base/neutral extractable compounds.

An RI (W-C 1992) was completed at SWMU 95. Two soil borings were drilled and sampled to maximum depths of 10 feet bgs. The soil borings were located upstream of SWMU 95 to evaluate possible contaminant contributions from areas upstream of the already sampled reach of the ditch. Samples were analyzed for VOCs, SVOCs, TAL metals and TPH. A BRA was

completed based on data collected during the RI (W-C 1992). Lead and zinc were identified as the only chemical COPCs for human health risk evaluation. Calculated risk to human health for non-carcinogenic and carcinogenic risks indicated no unacceptable risk. No unacceptable ecological risks were identified.

The results and conclusions of the SWMU 95 IRP RI and RI/BRA were reevaluated using current methods and screening criteria during the RFI.

RFI Addendum fieldwork was completed, which consisted of the completion of four soil borings. Four soil borings were advanced to 15 feet bgs. Samples were collected and analyzed for arsenic to determine if the elevated concentrations and elevated reporting limits associated with the arsenic data in the RI (Walk-Haydel 1990) may be attributable to inter-element interference that was not properly accounted for during laboratory analysis and may not be representative of site conditions. With the exception of one arsenic level (4.6 mg/kg), which slightly exceeded Cannon AFB background levels (4.3 mg/kg) and the residential SSL (3.9 mg/kg) in the 0-4 foot interval at soil location SB01, no elevated arsenic concentrations were identified. Based on the RFI Addendum 2008 sample results, the RI data is considered invalid since previous arsenic data in the RI (Walk-Haydel 1990) may be attributed to inter-element interference.. Because the maximum arsenic concentration detected during the RFI (4.6 mg/kg) is above the residential SSL (3.9 mg/kg), but below the industrial SSL (17.7 mg/kg) Corrective Action Complete with Controls is recommended for SWMU 95.

12.10.6 SWMU 107

SWMU 107 is located in the southeast corner of Cannon AFB adjacent to and east of abandoned north-south taxiway T-5. The training area consists of an unlined surface area in a half-moon shape that is approximately 300 feet in length. A low berm (less than one foot high) encircles the site a forms the site boundary. From 1968 to 1974, the SWMU was used concurrently with SWMU 106, Fire Department Training Area No. 2. During training exercises, the ground was saturated with water, and JP-4 jet fuel was introduced and ignited for training purposes. According to the 1995 RFI (W-C 1995), the area of SWMU 107 has also been used for activities associated with the adjacent ordnance training site.

The Phase I IRP included a review of installation records and existing site conditions to identify and evaluate sites with suspected hazardous waste contamination (CH2M Hill 1983). A Phase II IRP was conducted to define the extent of subsurface contamination due to historical activities at the site (Radian 1987).

An RI of 18 SWMUs completed in 1991 (W-C 1992), included SWMU 107. A BRA was completed as part of the RI. The BRA assessed potential adverse human health and ecological effects by comparing analytical data to risk-based RFI criteria and proposed RCRA action levels, and by calculating site-specific health risks, where appropriate. The BRA concluded that potential impacts to human health and to the environment were insignificant at SWMU 107. Based on the RI analytical results and the BRA conclusions, the RI report included the recommendation that no further investigation or action was required at SWMU 107.

The results and conclusions of Phase I IRP, Phase II IRP, and the RI/BRA were reevaluated using current methods and screening criteria during the RFI.

RFI Addendum fieldwork was completed, which consisted of the completion of five soil borings. The three proposed soil borings were completed and two additional borings were also completed due to strong odor in soil boring SB03 from 4 to 28 feet. Soil borings were advanced to 30 feet bgs, unless refusal was encountered. Three samples from each boring with the exception of SB04 were submitted to the laboratory for TPH-DRO, TPH-GRO and BTEX analysis. No samples from boring SB04 were submitted for laboratory analysis based on elevated PID readings; instead this location is assumed to contain elevated TPH levels. The TPH-DRO results were above the residential and industrial NMED TPH screening levels in soil boring SB03 for the 4-foot, 12-foot, and 24-foot intervals. Based on the TPH-DRO results from SB03 additional action is recommended for the area where TPH-DRO concentrations exceeded the residential and industrial NMED TPH SSLs. The estimated area of elevated TPH levels area is shown in **Figure 11-3**.

12.11 RECOMMENDATIONS

Site characterization was completed for SWMU 91 and additional site characterization was completed for SWMUs 34, 78, 85, 95, and 107. All SWMUs included in this RFI Addendum have been adequately characterized with the exception of SWMU 107 in accordance with the current applicable state and federal regulations, and the available data indicate that the sites do not pose an unacceptable level of risk under current and projected future land uses with the exception of TPH-DRO at SWMU 107:

- Lead exceeded the residential human health SSL in surface soil at SWMU 34.
- Lead exceeded the residential SSL and one lead concentration exceeded the industrial SSL at SWMU 78.
- Arsenic exceeded residential SSLs in surface soil at SWMUs 85 and SWMU 95.
- TPH-GRO exceeded screening levels at SWMU 107.

Only the TPH-DRO concentrations at SWMU 107 require further action. Based on this, Corrective Action Complete without Controls is appropriate for SWMU 91. In addition, Corrective Action Complete with Controls is appropriate for SWMUs 34, 78, 85 and 95. Additional action is recommended for SWMU 107. However, additional investigation and limited IDW disposal is planned for SWMUs 34 and 78, and additional investigation is planned for SWMU 85 (all under a separate work plan). Following completion of this additional fieldwork at SWMUs 34, 78, and 85, a petition for Corrective Action Complete review should be submitted to NMED for five of the six SWMUs addressed in this report (34, 78, 85, 91, and 95), and upon NMED's approval of Corrective Action Complete status for these SWMUs, a Class III modification should be made to Cannon AFB's RCRA Part B Permit to remove SWMUs 34, 78, 85, 91, and 95. As stated above, SWMU 107 will require more extensive action in order to qualify for Corrective Action Complete status.

TABLE 12-1
SWMU STATUS SUMMARY
RFI ADDENDUM FOR 6 SWMUs
CANNON AFB, NEW MEXICO

RFI Report Section	Soild Waste Management Unit (SWMU) Identification #	Corrective Action Complete without Controls	Corrective Action Complete with Controls	Additional Action	Comments
6	SWMU 34		YES	NO *	One lead result was above NMED residential SSL, but below NMED industrial SSL
7	SWMU 78		YES	NO *	One lead result was above NMED residential and industrial SSLs
8	SWMU 85		YES	NO *	One arsenic result was above NMED residential SSL, but below NMED industrial SSL
9	SWMU 91	YES		NO	TPH-DRO and TPH-GRO was non-detect in all samples
10	SWMU 95		YES	NO	One arsenic result was above NMED residential SSL, but below NMED industrial SSL
11	SWMU 107			YES	TPH-DRO and TPH-GRO results were above NMED TPH screening guidelines
Number of SWMUs per category		1	4	6	

Notes:

* Cannon AFB plans to complete additional action at SWMUs 34, 78, and 85 so that they may qualify for Corrective Action Complete without Controls.

RFI = RCRA Facility Investigation

SWMU = Solid Waste Management Unit

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DAILY QUALITY CONTROL REPORTS

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

COE Project Manager	Hector Santiago
Project	RCRA Facility Investigation Addendum
Project No.	16169930
Contract No.	W9128F-04-0001

Date	**15-Oct-08**					
Day	S	M	T	W X	TH	F	S
On Site Hours	0					
Travel Time	6					
Office Time	2					
Weather	Bright Sun	Clear	Overcast	Rain X	Snow	
Temp	To 32	32-50 X	50-70	70-85	85 up	
Wind	Still X	Moderate	High	**Report No.** 1		
Humidity	Dry	Moderate X	Humid			

Subcontractors on Site: N/A

Equipment on Site: N/A

Visitors on Site: N/A

URS Personnel on Site: N/A

Field Work Performed (including sampling): Mobilization to Clovis, New Mexico

Quality Control Activities (including field calibration): N/A

Health and Safety and Activities: N/A

Observations/Problems Encountered/Corrective Action Taken: N/A

Office Work Performed: Verified proposed sample points on aerial figures and uploaded to PDA GSI unit.

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

COE Project Manager Hector Santiago
Project RCRA Facility Investigation Addendum
Project No. 16169930
Contract No. W9128F-04-0001

Date **16-Oct-08**

Day	S	M	T	W	TH	F	S
					X		

On Site Hours	8.5
Travel Time	0
Office Time	0

Weather	Bright Sun	Clear	Overcast X	Rain	Snow
Temp	To 32	32-50 X	50-70	70-85	85 up
Wind	Still X	Moderate	High	**Report No.** 2	
Humidity	Dry	Moderate X	Humid		

Subcontractors on Site: None

Equipment on Site: None

Visitors on Site: Hugh Hanson (Cannon AFB Civil Engineering Environmental Flight)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling): Aquiring required Cannon AFB signatures for digging permit.

Quality Control Activities (including field calibration): None

Health and Safety and Activities: Tailgate safety meeting. URS personnel discussed no cell phone use while driving on Cannon AFB as part of brief safety meeting.

Observations/Problems Encountered/Corrective Action Taken: One proposed sample location at SWMU 85 is covered with water due to a recent rain event. In addition, one proposed sample location at SWMU 91 is covered with water due to recent rain event.

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Date **17-Oct-08**

Day	S	M	T	W	TH	F	S
						X	

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

On Site Hours	8
Travel Time	0
Office Time	0

COE Project Manager Hector Santiago
Project RCRA Facility Investigation Addendum
Project No. 16169930
Contract No. W9128F-04-0001

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50 X	50-70	70-85	85 up
Wind	Still	Moderate X	High	**Report No.** 3	
Humidity	Dry	Moderate X	Humid		

Subcontractors on Site: None

Equipment on Site: None

Visitors on Site: Hugh Hanson (Cannon AFB)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling): Continuing to acquire signatures for digging permit. Met State Locators Gary Langford with seven-link and Marty with Quest communications to show them sampling locations for utility locates. Received clearance from Gary with seven-link for all sites and Marty with Quest gave all clear and located utilities with paint at SWMU 34. Also met Phil Carr with Base CE at SWMU 34 to verfiy that URS was clear to dig at all sites. Phil signed digging permit and received clearance to dig. Set wooden stakes at proposed sample locations at all 6 SWMUs.

Quality Control Activities (including field calibration): None

Health and Safety and Activities: None

Observations/Problems Encountered/Corrective Action Taken: SWMUs 85 and 91 still covered with water. Moved one sample location at SWMU 91 to area not covered with water due to limited acess with drill rig.

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

COE Project Manager	Hector Santiago
Project	RCRA Facility Investigation Addendum
Project No.	16169930
Contract No.	W9128F-04-0001

Date	**10/18/08**						
Day	S	M	T	W	TH	F	S X
On Site Hours	9.5						
Travel Time	0						
Office Time	0						
Weather	Bright Sun		Clear X	Overcast		Rain	Snow
Temp	To 32		32-50	50-70		70-85 X	85 up
Wind	Still	Moderate X		High		**Report No.** 4	
Humidity	Dry X	Moderate		Humid			

Subcontractors on Site: None

Equipment on Site: Innov-X X-Ray Fluorescence analyzer

Visitors on Site: Hugh Hanson (Cannon AFB)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling): Collected six near surface soil borings 0- to 2 feet below ground surface using stainless steel hand augers at SWMU 34. Submitted samples to laboratory for TPH-DRO, TPH-GRO and lead analysis. In addition, a near surface soil sample was collected at SWMU 85 from near concrete debris pile under approximately 10 - to 12 inches of water using a stainless steel hand auger. The sample from SWMU 85 was submitted to the laboratory for arsenic analysis.

Quality Control Activities (including field calibration): Calibrated Photoionization detector with 100 ppm isobutylene (span gas). Also, calibrated XRF with provided NIST standards. An MS/MSD and field duplicate sample from SWMU 34 were submitted to the laboratory and analyzed for TPH-DRO, TPH-GRO and lead.

Health and Safety and Activities: Conducted tailgate safety meeting and discussed XRF safety and sampling activities and target compounds.

Observations/Problems Encountered/Corrective Action Taken: Refusal was encountered at soil borings SS02, SS03 and SS04.

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Date **10/19/08**

Day	S	M	T	W	TH	F	S
	X						

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

On Site Hours	0
Travel Time	0
Office Time	0

COE Project Manager Hector Santiago
Project RCRA Facility Investigation Addendum
Project No. 16169930
Contract No. W9128F-04-0001

Weather	Bright Sun	Clear	Overcast	Rain	Snow
		X			
Temp	To 32	32-50	50-70	70-85	85 up
			X		
Wind	Still	Moderate	High	**Report No.**	
	X			5	
Humidity	Dry	Moderate	Humid		
		X			

Subcontractors on Site: None

Equipment on Site: None

Visitors on Site: None

URS Personnel on Site: None

Field Work Performed (including sampling): None

Quality Control Activities (including field calibration): None

Health and Safety and Activities: None

Observations/Problems Encountered/Corrective Action Taken: None

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

COE Project Manager Hector Santiago
Project RCRA Facility Investigation Addendum
Project No. 16169930
Contract No. W9128F-04-0001

Date	**20-Oct-08**					
Day	S	M X	T	W	TH	F	S
On Site Hours	8.5					
Travel Time	0					
Office Time	0					
Weather	Bright Sun	Clear X	Overcast	Rain	Snow	
Temp	To 32	32-50	50-70 X	70-85	85 up	
Wind	Still X	Moderate	High	**Report No.** 6		
Humidity	Dry	Moderate X	Humid			

Subcontractors on Site: None

Equipment on Site: Innov-X X-Ray Fluorescence analyzer

Visitors on Site: Hugh Hanson (Cannon AFB)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling): Collected three near surface soil borings 0- to 2 feet below ground surface using stainless steel hand augers at SWMU 78. Submitted samples to laboratory for TPH-DRO, TPH-GRO and lead analysis.

Quality Control Activities (including field calibration): Calibrated Photoionization detector with 100 ppm isobutylene (span gas). Also, calibrated XRF with provided NIST standards. An MS/MSD and field duplicate sample from SWMU 78 were submitted to the laboratory and analyzed for TPH-DRO, TPH-GRO and lead.

Health and Safety and Activities: Conducted tailgate safety meeting and discussed XRF safety and sampling activities and target compounds.

Observations/Problems Encountered/Corrective Action Taken: Visible staining was present from 0-to 2-inch interval in all three soil borings at SWMU 78. In addition, metal debris was observed on the ground surface of SWMU 78.

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

COE Project Manager	Hector Santiago
Project	RCRA Facility Investigation Addendum
Project No.	16169930
Contract No.	W9128F-04-0001

Date **21-Oct-08**

Day	S	M	T	W	TH	F	S
			X				

On Site Hours	8.5
Travel Time	0
Office Time	0

Weather	Bright Sun	Clear X	Overcast	Rain	Snow
Temp	To 32	32-50	50-70 X	70-85	85 up
Wind	Still X	Moderate	High	**Report No.** 7	
Humidity	Dry	Moderate X	Humid		

Subcontractors on Site: Roy Wedel, Charles Johnson, Phil Slack, Ruebon Navarro (Peterson Drilling & Testing Inc.)

Equipment on Site: Ingersoll Rand TH60 Drilling Rig, Innov-X X-Ray Fluorescence analyzer

Visitors on Site: Hugh Hanson (Cannon AFB)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling): Collected one soil boring to 15 feet bgs by hollow stem auger using the drill rig at SWMU 95. Submitted sample to laboratory for arsenic analysis.

Quality Control Activities (including field calibration): Calibrated Photoionization detector with 100 ppm isobutylene (span gas). Also, calibrated XRF with provided NIST standards.

Health and Safety and Activities: Conducted tailgate safety meeting and discussed XRF safety and sampling activities, target compounds and route to hospital. Peterson employees provided 40 hour HAZWOPER certification.

Observations/Problems Encountered/Corrective Action Taken:
Drill rig encountered refusal at approximatley 5 feet bgs at soil boring # 1. Offset and hit refusal at same depth.

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs
(34, 78, 85, 91, 95 & 107)

COE Project Manager	Hector Santiago
Project	RCRA Facility Investigation Addendum
Project No.	16169930
Contract No.	W9128F-04-0001

Date	**22-Oct-08**					
Day	S	M	T	W X	TH	F	S
On Site Hours	10					
Travel Time	0					
Office Time	0					
Weather	Bright Sun	Clear X	Overcast	Rain	Snow	
Temp	To 32	32-50	50-70 X	70-85	85 up	
Wind	Still	Moderate X	High	**Report No.** 8		
Humidity	Dry	Moderate X	Humid			

Subcontractors on Site: Roy Wedel, Charles Johnson, Phil Slack, Ruebon Navarro and Tony Marquez (Peterson Drilling & Testing Inc.)

Equipment on Site: Ingersoll Rand TH60 Drilling Rig, Geoprobe DH66, Innov-X X-Ray Fluorescence analyzer

Visitors on Site: Hugh Hanson and Jerry Pelfrey (Cannon AFB)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling): Collected three soil borings to 15 feet bgs with Georpobe at SWMU 95. Submitted samples to the laboratory for arsenic analysis. Collected three soil borings to 15 feet bgs with Georpobe at SWMU 85. Submitted samples to the laboratory for arsenic analysis. Collected one soil boring to 30 feet bgs with Geoprobe at SWMu 107. Submitted sample to laboratory for BTEX, TPH-DRO and TPH-GRO analysis.

Quality Control Activities (including field calibration): Calibrated Photoionization detector with 100 ppm isobutylene (span gas). Also, calibrated XRF with provided NIST standards. A field duplicate sample from SWMU 95 were submitted to the laboratory and analyzed for arsenic. An MS/MSD and field duplicate sample from SWMU85 were submitted to the laboratory and analyzed for TPH-DRO, TPH-GRO and lead.

Health and Safety and Activities: Conducted tailgate safety meeting and discussed XRF safety and sampling activities, target compounds.

Observations/Problems Encountered/Corrective Action Taken: Due to presence of caliche in the soil and the drill rig encountering refusal and not drilling to desired depth. Peterson brought a Geoprobe DH66 to complete the remaing soil borings at the remaining SWMUs.

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

DAILY QUALITY CONTROL REPORT

Cannon AFB Additional RFI for 6 SWMUs (34, 78, 85, 91, 95 & 107)

COE Project Manager Hector Santiago
Project RCRA Facility Investigation Addendum
Project No. 16169930
Contract No. W9128F-04-0001

Date	23-Oct-08						
Day	S	M	T	W	TH X	F	S
On Site Hours	10						
Travel Time	0						
Office Time	0						
Weather	Bright Sun		Clear	Overcast X		Rain	Snow
Temp	To 32		32-50 X	50-70		70-85	85 up
Wind	Still	Moderate		High X		**Report No.** 9	
Humidity	Dry	Moderate X		Humid			

Subcontractors on Site: Ruebon Navarro and Tony Marquez (Peterson Drilling & Testing Inc.)

Equipment on Site: Geoprobe DH66, Innov-X X-Ray Fluorescence analyzer

Visitors on Site: Hugh Hanson and Jerry Pelfrey (Cannon AFB)

URS Personnel on Site: Tony Sedlacek, Skip Wrightson

Field Work Performed (including sampling):

Quality Control Activities (including field calibration): Calibrated Photoionization detector with 100 ppm isobutylene (span gas).

Health and Safety and Activities: Conducted tailgate safety meeting sampling activities, target compounds.

Observations/Problems Encountered/Corrective Action Taken:

Office Work Performed: None

By Tony Sedlacek **Title** Chemist

BORING LOGS

HTRW DRILLING LOG

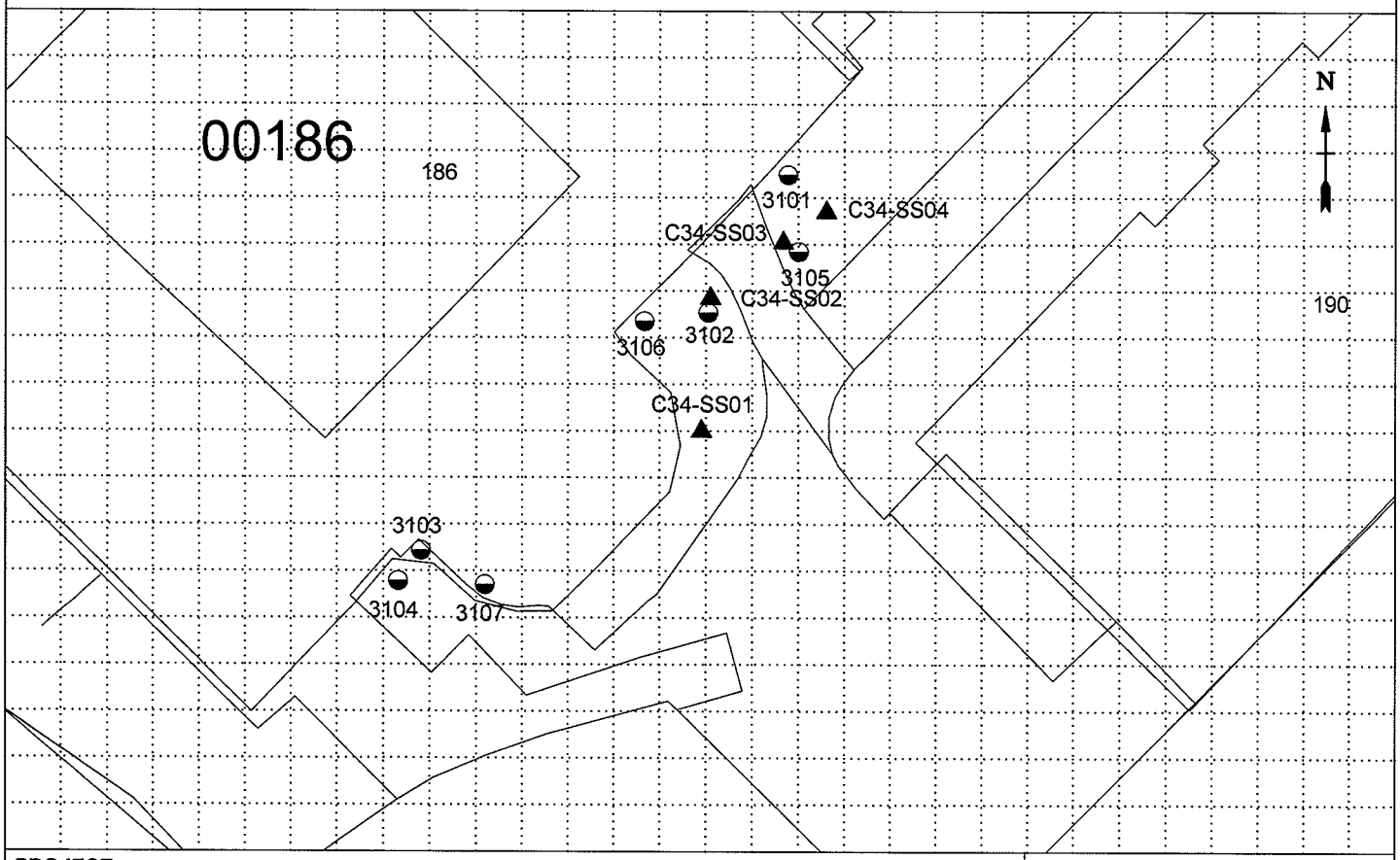
DISTRICT: AFCEE		HOLE NUMBER: C34-SS01
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF 2 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,236,053.16N 846,883.44E Site 34	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 2' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C34-SS01	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Roots					Native soil
		Sandy SILT (ML) - Soft, moist, medium-reddish-brown	HS = ND XRF = 37		C34-SS01-000 (TPH)		No odor, no stain
		~2" gravel seam	HS = ND XRF = 53		C34-SS01-006 (Pb)		Slight odor, no stain
	1		HS = ND XRF = 41				No odor, no stain
		With trace coarse-grained sand	HS = ND XRF = 34				No odor, no stain
	2	B.O.B. @ 2.0' bgs					
	3						HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
	4						
	5						
	6						
	7						
	8						
	9						
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

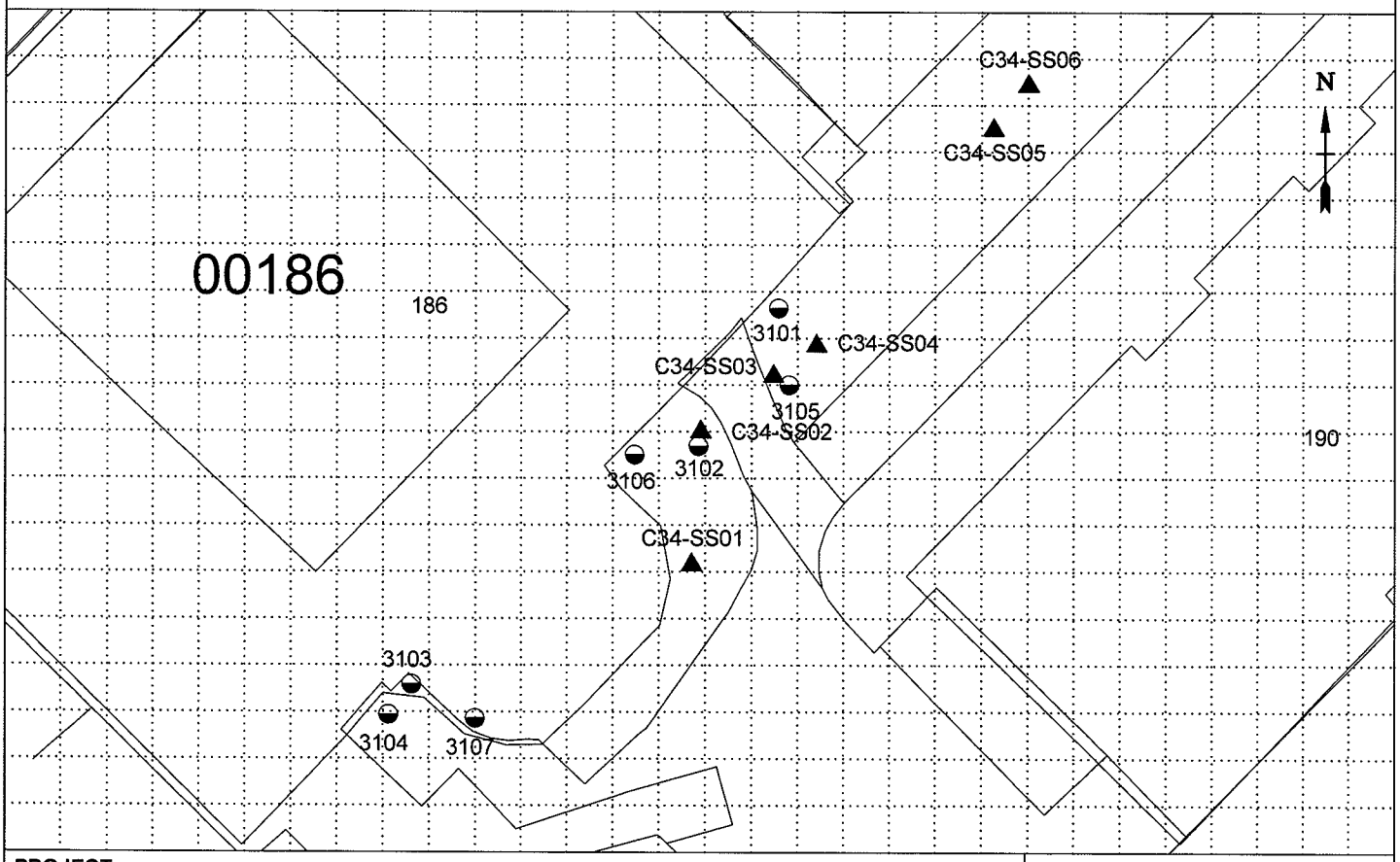
DISTRICT: AFCEE		HOLE NUMBER: C34-SS02
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF 2 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,236,088.71N 846,885.89E Site 34	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.4' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS02

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C34-SS02	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Medium stiff, medium-reddish-brown, with gravel	HS = ND		C34-SS02-000 (TPH+Pb)		Native soil
		With increasing gravel	HS = ND				
	1		XRF =28				
			HS = ND				
		B.O.B. @ 1.4' bgs (Refusal)	XRF = 64				
	2						HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: AFCEE		HOLE NUMBER: C34-SS03
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF SHEETS 2
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,236,103.63N 846,905.40E Site 34	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.3' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

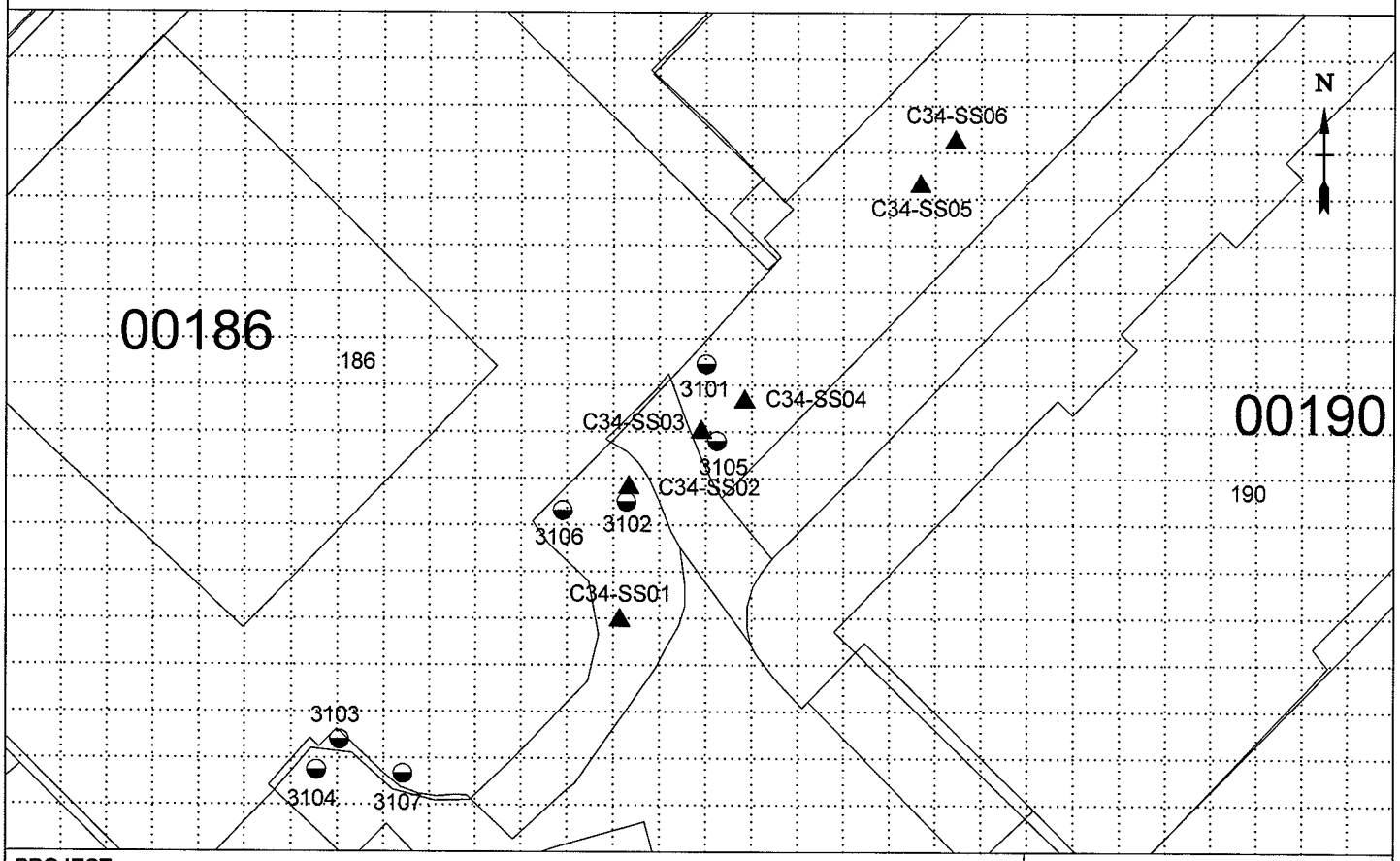
18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS03

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C34-SS03	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Medium stiff, moist, brown	HS = ND XRF = 60		C34-SS03-000 (TPH+Pb)		Native soil No odor, no stain
		Becomes very stiff, dry, light brown, with caliche	HS = ND XRF =29				No odor, no stain
	1		HS = ND				No odor, no stain
		B.O.B. @ 1.3' bgs (Refusal)	XRF = 26				
	2						HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

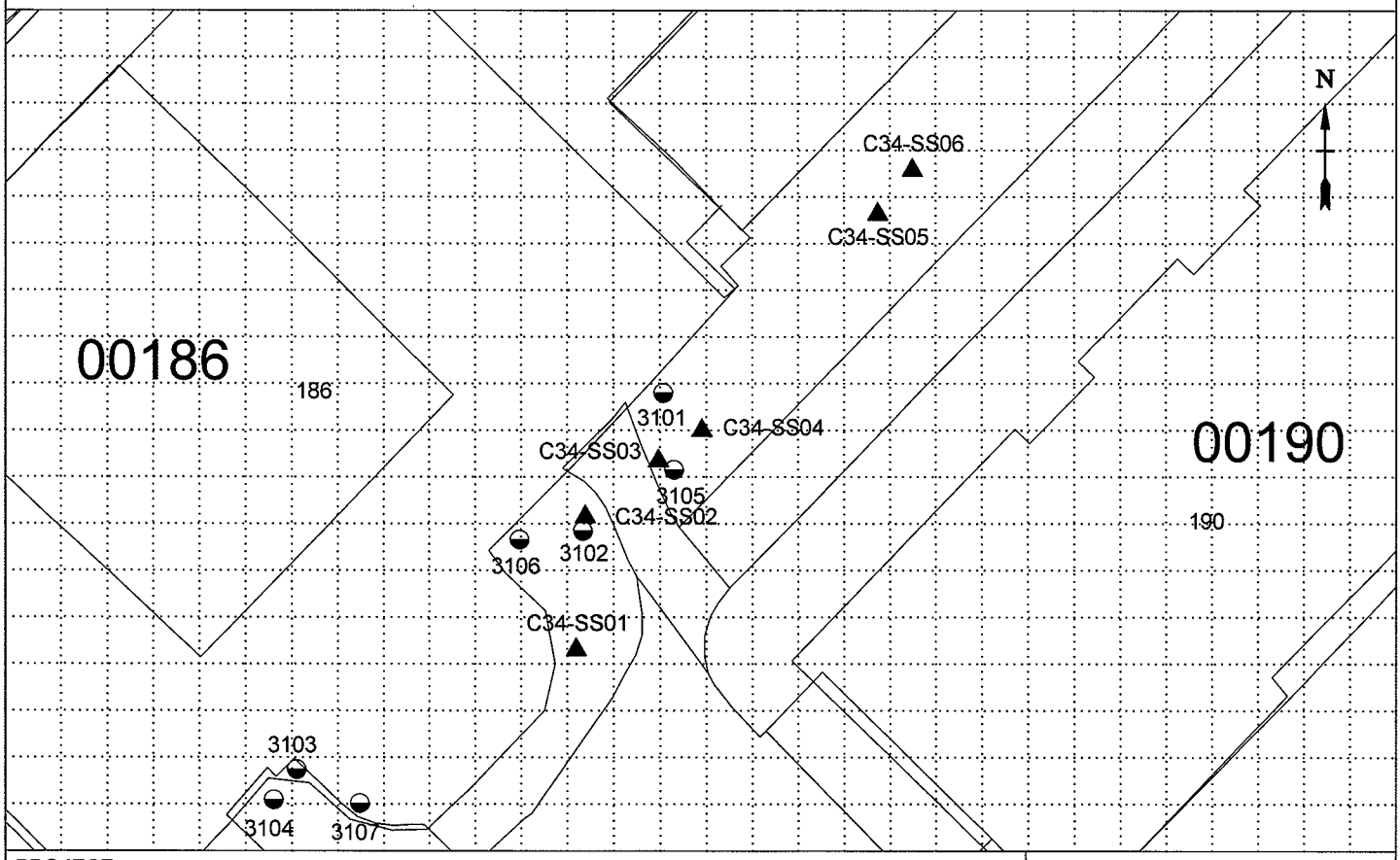
DISTRICT: AFCEE		HOLE NUMBER: C34-SS04
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF 2 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,236,111.79N 846,917.07E Site 34	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS04

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C34-SS04	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Medium stiff, moist, dark brown, with organics	HS = ND XRF = 44		C34-SS04-000 (TPH+Pb)		Native soil No stain
		With caliche and gravel	HS = ND XRF =23				Native soil
	1	B.O.B. @ 1.0' bgs (Refusal)					
	2						HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS04

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

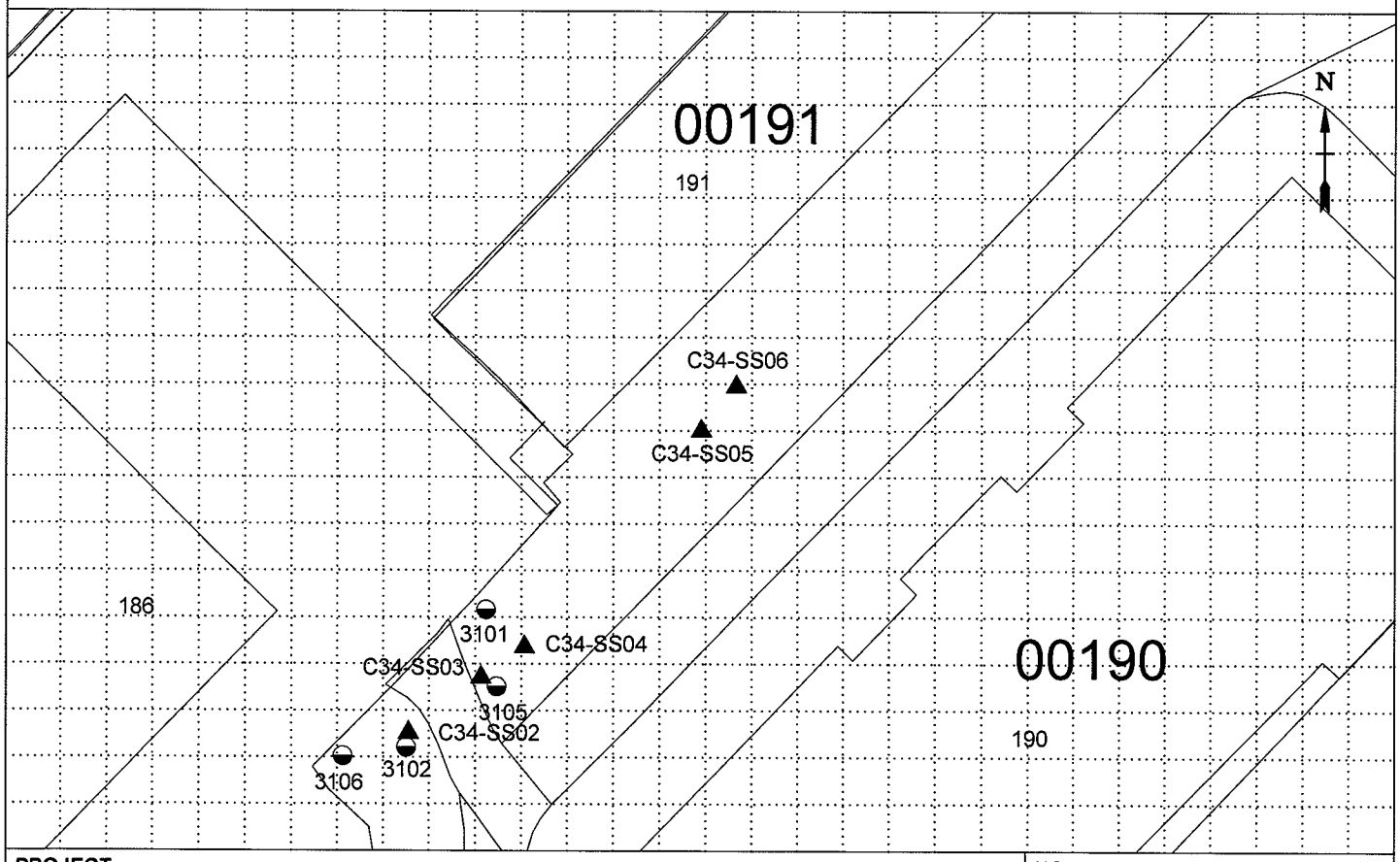
DISTRICT: AFCEE		HOLE NUMBER: C34-SS05
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF SHEETS 2
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,236,169.71N 846,964.70E Site 34	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.7' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS05

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C34-SS05	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Medium stiff, moist, reddish-brown, with some gravel	HS = 7.4 ppm XRF = 25		C34-SS05-000 (TPH)		Native soil No odor, no stain
	1		HS = 6.9 ppm XRF =33		C34-SS05-006 (Pb)		No odor, no stain
			HS = 6.4 ppm XRF = 29				No odor, no stain
			HS = 2.4 ppm				No odor, no stain
	2	B.O.B. @ 1.7' bgs (Refusal)	XRF =32				
	3						HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS05

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

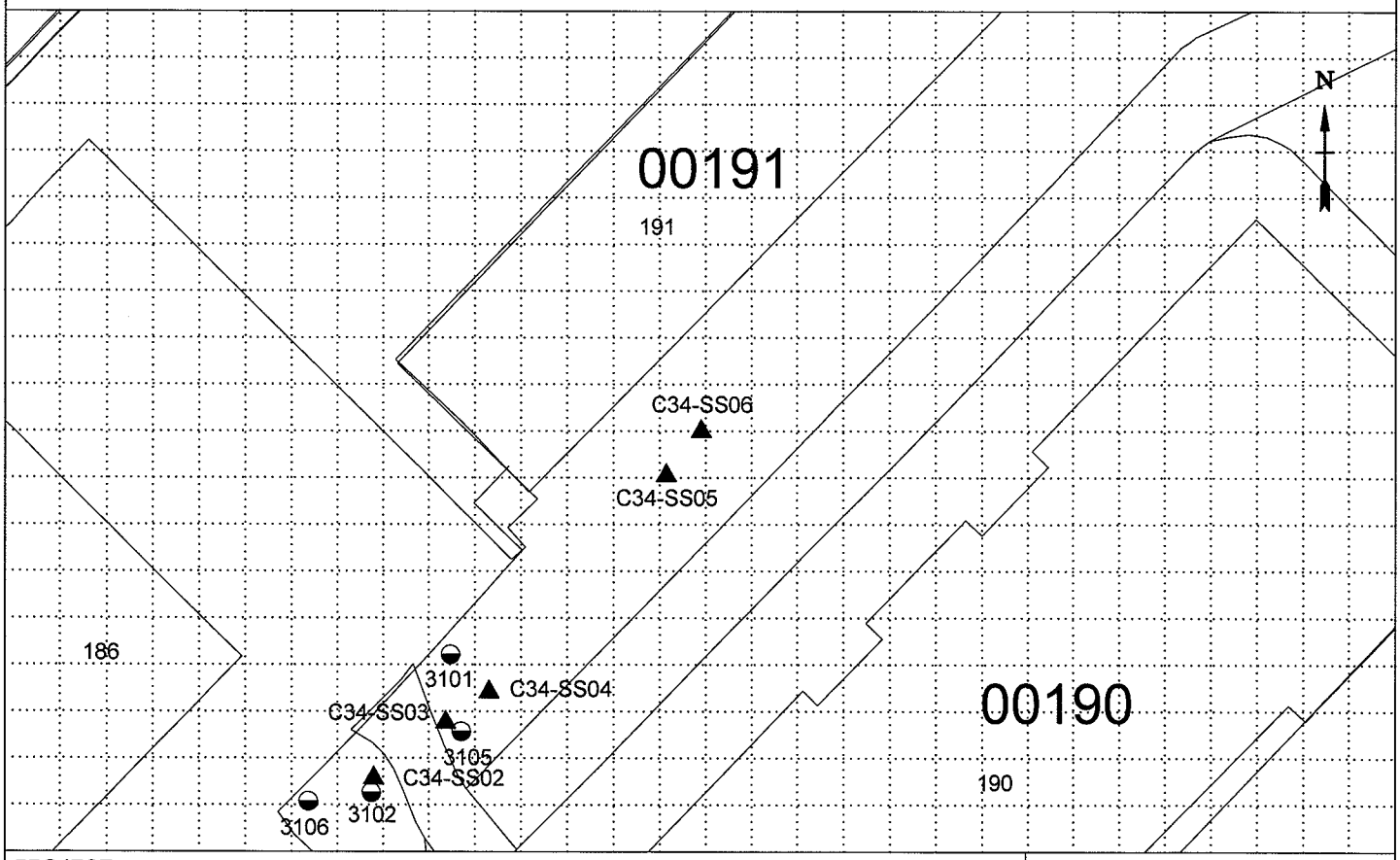
DISTRICT: AFCEE	HOLE NUMBER: C34-SS06	
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF 2 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,236,181.55N 846,974.15E Site 34	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.8' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C34-SS06

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C34-SS06

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Soft, moist, reddish-brown, with organics	HS = ND		C34-SS06-000 (TPH+Pb)		Native soil
	1		HS = 6.9 ppm XRF =24				
		With gravel and caliche	HS = 9.2 ppm XRF = 22				
			HS = 7.9 ppm				
	2	B.O.B. @ 1.8' bgs (Refusal)	XRF =22				HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C34-SS06

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

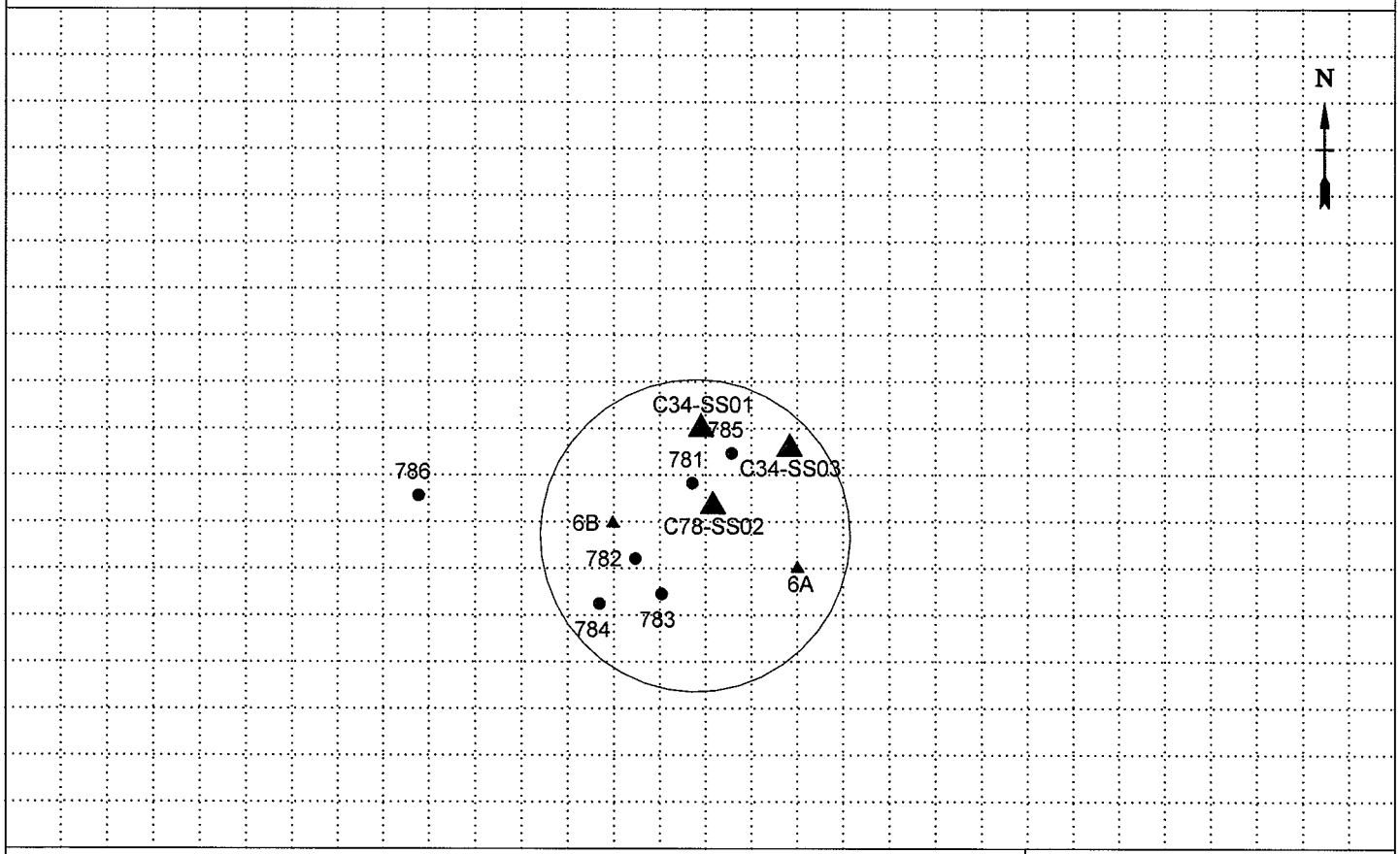
DISTRICT: AFCEE		HOLE NUMBER: C78-SS01
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF SHEETS 2
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,239,394.51N 852,130.01E Site 78	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/20/08	11. DATE COMPLETED: 10/20/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.8' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C78-SS01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C78-SS01

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 2 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Silty SAND (SP) - Loose, dry , light to medium brown, fine-grained	HS = ND XRF =408		C78-SS01-000 (TPH+Pb) plus duplicate C78-SS01-000 (TPH+Pb)		Native soil
	1		HS = ND XRF =128				
			HS = ND XRF = 53				
			HS = ND				
	2	B.O.B. @ 1.8' bgs	XRF =178				HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C78-SS01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

DISTRICT: AFCEE		HOLE NUMBER: C78-SS02
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF SHEETS 2
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,239,373.74N 852,133.22E Site 78	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/20/08	11. DATE COMPLETED: 10/20/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 1.8' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

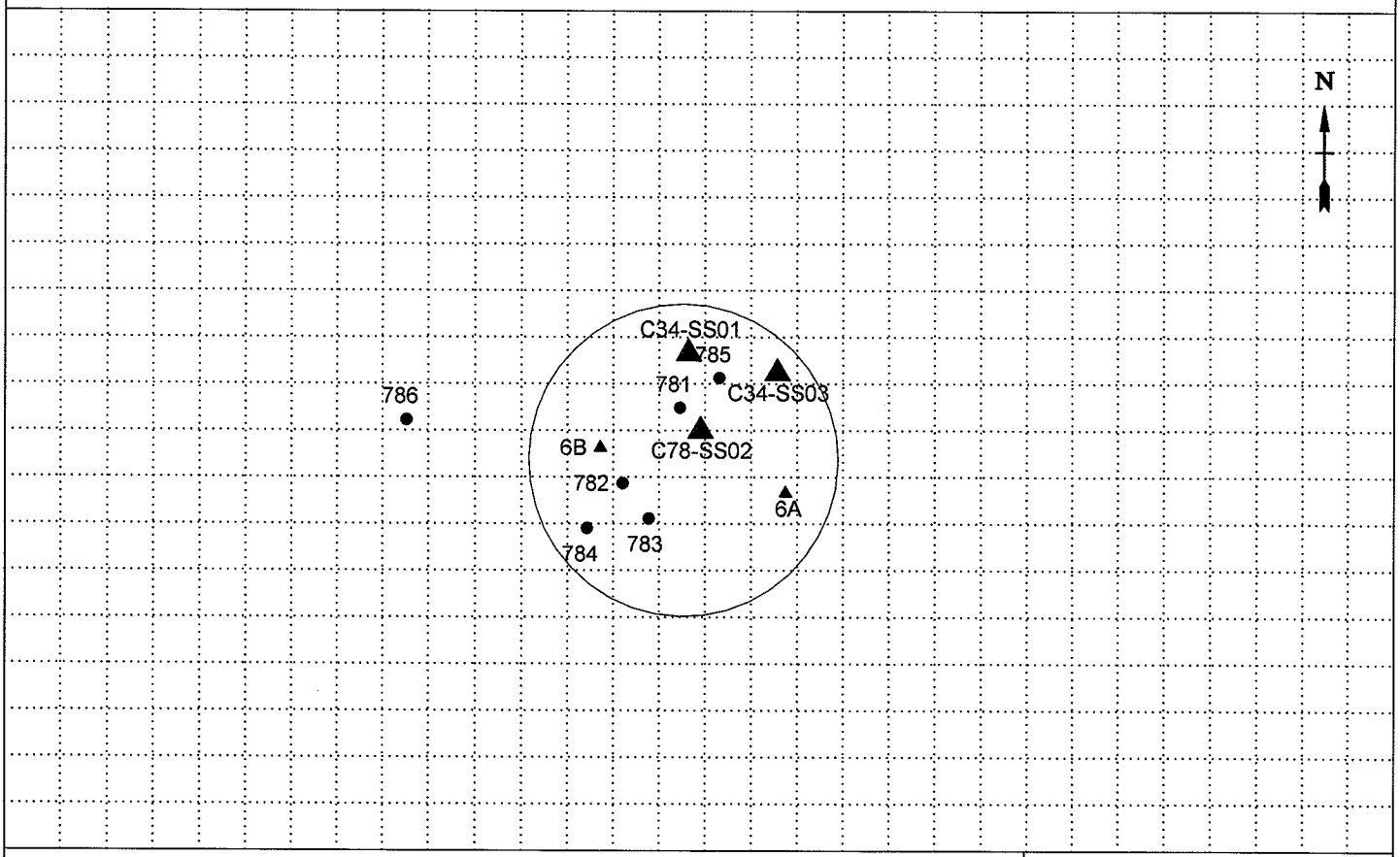
18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS

SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C78-SS02

ENG FORM 5056-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C78-SS02	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Silty SAND (SP) - Very stiff, moist, light to medium brown, fine-grained	HS = 2.6 ppm XRF =347		C78-SS02-000 (TPH+Pb)		Native soil
	1		HS = ND XRF =237				
			HS = ND XRF = 38				
	2	B.O.B. @ 1.8' bgs					HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
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PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C78-SS02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

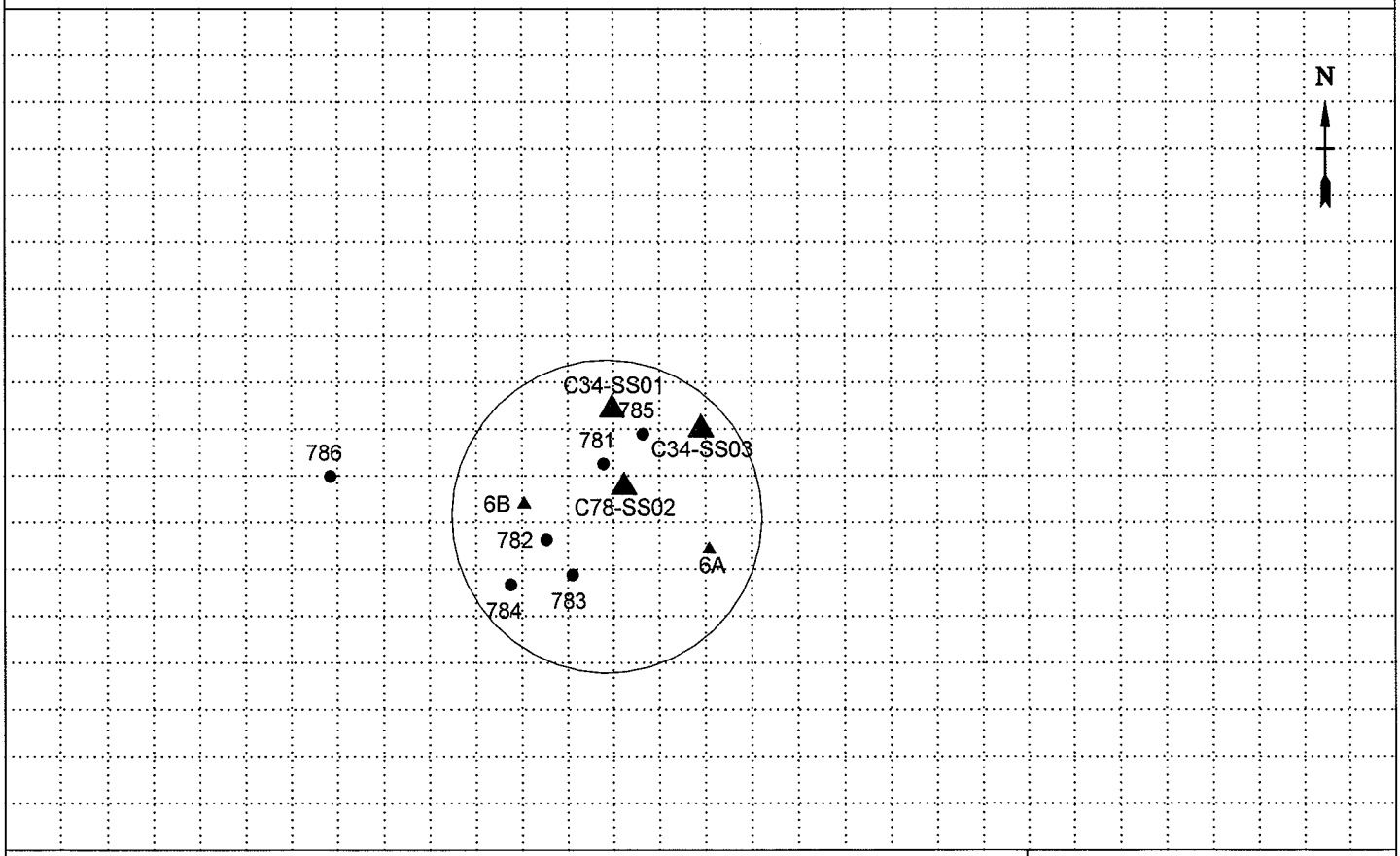
DISTRICT: AFCEE		HOLE NUMBER: C78-SS03
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF 2 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,239,389.19N 852,153.98E Site 78	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/20/08	11. DATE COMPLETED: 10/20/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 2' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		Pb	TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C78-SS03

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C78-SS03	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Soft, moist, reddish-brown, homogenous	HS = 1.7 ppm XRF =383		C78-SS03-000 (TPH+Pb)		Native soil No odor
	1		HS = 1.2 ppm XRF =47				No odor
			HS = 0.8 ppm XRF = 33				No odor
	2		HS = ND XRF =21				No odor
		B.O.B. @ 2.0' bgs					HS = Headspace ND = Non-detect XRF = X-ray Fluorescence Lead
	3						
	4						
	5						
	6						
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	8						
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	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C78-SS03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

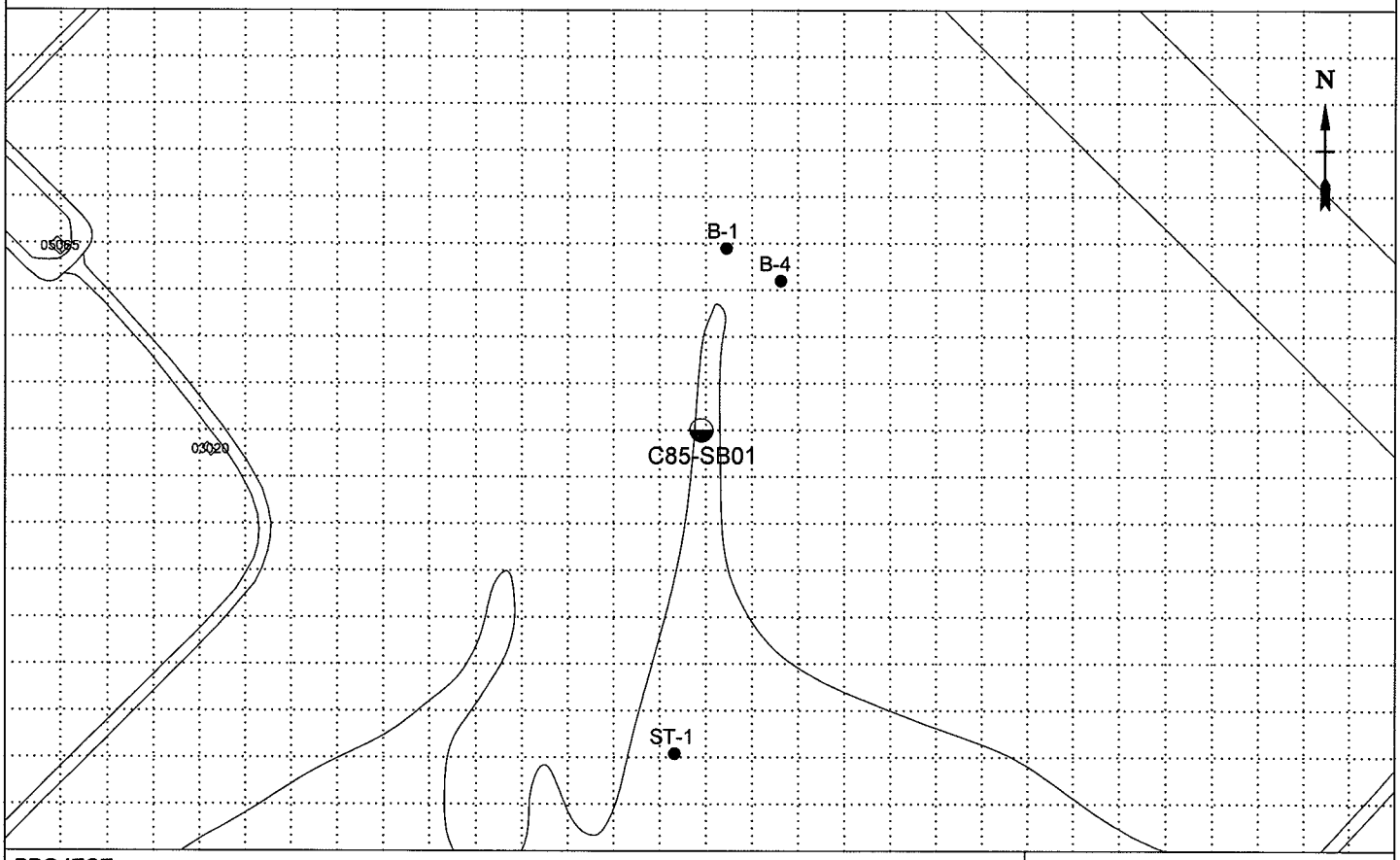
DISTRICT: AFCEE		HOLE NUMBER: C85-SB01
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,230,362.84N 845,097.68E Site 85	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/22/08	11. DATE COMPLETED: 10/22/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 200'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C85-SB01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C85-SB01

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - With organics			C85-SB01-000		Topsoil
		Sandy SILT (ML) - Stiff, dry, reddish-brown to gray, calcareous					Native soil
	1		XRF = ND				ND = Non-detect GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run XRF = X-ray Fluorescence Arsenic
		2" seam of gravel with asphalt					
	2	Gravel (GW) - Dry, light gray, fine to medium, well graded					Native soil
		Sandy SILT (ML) - Soft, dry, light reddish-gray, homogenous				GEOM	Native soil
	3						
	4					NR	R=2.8/4.0
	5		XRF = ND				
	6						
	7					GEOM	
	8					NR	R=3.5/4.0
		Becomes reddish-gray to gray, with calcareous concretions			C85-SB01-008 plus MS/MSD C85-SB01-108		
	9		XRF = ND				
	10						

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C85-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C85-SB01	3 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Soft, dry, reddish-gray to gray, with calcareous concretions				GEOM	Native soil
	11						
	12					NR	R=2.75/4.0
		Silty SAND (SP) - Loose, dry, light gray to reddish-gray, fine-grained	XRF = ND		C85-SB01-012		Native soil
	13						
	14						
	15						
	16					GEOM	R=4.0/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C85-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

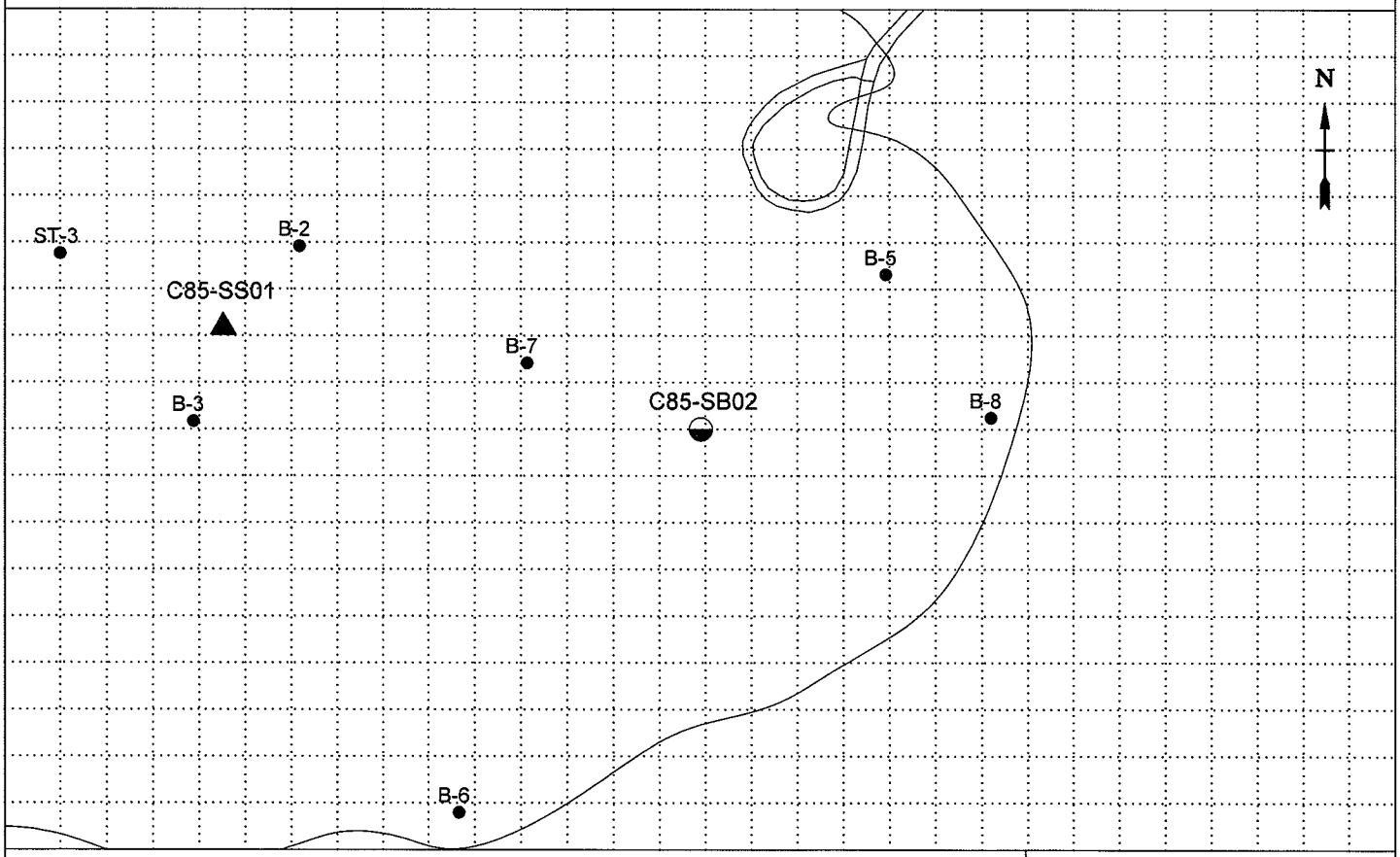
DISTRICT: AFCEE	HOLE NUMBER: C85-SB02	
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,229,433.95N 845,517.90E Site 85	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/22/08	11. DATE COMPLETED: 10/22/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 200'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C85-SB02

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C85-SB02

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Clayey SILT (ML) -Soft, moist, dark brown, homogenous, with organics			C85-SB02-000 plus duplicate C85-SB02-200		Topsoil
	1	Sandy SILT (ML) - Dry, light reddish-brown to gray, with calcareous nodules	XRF = ND				Native soil
	2						GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run ND = Non-detect XRF = X-ray Fluorescence
	3					GEOM	Arsenic
	4	With increasing sand				NR	R=3.0/4.0
	5		XRF = ND				
	6						
	7					GEOM	
		Silty SAND (SP) - Loose, dry, light reddish-brown to gray mottled, fine-grained, with caliche nodules					Native soil
	8				C85-SB02-008	NR	R=3.3/4.0
	9		XRF = ND				
	10						

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C85-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C85-SB02	3 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Silty SAND (SP) - Loose, dry, light reddish-brown to gray mottled, fine-grained, with caliche nodules					Native soil
	11					GEOM	
	12					NR	R=3.5/4.0
					C85-SB02-012		
	13	Silty SAND (SP) - Loose, dry, light reddish-brown to gray, fine-grained, with decreasing silt	XRF = ND				
	14						
	15					GEOM	
	16					NR	R=3.5/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C85-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

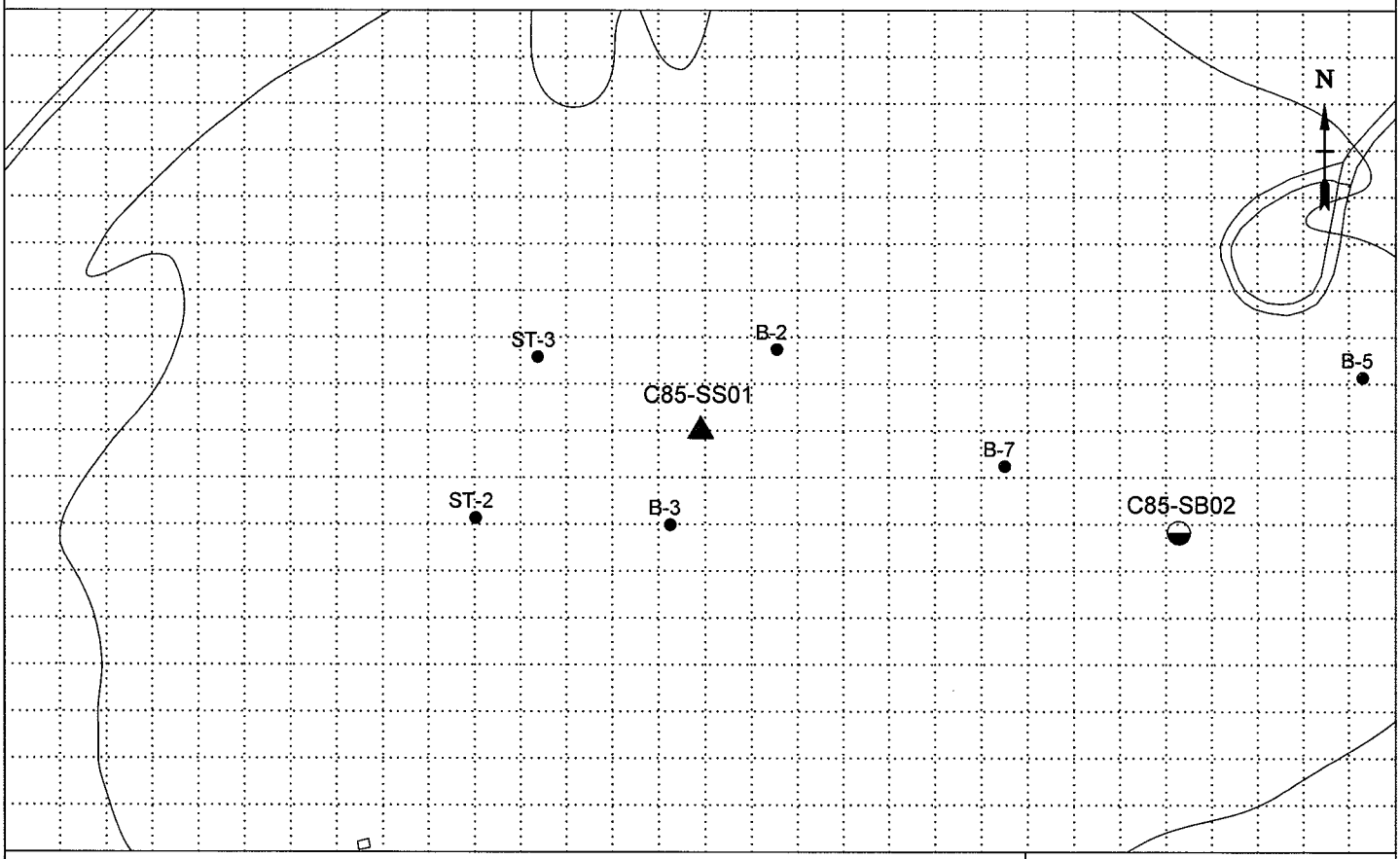
DISTRICT: AFCEE		HOLE NUMBER: C85-SS01
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR:	SHEET 1 OF 2 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER:	6. MANUFACTURER'S DESIGNATION OF DRILL: hand auger	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT:	8. HOLE LOCATION: 1,229,542.81N 845,002.73E Site 85	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/18/08	11. DATE COMPLETED: 10/18/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 0.5' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
1		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 200'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C85-SS01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C85-SS01	2 OF	2

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Silty CLAY (OH) - Soft, wet, dark brown, homogenous, with organics			C85-SS01-000		Native soil
		B.O.B. @ 0.5' bgs					
	1						
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C85-SS01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

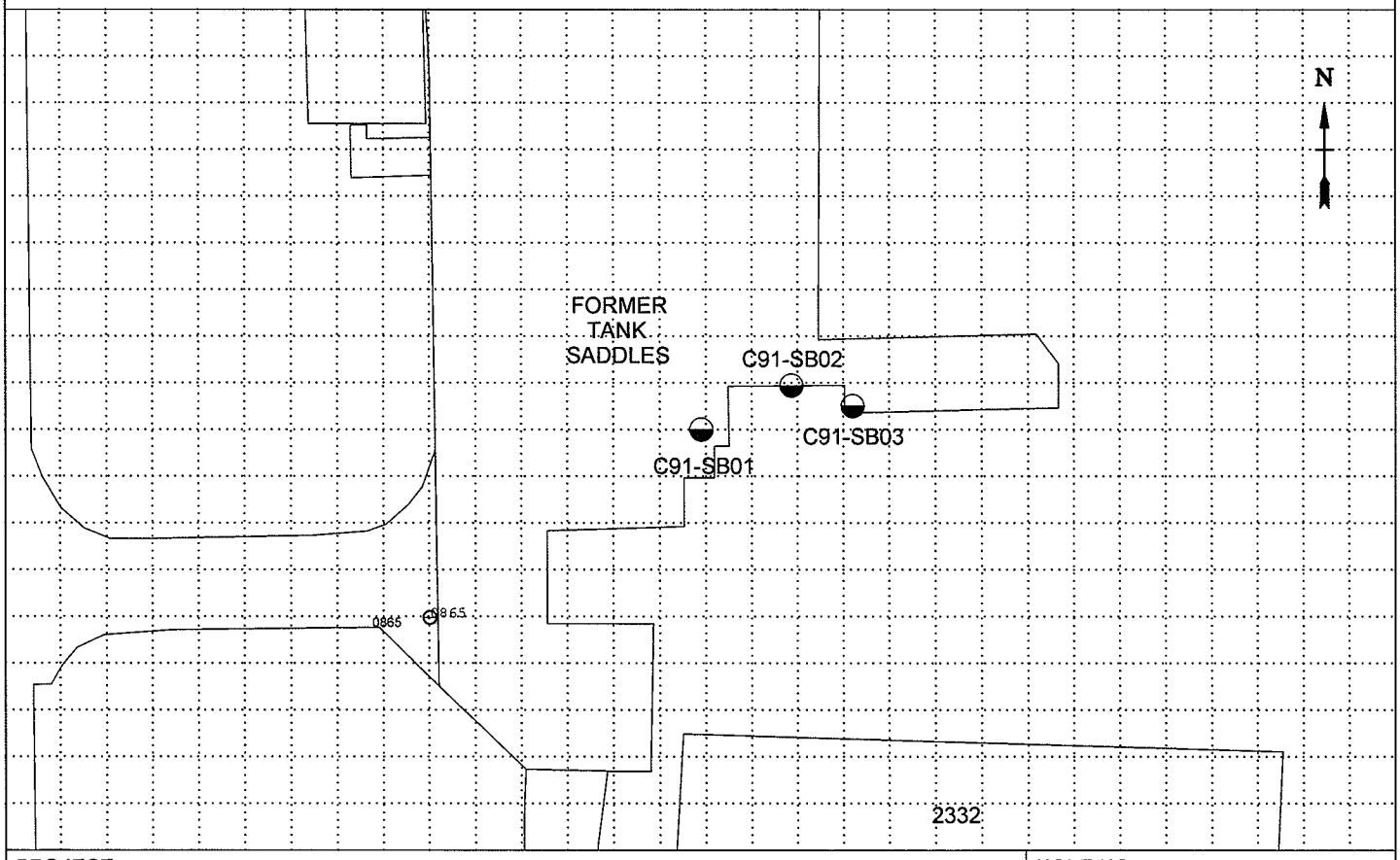
DISTRICT: AFCEE		HOLE NUMBER: C91-SB01
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,229,546.05N 849,434.89E Site 91	
	9. SURFACE ELEVATION	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3			TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C91-SB01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C91-SB01

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Reddish-brown			C91-SB01-000		Fill No odor No stain
	1	SILT (ML) - Dark brown, with organics	HS = ND				Native soil
	2	Becomes medium stiff, moist, reddish-brown, homogenous					
	3					GEOM	NR = No Recovery R = Recovery / Run HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore
	4	With increasing sand				NR	R=3.0/4.0
	5		HS = ND				
	6					GEOM	
	7						
	8					NR	R=2.6/4.0
	9		HS = ND		C91-SB01-008		No odor No stain
	10						

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C91-SB01

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C91-SB01	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	3	3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: SILT (ML) - Medium stiff, moist, reddish-brown to gray mottled, homogenous					Native soil
	11	SILT (ML) - Hard, light gray, with caliche					Native soil
	12					GEOM	R=4.0/4.0
					C91-SB01-012		No odor No stain
	13	Sandy SILT (ML) - Medium stiff, light gray to buff	HS = ND				Native soil
	14	With increasing sand					
	15						
	16					GEOM	R=4.0/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C91-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

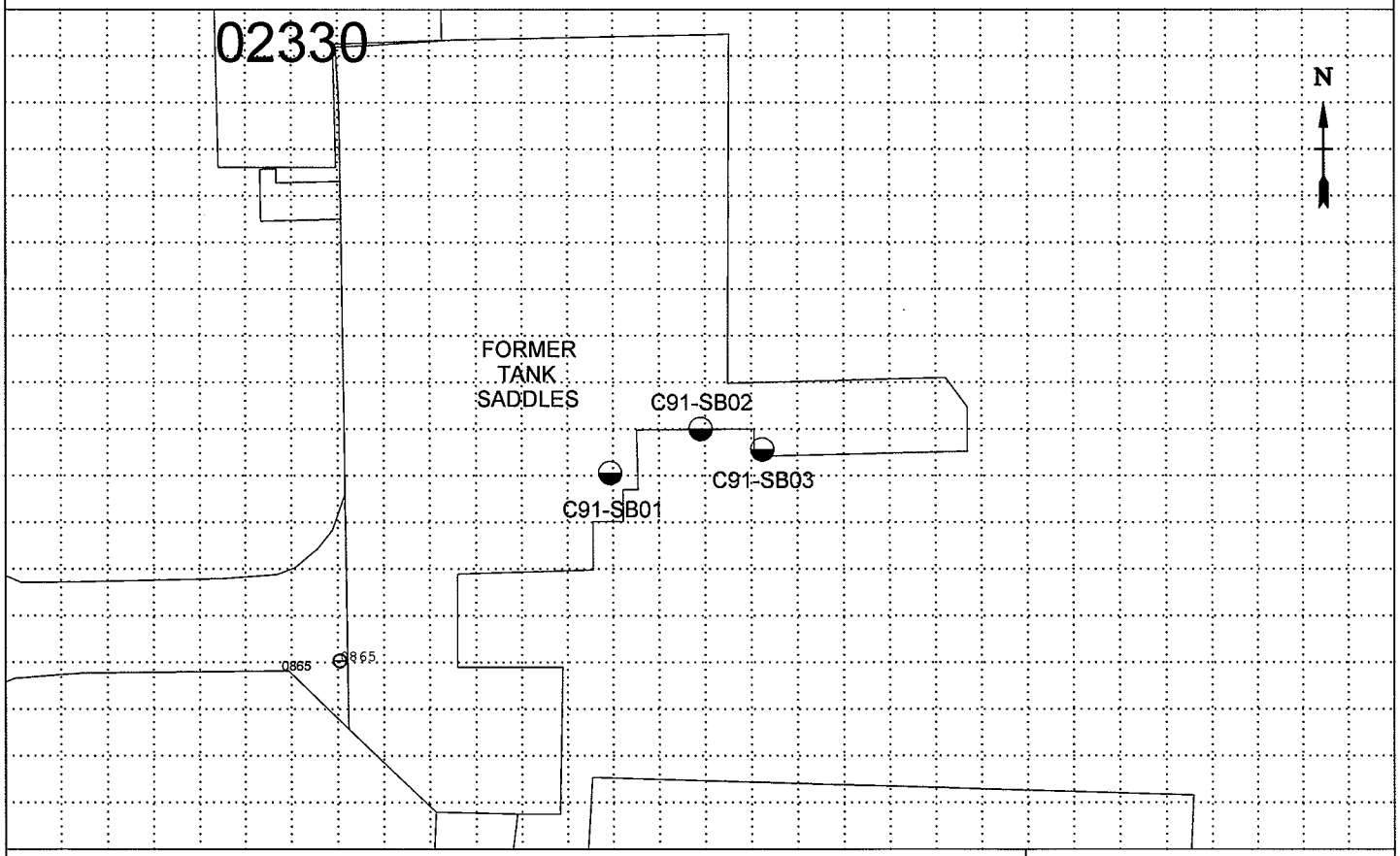
DISTRICT: AFCEE		HOLE NUMBER: C91-SB02
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,229,557.84N 849,459.31E Site 91	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 20' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3			TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C91-SB02

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C91-SB02

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Reddish-brown	HS = ND		C91-SB02-000	GEOM	Fill
	1						
	2						
	3						NR = No Recovery R = Recovery / Run HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore
	4					NR	R=2.4/4.0
		SILT (ML) - Medium stiff, moist, light gray to buff	HS = ND				Native soil No odor No stain
	5						
	6						
	7						
	8					GEOM	R=4.0/4.0
		Becomes reddish-brown to buff	HS = ND		C91-SB02-008		No odor No stain
	9						
	10						

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C91-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C91-SB02

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 3 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: SILT (ML) - Medium stiff, moist, reddish-brown to buff					Native soil
		Sandy SILT (ML) - Medium stiff, moist, light gray to buff					Native soil
	11						
	12					GEOM	R=4.0/4.0
					C91-SB02-012		
	13		HS = ND				
	14						
	15						
	16					GEOM	R=4.0/4.0
	17		HS = ND				
	18	With caliche, consolidated					
	19						
	20	B.O.B. @ 20.0' bgs				GEOM	R=4.0/4.0

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C91-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

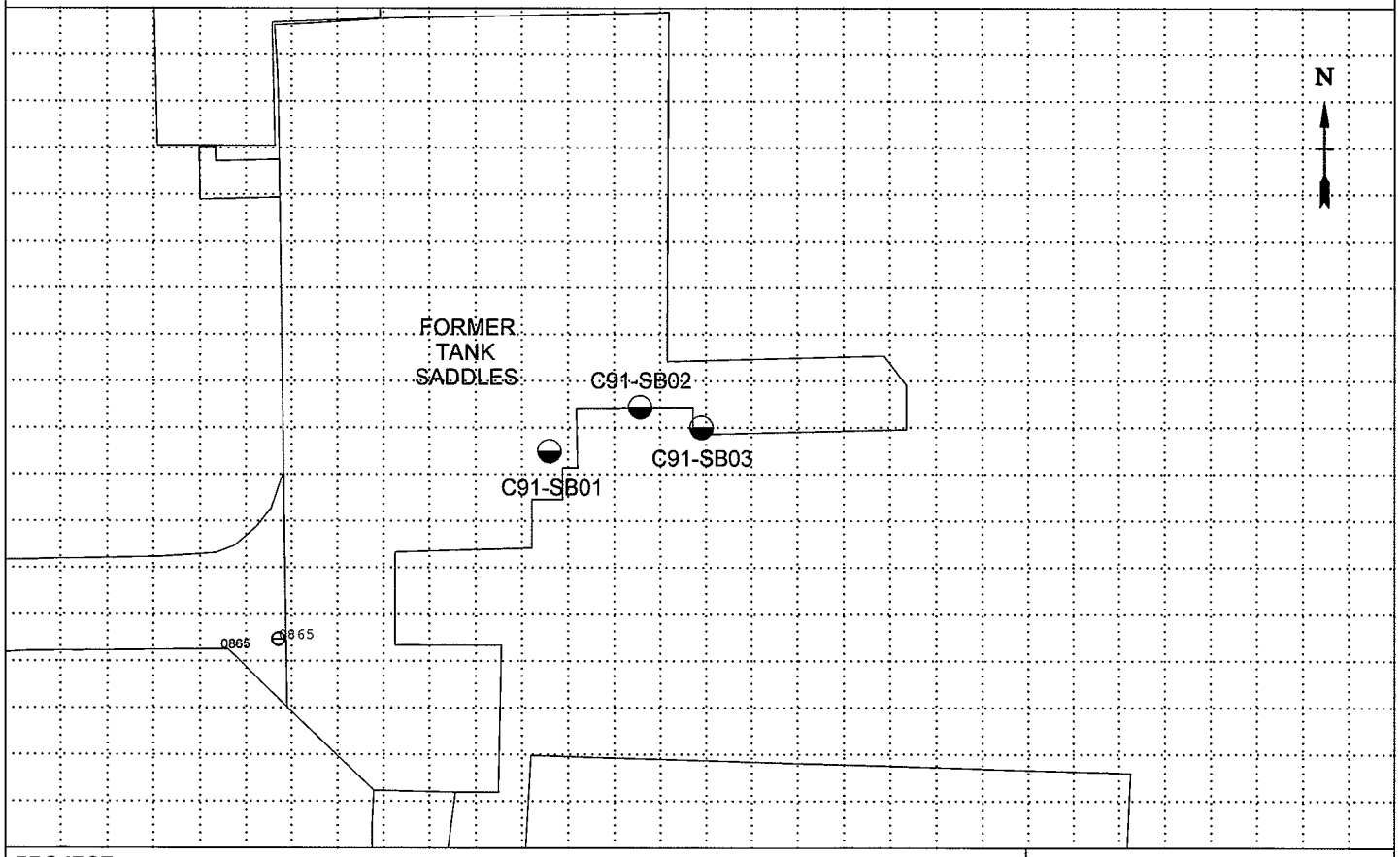
DISTRICT: AFCEE	HOLE NUMBER: C91-SB03	
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,229,552.34N 849,475.90E Site 91	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 20' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3			TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C91-SB03

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C91-SB03	2 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Reddish-brown	HS = ND		C91-SB03-000		Fill No odor No stain
	1	Sandy SILT (ML) - Soft, wet, reddish-brown				GEOM	Native soil
	2						
	3						NR = No Recovery R = Recovery / Run HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore
	4					NR	R=1.6/4.0
	5		HS = ND				No odor No stain
	6						
	7						
		Becomes medium stiff, light gray to buff					
	8					GEOM	R=4.0/4.0
					C91-SB03-008		
	9		HS = ND				No odor No stain
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C91-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C91-SB03	3 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Medium stiff, wet, light gray to buff					Native soil
	11						
	12					GEOM	R=4.0/4.0
					C91-SB03-012		
							No odor No stain
	13		HS = ND				
		SILT (ML) - Moist, light gray to buff and reddish-brown					
	14						
	15						
	16					GEOM	R=4.0/4.0
							No odor No stain
	17		HS = ND				
	18						
		Silty SAND (SP) - Moist, light gray to buff, fine-grained					Native soil
	19					GEOM	
	20	B.O.B. @ 20.0' bgs				NR	R=3.1/4.0

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C91-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

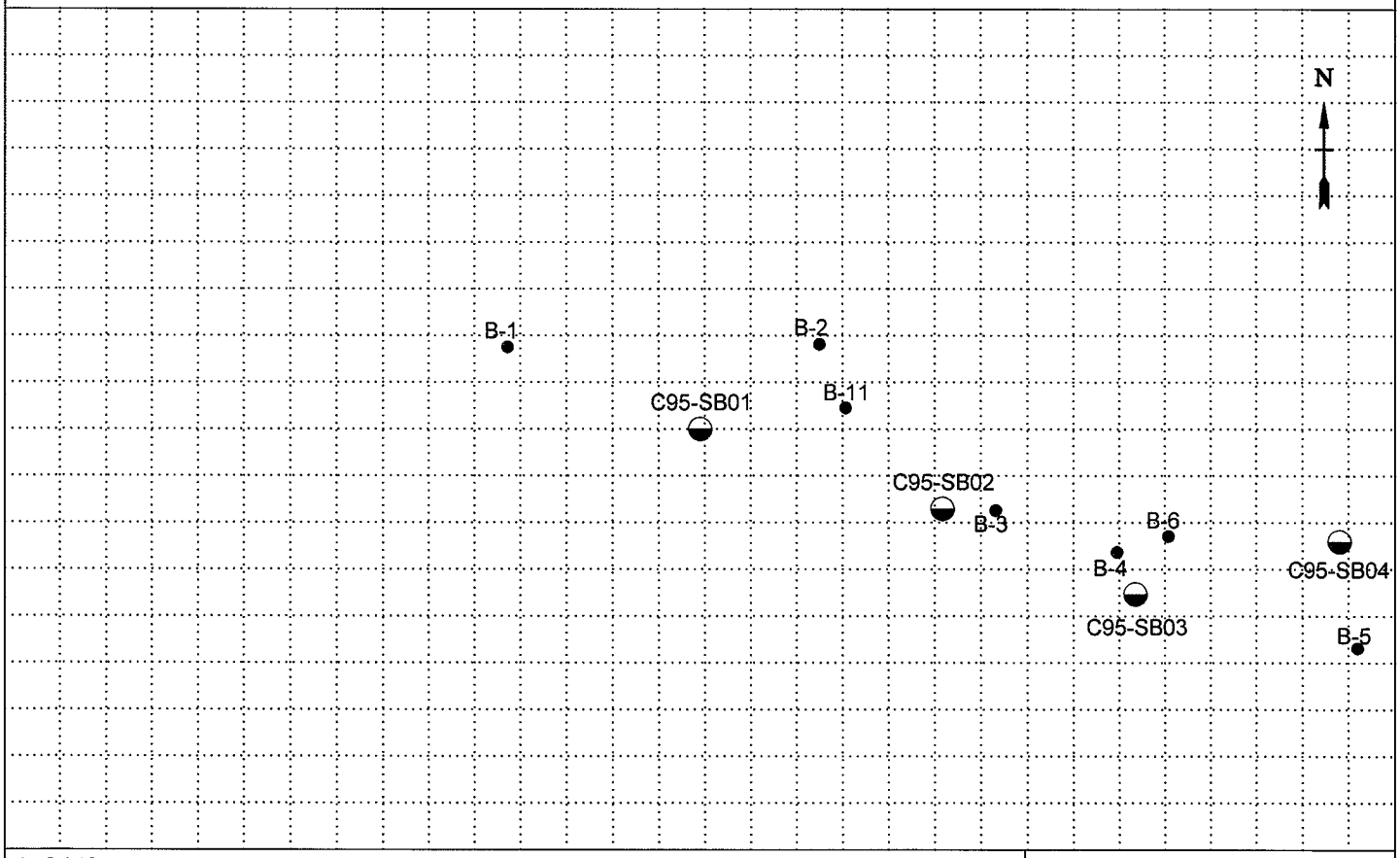
DISTRICT: AFCEE	HOLE NUMBER: C95-SB01	
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,235,323.05N 849,995.09E Site 95	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/22/08	11. DATE COMPLETED: 10/22/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C95-SB01

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Hard, dark brown, with organics (0"-3")			C95-SB01-000 plus duplicate C95-SB01-200		Native soil No odor No stain
	1	2" caliche seam	XRF = 14				
	2						NR = No Recovery R = Recovery / Run ND = Non-detect XRF = X-ray Fluorescence Arsenic
	3					GEOM	GEOM = Geoprobe macrocore
	4					NR	R=3.0/4.0
		SILT (ML) - Hard, dry, light reddish-gray, with caliche					Native soil No odor No stain
	5		XRF = ND				
	6						
	7						
		With increasing fine-grained sand					
	8					GEOM	R=4.0/4.0
					C95-SB01-008		
	9	Becomes light reddish-brown	XRF = ND				No odor No stain
	10						

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C95-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C95-SB01	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	3	3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: SILT (ML) - Hard, dry, light reddish-brown, with caliche					Native soil
	11					GEOM	
		With increasing sand				NR	R=3.25/4.0
	12				C95-SB01-012		
							No odor No stain
	13	Silty SAND (SP) - Light reddish-gray, fine-grained, with interstitial caliche	XRF = ND				Native soil
	14						
	15						
	16					GEOM	R=4.0/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

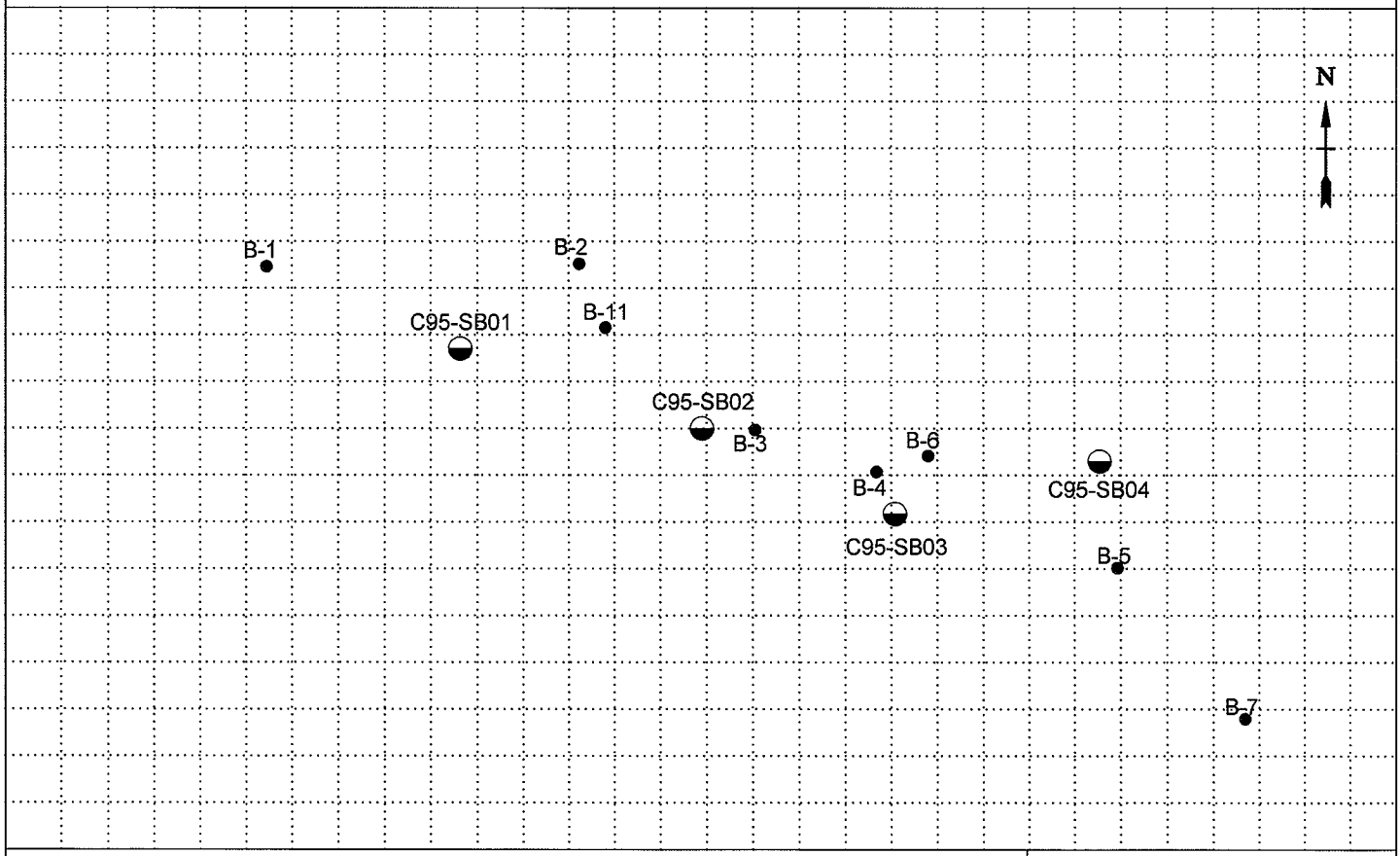
DISTRICT: AFCEE		HOLE NUMBER: C95-SB02
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Charles Johnson	6. MANUFACTURER'S DESIGNATION OF DRILL: Foremost / Mobil	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 8" HSA. 2' split spoon	8. HOLE LOCATION: 1,235,301.73N 850,060.49E Site 95	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/21/08	11. DATE COMPLETED: 10/21/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 15' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB02

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C95-SB02	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	2 OF	3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Stiff, dry, reddish-brown, fine-grained, poorly graded, with organics (0"-2")	XRF = ND		C95-SB02-000	SS	Native soil NR = No Recovery R = Recovery / Run ND = Non-detect SS = split spoon XRF = X-ray Fluorescence Arsenic
	1						
	2					NR	R=1.7/2.0
			XRF = ND			SS	
	3						
	4					NR	R=0.7/2.0
			XRF = ND			SS	
	5	SILT (ML) - Hard, dry, light gray to reddish-brown to tan mottled, becoming calcareous					Native soil
	6					NR	R=0.7/2.0
			XRF = ND		C95-SB02-006	SS	
	7	With increasing caliche					
	8					NR	R=1.7/2.0
			XRF = ND				
	9	Becomes very stiff, light gray to reddish-brown mottled					
	10					SS	R=2.0/2.0

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C95-SB02	3 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: SILT (ML) - Very stiff, dry, light gray to reddish-brown mottled					Native soil
		Becomes hard, calcareous	XRF = ND				
	11					SS	
	12					NR	R=1.8/2.0
		Becomes light gray mottled	XRF = ND				
	13					SS	
	14					NR	R=1.0/2.0
		Becomes consolidated	XRF = ND		C95-SB02-015		
	15					SS	R=1.0/1.0
		B.O.B. @ 15.0' bgs					
	16						
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

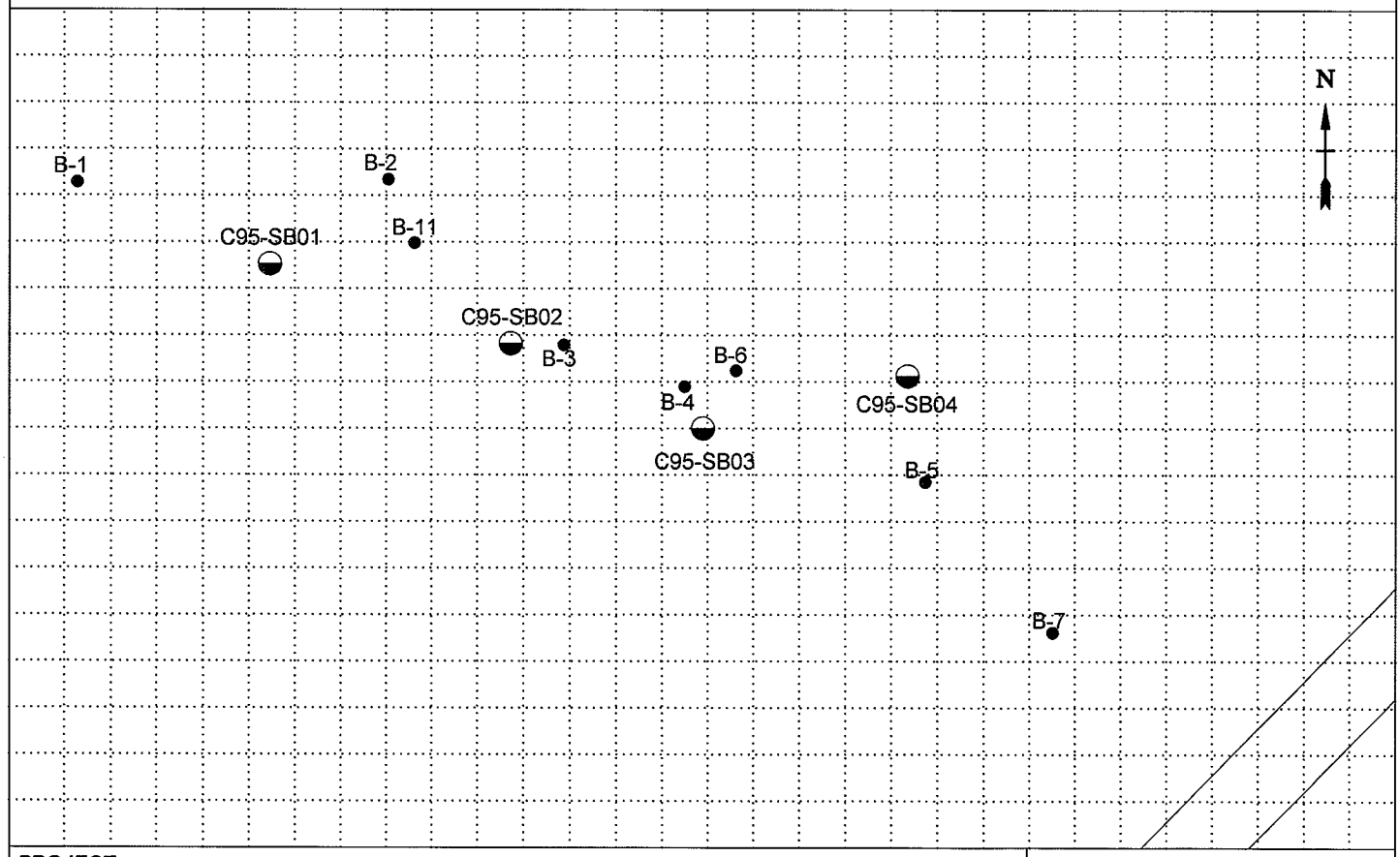
DISTRICT: AFCEE		HOLE NUMBER: C95-SB03
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,235,278.92N 850,112.32E Site 95	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/22/08	11. DATE COMPLETED: 10/22/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB03

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C95-SB03

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 3 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Stiff, moist, reddish-brown, with organics (0"-2")			C95-SB03-000		Native soil
							No odor No stain
	1		XRF = ND				
							ND = Non-detect XRF = X-ray Fluorescence Arsenic GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	2						
	3					GEOM	
	4					NR	R=3.0/4.0
							No odor No stain
	5		XRF = ND				
		Sandy SILT (ML) - Hard, dry, light reddish-gray, with caliche					Native soil
	6						
	7					GEOM	
	8					NR	R=2.9/4.0
					C95-SB03-008		
		Becomes moist, homogenous					
	9		XRF = ND				
							No odor No stain
	10						

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C95-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C95-SB03	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	3	3

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Hard, moist, light reddish-gray, homogenous, with decreasing caliche					Native soil
	11						
	12					GEOM	R=4.0/4.0
					C95-SB03-012		
		With increasing sand					No odor No stain
	13		XRF = ND				
	14	Silty SAND (SP) - Medium dense, moist, light reddish-gray, fine-grained					Native soil
	15						
	16					GEOM	R=4.0/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

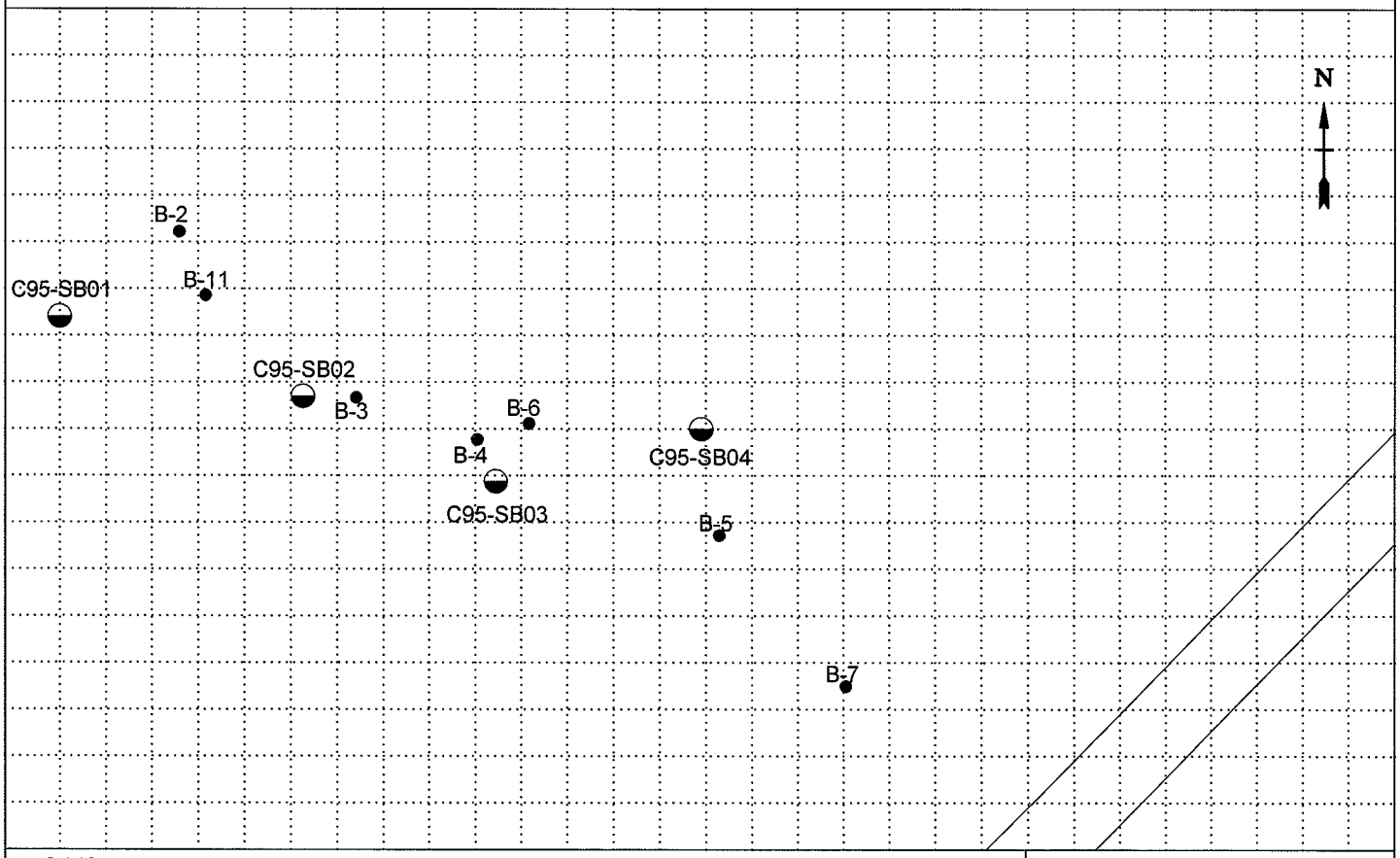
DISTRICT: AFCEE		HOLE NUMBER: C95-SB04
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,235,292.97N 850,167.68E Site 95	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/22/08	11. DATE COMPLETED: 10/22/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3		As				NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB04

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C95-SB04	2 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Sandy SILT (ML) - Hard, moist, dark brown to reddish-brown, with intersticial calcite (caliche)			C95-SB04-000		Native soil No odor No stain
	1		XRF = ND				ND = Non-detect XRF = X-ray Fluorescence Arsenic GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	2						
		Silty CLAY (CL) - Hard, moist, dark brown, low plastic				GEOM	Native soil
	3						
		Sandy SILT (ML) - Hard, moist, dark brown, with calcareous concretions					Native soil
	4					NR	R=2.9/4.0
							No odor No stain
	5						
		Becomes reddish-brown to light gray mottled, fine-grained	XRF = ND				
	6						
	7						
	8					GEOM	R=4.0/4.0
		Becomes soft			C95-SB04-008		
	9		XRF = ND				No odor No stain
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB04

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C95-SB04	3 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Soft, moist, reddish-brown to light gray, fine-grained					Native soil
						GEOM	
	11						
						NR	R=2.9/4.0
	12				C95-SB04-012		
							No odor No stain
	13		XRF = ND				
	14	Sandy SILT (ML) - Hard, dry, light gray, with caliche					Native soil
						GEOM	
	15						
	16					NR	R=2.9/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C95-SB04

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

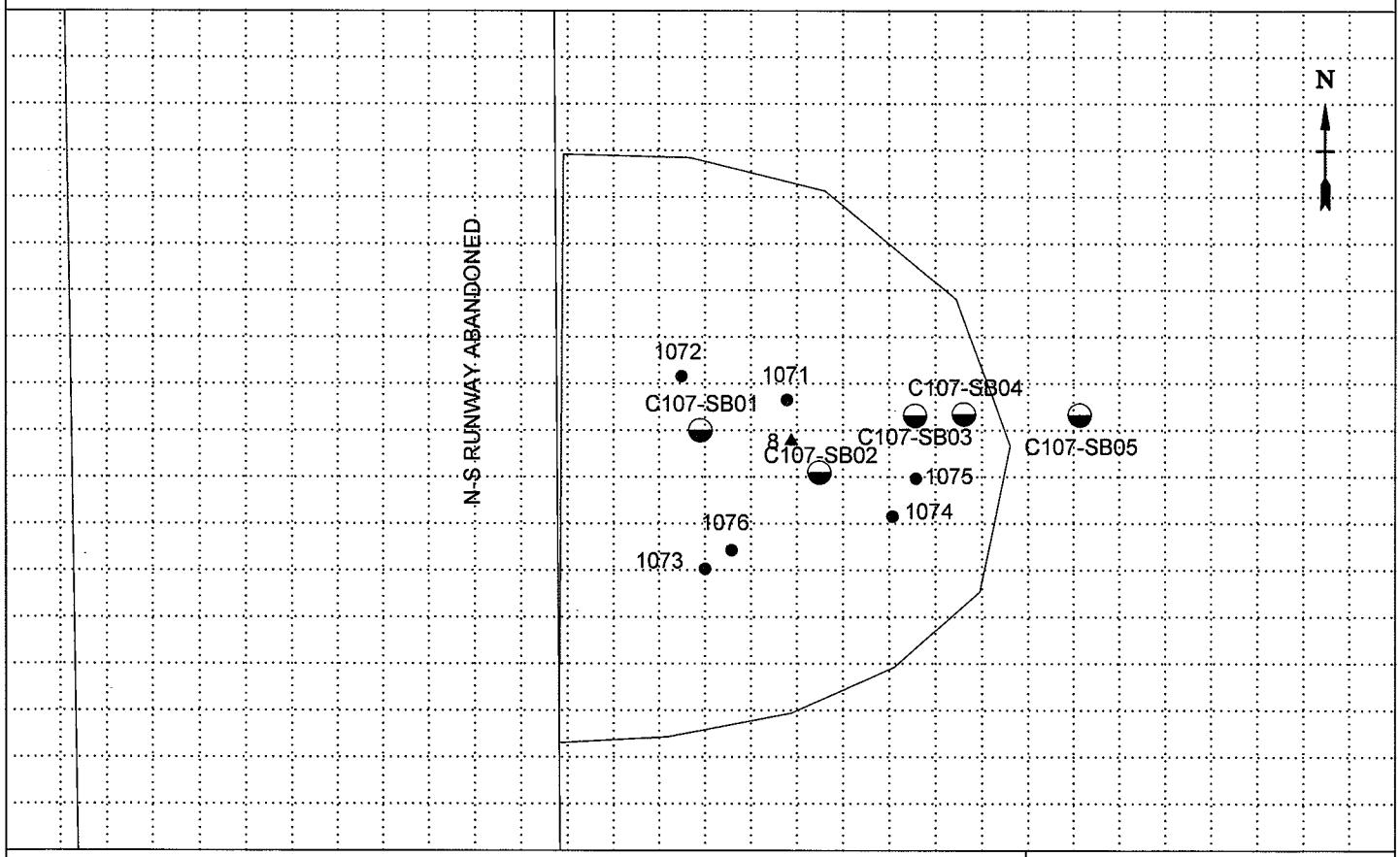
DISTRICT: AFCEE		HOLE NUMBER: C107-SB01
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,228,356.24N 851,145.56E Site 107	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/22/08	11. DATE COMPLETED: 10/22/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 30' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3	BTEX		TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB01

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C107-SB01	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	2 OF	4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Gravel - Light gray					Fill
		SILT (ML) - Hard, dark brown to brown, homogenous	HS = ND		C107-SB01-000		Native soil No odor No stain
	1						
	2						HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	3					GEOM	
	4					NR	R=3.2/4.0
		Becomes stiff, reddish-brown					No odor No stain
	5						
		Sandy SILT (ML) - Stiff, dry, light gray, calcareous	HS = ND				
	6						
	7						
	8					GEOM	R=4.0/4.0
		With increasing fine-grained sand					No odor No stain
	9		HS = ND				
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C107-SB01

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 3 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Stiff, dry, light gray, calcareous					Native soil
	11						
	12					GEOM	R=4.0/4.0
					C107-SB01-012		No odor No stain
		Becomes reddish-brown, with increasing poorly graded, fine-grained sand					
	13		HS = ND				
	14						
	15						
	16					GEOM	R=4.0/4.0
		Silty SAND (SP) - Medium dense, dry, reddish-brown, fine-grained					Native soil No odor No stain
	17		HS = ND				
	18						
	19						
	20					GEOM	R=4.0/4.0

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C107-SB01

ENG FORM 5056A-R, AUG 94

(Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C107-SB01	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	4	4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	20	SAME: Silty SAND (SP) - Medium dense, dry, reddish-brown, fine-grained					Native soil No odor No stain
	21		HS = ND				
		Becomes light gray, with increasing calcium carbonate					
	22						
	23						
	24					GEOM	R=4.0/4.0
		With decreasing silt					No odor No stain
	25		HS = ND				
	26						
	27						
	28					GEOM	
			HS = ND		C107-SB01-028		No odor No stain
	29						
	30	B.O.B. @ 30.0' bgs				GEOM	R=2.0/2.0

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB01

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

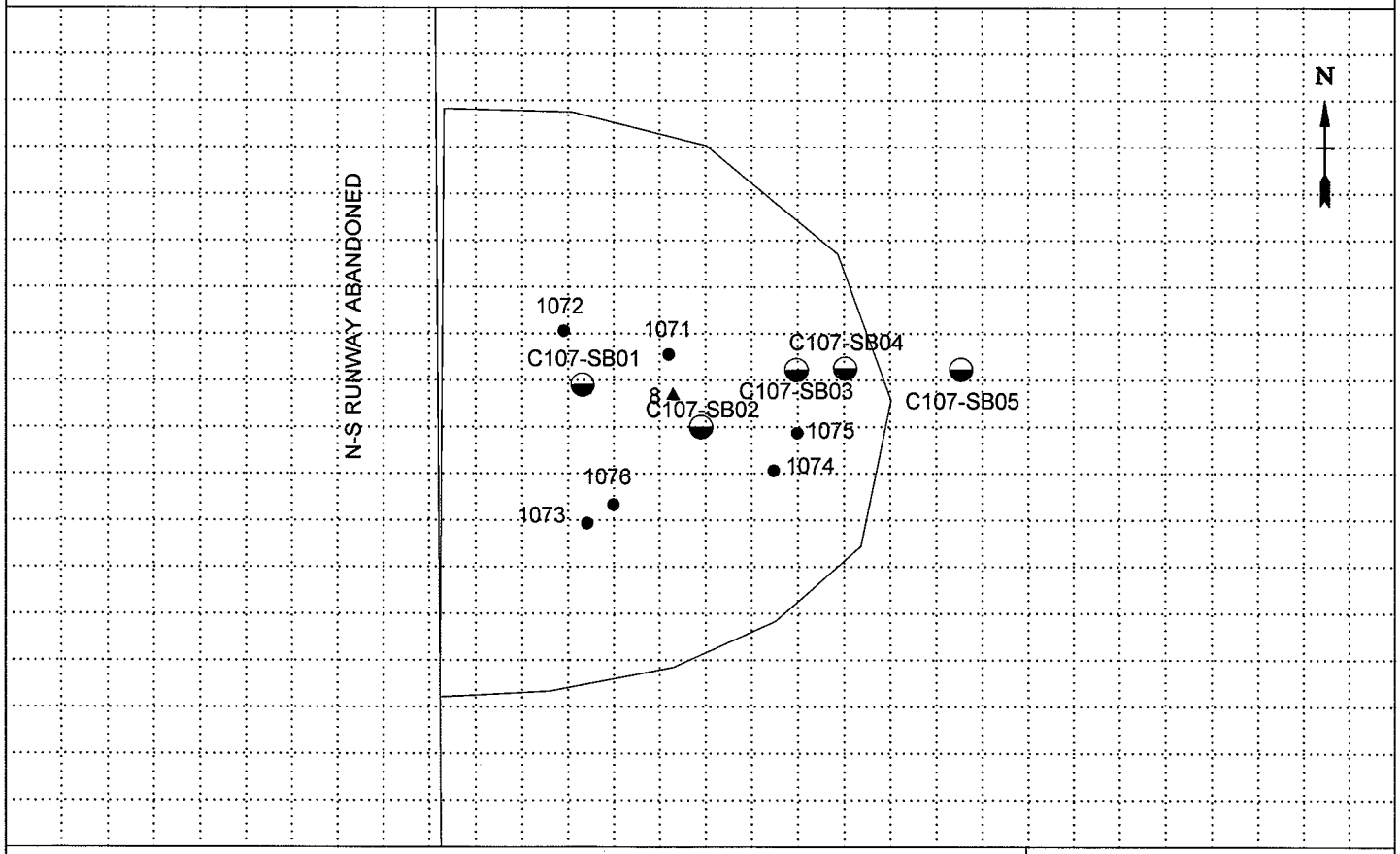
DISTRICT: AFCEE		HOLE NUMBER: C107-SB02
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,228,344.92N 851,177.70E Site 107	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 28' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3	BTEX		TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB02

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C107-SB02

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 2 OF 4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	Gravel					Fill
		SILT (ML) - Stiff, dry, reddish-brown, homogenous			C107-SB02-000		Native soil No odor No stain
	1		HS = ND				
	2						HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	3					GEOM	
	4					NR	R=3.0/4.0
							No odor No stain
	5	Sandy SILT (ML) - Stiff, dry, light reddish-brown to buff mottled, fine-grained, with caliche concretions	HS = ND				Native soil
	6						
	7					GEOM	
	8					NR	R=3.5/4.0
							No odor No stain
	9		HS = ND				
	10						

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C107-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C107-SB02

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 3 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Stiff, dry, light reddish-brown to buff mottled, fine-grained, with caliche concretions					Native soil
	11	With increasing sand					
	12					GEOM	R=4.0/4.0
					C107-SB02-012 plus C107-SB02-112 MS/MSD		No odor No stain
	13	Becomes light reddish-brown	HS = ND				
	14						
	15						
	16					GEOM	R=4.0/4.0
		Silty SAND (SP) - Loose, dry, light brown, fine-grained					Native soil
	17		HS = ND				
	18						
	19						
	20					GEOM	R=4.0/4.0

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C107-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C107-SB02

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 4 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	20	SAME: Silty SAND (SP) - Loose, dry, light brown, fine-grained					Native soil No odor No stain
	21	Becomes medium dense, with some intergranular caliche	HS = ND				
	22						
	23						
	24					GEOM	R=4.0/4.0
					C107-SB02-024		No odor No stain
	25	SAND (SP) - Medium dense, dry, light gray, fine-grained, with decreasing silt	HS = ND				Native soil
	26						
	27						
	28					GEOM	R=4.0/4.0
		B.O.B. @ 28.0' bgs (Refusal)					
	29						
	30						

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C107-SB02

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

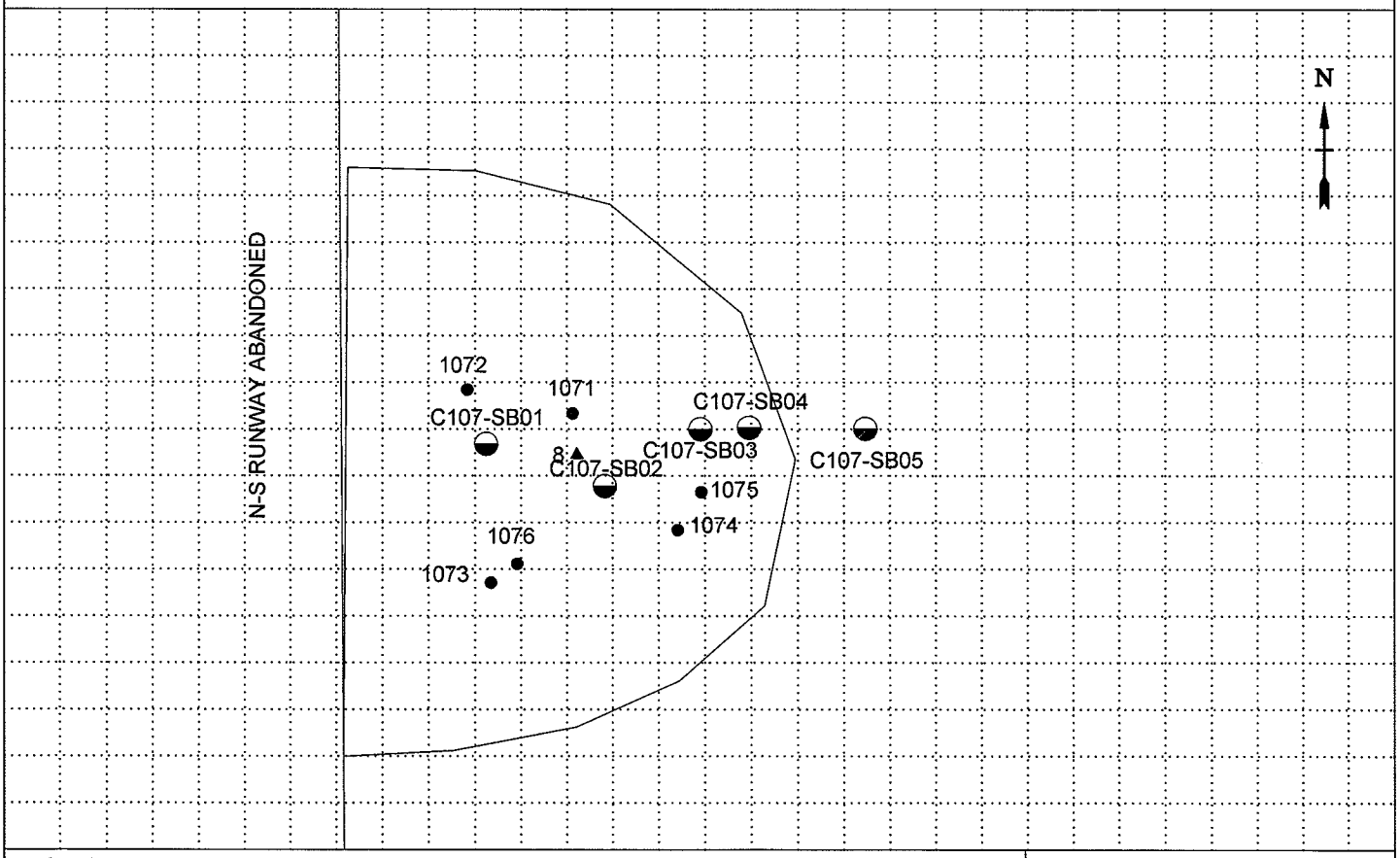
DISTRICT: AFCEE		HOLE NUMBER: C107-SB03
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,228,360.18N 851,203.42E Site 107	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 27' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
4	BTEX		TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB03

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C107-SB03	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	2 OF	4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Medium stiff, dry, dark reddish-brown to black, homogenous					Native soil
	1		HS = 4.5 ppn				HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	2						Slight odor
	3	Sandy SILT (ML) - Soft, moist, light gray, with low plastic clay				GEOM	Native soil
	4					NR	R=3.25/4.0
	5		HS = 473 ppm		C107-SB03-004 plus duplicate C107-SB03-204		
	6						Stong odor
	7	Becomes light gray to reddish-brown					
	8					GEOM	R=4.0/4.0
	9	With decreasing clay	HS = 567 ppm				Stong odor
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C107-SB03

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 3 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Soft, moist, light gray to reddish-brown, with low plastic clay					Native soil
	11	With increasing sand					
	12					GEOM	R=4.0/4.0
		Becomes light gray to light brown, fine-grained, poorly graded			C107-SB03-012		Strong odor Slight staining
	13		HS = 612 ppm				
	14						
	15						
	16					GEOM	R=4.0/4.0
		Becomes medium stiff, reddish-brown to light gray					Odor Some staining in thin layers
	17		HS = 423 ppm				
	18						
	19						
	20	With increasing sand				GEOM	R=4.0/4.0

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C107-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C107-SB03	4 OF	4

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	20	SAND (SP) - Medium dense, dry, light gray, fine-grained					Native soil Slight odor No stain
	21		HS = 400 ppm				
	22						
	23						
		Becomes very light whitish-gray, with intergranular calcium carbonate (caliche)					Slight odor
	24					GEOM	R=4.0/4.0
					C107-SB03-024		
	25	Becomes light gray to reddish-gray, with silt	HS = 182 ppm				Staining @ 25'
	26						
	27					GEOM	R=3.0/3.0
		B.O.B. @ 27.0' bgs (Refusal)					
	28						
	29						
	30						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB03

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

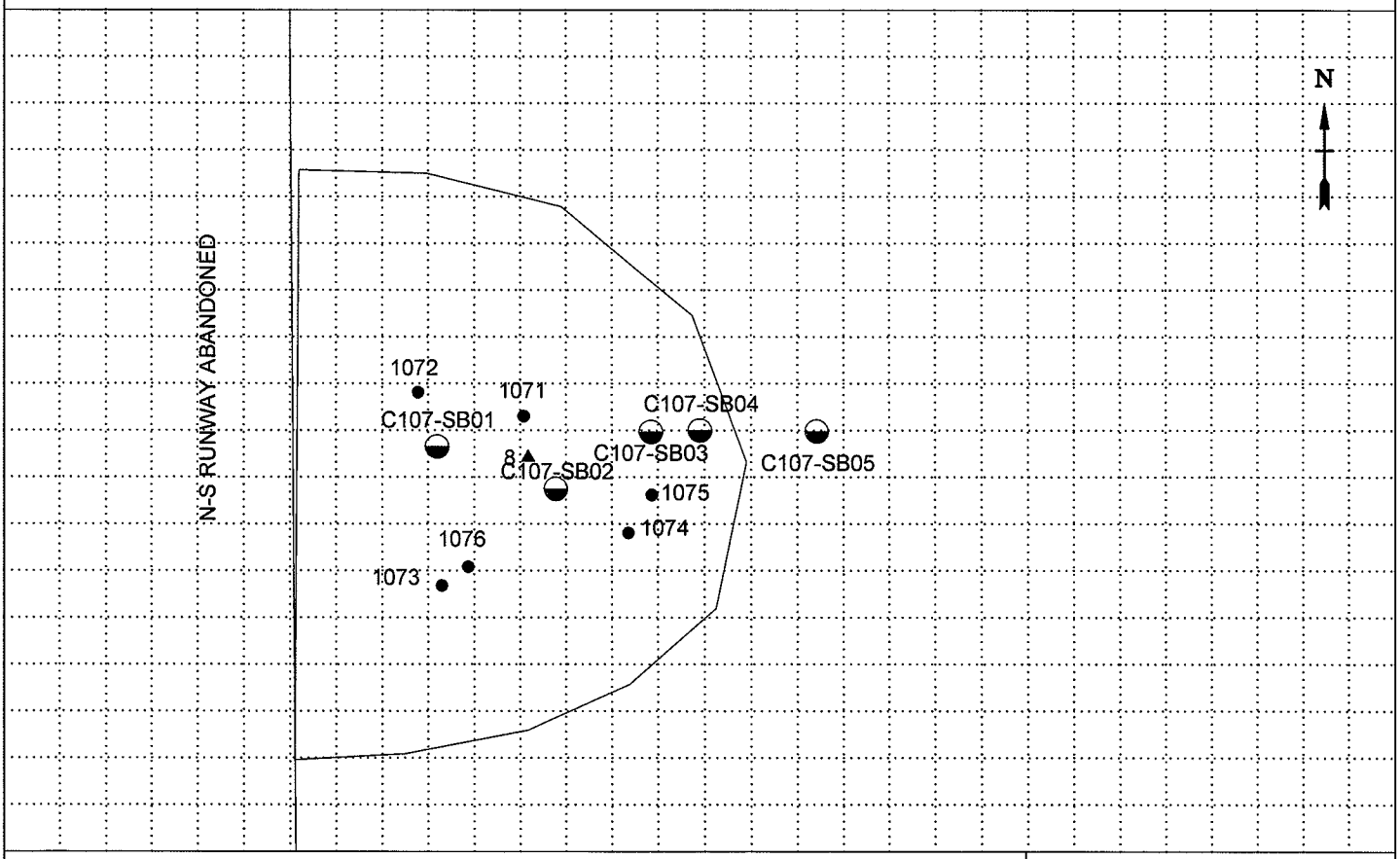
DISTRICT: AFCEE		HOLE NUMBER: C107-SB04
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 3 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,228,360.57N 851,216.46E Site 107	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 16' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
0						NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB04

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C107-SB04	2 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Soft, reddish-brown, homogenous					Native soil
	1		HS = ND				No odor No stain
	2						HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	3						
	4					GEOM	R=4.0/4.0
		Hard, light gray, gravelly caliche (SP)					
		Sandy SILT (ML) - Medium stiff, moist, light gray					Native soil
	5		HS = 0.6 ppm				
	6	With increasing sand					
						GEOM	Slight odor
	7						
	8					NR	R=2.75/4.0
	9		HS = 183 ppm				Stong odor
		Becomes reddish-brown					
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB04

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	SHEET	SHEETS
C107-SB04	3 OF	3

PROJECT	INSPECTOR
CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Medium stiff, moist, reddish-brown, fine-grained, poorly graded					Native soil Product odor
	11						
	12					GEOM	R=4.0/4.0
							Product odor Staining
	13		HS = 200 ppm				
	14						
	15						
	16					GEOM	R=4.0/4.0
		B.O.B. @ 16.0' bgs					
	17						
	18						
	19						
	20						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB04

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG

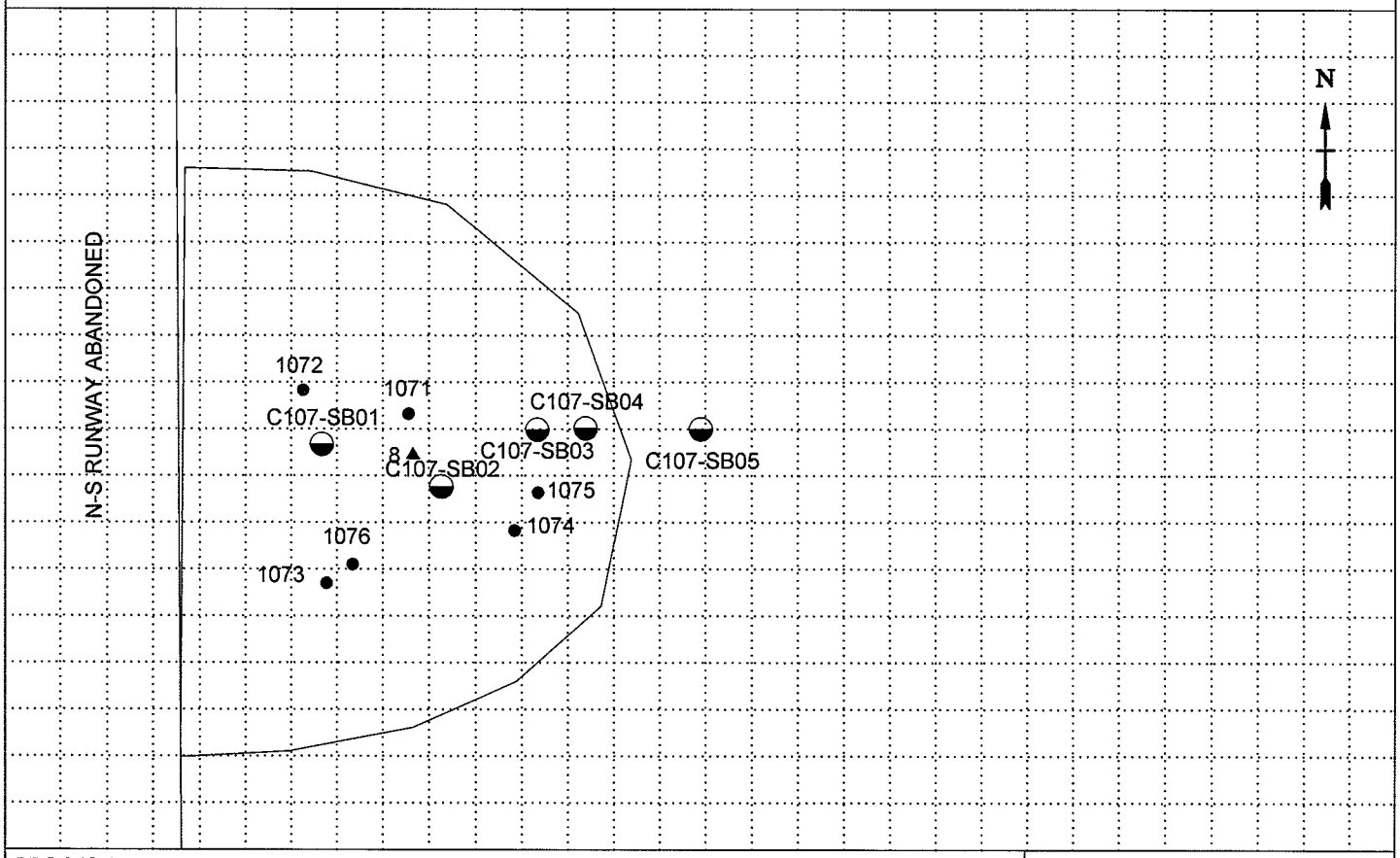
DISTRICT: AFCEE		HOLE NUMBER: C107-SB05
1. COMPANY NAME: *URS GROUP, INC.*	2. DRILLING CONTRACTOR: Peterson Drilling	SHEET 1 OF 4 SHEETS
3. PROJECT: CANNON AFB - RFI	4. LOCATION: CANNON AFB, NEW MEXICO	
5. NAME OF DRILLER: Tony Marquez	6. MANUFACTURER'S DESIGNATION OF DRILL: Geoprobe DH66	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 4' macrocore acetate liner	8. HOLE LOCATION: 1,228,360.33N 851,247.69E Site 107	
	9. SURFACE ELEVATION:	
	10. DATE STARTED: 10/23/08	11. DATE COMPLETED: 10/23/08
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED:	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: NA	
14. TOTAL DEPTH OF HOLE: 30' bgs	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY): NA	

18. GEOTECHNICAL SAMPLES (TESTED)	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0			NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE RECOVERY
3	BTEX		TPH-DRO/GRO			NA %

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
X	bentonite			S. Wrightson

LOCATION SKETCH/COMMENTS SCALE: 1" = 50'



PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB05

ENG FORM 5056-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C107-SB05	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	2 OF	4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	0	SILT (ML) - Medium stiff, reddish-brown, with trace clay			C107-SB05-000		Native soil
	1		HS = ND				No odor
	2						HS = Headspace ND = Non-detect GEOM = Geoprobe macrocore NR = No Recovery R = Recovery / Run
	3						
	4					GEOM	R=4.0/4.0
		Becomes moist, light reddish-gray, homogenous					No odor No stain
	5		HS = ND				Native soil
	6						
	7					GEOM	
	8					NR	R=3.25/4.0
		Becomes medium stiff to stiff					9.4
	9	Sandy SILT (ML) - Medium stiff, light reddish-gray to light gray, homogenous	HS = ND				Native soil No odor
	10						

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB05

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER	PROJECT	INSPECTOR	SHEET	SHEETS
C107-SB05	CANNON AFB - RFI CANNON AFB, NEW MEXICO	S. Wrightson	3 OF	4

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	10	SAME: Sandy SILT (ML) - Medium stiff, light reddish-gray to light gray, homogenous					Native soil
	11						
	12					GEOM	R=4.0/4.0
					C107-SB05-012		No odor No stain
		With increasing sand					
	13		HS = ND				
		Becomes dry, light gray to buff					
	14						
	15						
		Silty SAND (SP) - Dense, dry, light gray to buff, fine-grained					Native soil
	16					GEOM	R=4.0/4.0
							No odor No stain
	17		HS = ND				
	18						
	19						
	20					GEOM	R=4.0/4.0

PROJECT	HOLE NO.
CANNON AFB - RFI CANNON AFB, NEW MEXICO	C107-SB05

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

HTRW DRILLING LOG (CONTINUATION SHEET)

HOLE NUMBER: C107-SB05

PROJECT: CANNON AFB - RFI CANNON AFB, NEW MEXICO

INSPECTOR: S. Wrightson

SHEET 4 OF 4 SHEETS

ELEV. (a)	DEPTH (b)	DESCRIPTION OF MATERIALS (c)	FIELD SCREENING RESULTS (d)	GEOTECH SAMPLE OR CORE BOX NO. (e)	ANALYTICAL SAMPLE NO. (f)	BLOW COUNT (g)	REMARKS (h)
	20	SAME: Silty SAND (SP) - Dense, dry, light gray to buff, fine-grained					Native soil No odor No stain
	21		HS = 0.2 ppm				
	22						
	23						
	24					GEOM	R=4.0/4.0
	25		HS = ND				
	26						
	27						No odor No stain
	28					GEOM	R=4.0/4.0
					C107-SB05-028		
	29		HS = ND				
	30	B.O.B. @30.0' bgs				GEOM	R=2.0/2.0

PROJECT CANNON AFB - RFI CANNON AFB, NEW MEXICO

HOLE NO. C107-SB05

ENG FORM 5056A-R, AUG 94 (Proponent: CECW-EG)

SAMPLE COLLECTION FIELD SHEETS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-5501-000 BORING NO. 5501

DATE/TIME COLLECTED: 10-18-08 / 0919 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT / SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 0 - 0.5' DESCRIPTION: Sandy Silt (ML) - Soft, moist, medium - reddish - brown with 2" gravel seam

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-SS01-006 BORING NO. SS01

DATE/TIME COLLECTED: 10-18-08 / 0937 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger / 0.5-1.0'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Lead (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 0.5 -1.0' DESCRIPTION: Sandy Silt (ML) - Soft, moist, medium-reddish-brown

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-SS02-000 BORING NO. SS02

DATE/TIME COLLECTED: 10-18-08 / 1010 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand Auger / 0-0.5

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)
1 4 oz. glass jar	4^0 C	Lead (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0 - 0.5' DESCRIPTION: Sandy Silt (ML) - Medium Stiff, medium - reddish-brown, with gravel

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-SS03-000 BORING NO. SS03

DATE/TIME COLLECTED: 10-18-08 / 1114 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT / SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: (YES) NO C34-SS03-100

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO/Lead (8015B/6010B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Sandy Silt (ML) - Medium Stiff, moist, brown

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-SS04-000 BORING NO. SS04

DATE/TIME COLLECTED: 10-18-08 / 1216 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO/Lead (8015B/6010B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Sandy Silt (ML) - Medium, stiff, moist, dark brown with organics.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** PROJECT NO. **16169930**

SAMPLE NO. C34- 5505- 000 BORING NO. 5505

DATE/TIME COLLECTED: 10-18-08 / 1243 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel Hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Sandy Silt (ML) - Medium Stiff, moist, reddish-brown with some gravel.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-SS05-006 BORING NO. SS05

DATE/TIME COLLECTED: 10-18-08 / 1247 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel hand auger / 0.5-1.0'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Lead (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0.5-1.0' DESCRIPTION: Sandy silt (ML) - Medium stiff, moist, reddish-brown, with some gravel.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 34 - AGE Drainage Ditch** **PROJECT NO.** **16169930**

SAMPLE NO. C34-SS06-000 BORING NO. SS06

DATE/TIME COLLECTED: 10-18-08 / 1314 PERSONNEL: T.S, S.W.

SAMPLE METHOD / DEPTH: Stainless Steel hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT / SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO) C34-SS06-200

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO/Lead (8015B/6010B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Sandy Silt (ML) - Soft, moist, reddish-brown, with organics.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 78 - Fire Department Training Area No. 1** **PROJECT NO.** **16169930**

SAMPLE NO. C78-SS01-000 BORING NO. SS01

DATE/TIME COLLECTED: 10-20-08 / 0837 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO. C78-SS01-200

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO/Lead (8015B/6010B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)
1 4 oz. glass jar	4^0 C	Lead (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silty sand (SP) - loose, dry, light to medium brown, fine-grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 78 - Fire Department Training Area No. 1** PROJECT NO. **16169930**

SAMPLE NO. C78 - SS02 - 000 BORING NO. SS02

DATE/TIME COLLECTED: 10-20-08 / 0912 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO/Lead (8015B/6010B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)
1 4 oz. glass jar	4^0 C	Lead (6010B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silty sand (SP) - very stiff, moist, light to medium brown, fine-grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 78 - Fire Department Training Area No. 1** PROJECT NO. **16169930**

SAMPLE NO. C78-SS03-000 BORING NO. SS03

DATE/TIME COLLECTED: 10-20-08 / 1028 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel hand auger / 0-0.5"

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO/Lead (8015B/6010B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)
1 4 oz. glass jar	4^0 C	Lead (6010B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Sandy Silt (ML) - Soft, moist, reddish-brown homogeneous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 78 - Fire Department Training Area No. 1** PROJECT NO. **16169930**

SAMPLE NO. C78 - SS03 - 006 BORING NO. SS03

DATE/TIME COLLECTED: 10-20-08 / 1035 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless Steel hand auger / 0.5-1.0

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: (YES) NO C78-SS03-106

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0.5-1.0' DESCRIPTION: Sandy Silt (ML) - Soft, moist, reddish-brown, homogeneous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** **PROJECT NO. 16169930**

SAMPLE NO. C85-SS01-000 BORING NO. SS01

DATE/TIME COLLECTED: 10-18-08 / 1523 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Stainless steel hand auger / 0-0.5'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-0.5' DESCRIPTION: Silty Clay (OH) - Soft, wet, dark brown, homogeneous, with organics.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** **PROJECT NO.** **16169930**

SAMPLE NO. C85 – SB01-000 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 0837 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - with organics.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** PROJECT NO. **16169930**

SAMPLE NO. C85-SB01-008 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 0846 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8'-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: (YES) NO C85-SB01-108

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 8'-12' DESCRIPTION: Sandy Silt (ML) - Soft, dry, reddish-gray to gray with calcareous concretions.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** **PROJECT NO.** **16169930**

SAMPLE NO. C85-SB01-012 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 0851 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: ~~Sandy Silt~~ TS Silty Sand - Loose, dry, light gray to reddish-gray, fine-grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** **PROJECT NO. 16169930**

SAMPLE NO. C85-SB02-000 BORING NO. SB02

DATE/TIME COLLECTED: 10-22-08 / 0905 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: ~~YES~~ TB (NO) C85-SB02-200

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Sandy Silt (ML) - Dry, light reddish-brown to gray with calcareous nodules

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** PROJECT NO. **16169930**

SAMPLE NO. C85 - SB02 - 00 B BORING NO. SB02

DATE/TIME COLLECTED: 10-22-08 / 0912 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Silty sand (SP) - Loose, dry, light reddish-brown to gray mottled, fine grained, with caliche nodules

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 85 - Stormwater Collection Point** **PROJECT NO.** **16169930**

SAMPLE NO. C85-SB02-012 BORING NO. SB02

DATE/TIME COLLECTED: 10-22-08 / 0916 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sample / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Silty sand (SP) - Loose, dry, light reddish-brown to gray, fine-grained, with decreasing silt.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO.** **16169930**

SAMPLE NO. C91-SB01-000 BORING NO. SB01

DATE/TIME COLLECTED: 10-23-08 / 1224 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sample / 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - Dark brown with organics

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO.** **16169930**

SAMPLE NO. C91-SB01-008 BORING NO. SB01

DATE/TIME COLLECTED: 10-23-08 / 1234 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Silt (ML) - medium stiff, moist, reddish-brown to gray mottled, homogeneous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO. 16169930**

SAMPLE NO. C91-SB01-012 BORING NO. SB01

DATE/TIME COLLECTED: 10-23-08 / 1239 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Sandy Silt (ML) - medium stiff, light gray to buff

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO. 16169930**

SAMPLE NO. C91-SB02-000 BORING NO. SB02

DATE/TIME COLLECTED: 10-23-08 / 1249 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 0-4'

SAMPLE MEDIA: SOIL SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - Reddish brown

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO.** **16169930**

SAMPLE NO. C91- SB02 - 00B BORING NO. SB02

DATE/TIME COLLECTED: 10-23-08 / 1259 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Silt (ML) - Medium Stiff, moist, reddish-brown to buff

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO. 16169930**

SAMPLE NO. C91 - SB02 - 012 BORING NO. SB02

DATE/TIME COLLECTED: 10-23-08 / 1304 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Sandy Silt (ML) - Medium Stiff, moist, light gray to buff

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO. 16169930**

SAMPLE NO. C91-SB03-000 BORING NO. SB03

DATE/TIME COLLECTED: 10-23-08 / 1339 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - Reddish brown

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO. 16169930**

SAMPLE NO. C91 - SB03 - 008 BORING NO. SB03

DATE/TIME COLLECTED: 10-23-08 / 1348 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Sandy Silt (ML) - medium stiff, wet, light gray to buff

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 91 - Recovered Fuel Tank No. 5114** **PROJECT NO.** **16169930**

SAMPLE NO. C91-SB03-012 BORING NO. SB03

DATE/TIME COLLECTED: 10-23-08 / 1353 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 8 oz. wide mouth glass jars	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Silt (ML) - moist, light gray to buff and reddish - brown

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB01-000 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 1022 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO)

SAMPLE QC DUPLICATE: (YES) NO

MS/MSD REQUESTED: YES (NO)

SPLIT SAMPLE NO.

DUPLICATE SAMPLE NO. C95-SB01-200

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - Hard, dark brown, with organics

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB01-00B BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 1033 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Silt (ML) - Hard, dry, light reddish-gray, with caliche

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB01-012 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 1037 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Silty sand (SP) - Light reddish-gray, fine-grained, with interstitial caliche

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO. 16169930**

SAMPLE NO. C95-SB02-000 BORING NO. SB02

DATE/TIME COLLECTED: 10-21-08 / 1201 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Hollow stem auger / 0-2'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-2' DESCRIPTION: Sandy Silt (ML) - Stiff, dry, reddish-brown, fine-grained, poorly graded, with organics

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95- SB02-006 BORING NO. SB02

DATE/TIME COLLECTED: 10-21-08 / 1246 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Hollow stem auger / 6-8'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4° C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	
Headspace	

SAMPLE DESCRIPTION

DEPTH: 6-8' DESCRIPTION: Silt (ML) - Hard, dry, light gray to reddish-brown to tan mottled, becoming Calcareous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB02-015 BORING NO. SB02

DATE/TIME COLLECTED: 10-21-08 / 1346 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Hollow stem auger / 15-16'

SAMPLE MEDIA: (SOIL) SEDIMENT / SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 15-16' DESCRIPTION: Silt (ML) - very stiff, dry, light gray to reddish-brown mottled.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB03-000 BORING NO. SB03

DATE/TIME COLLECTED: 10-22-08 / 0958 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4° C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Sandy silt (ML) - Stiff, moist, reddish-brown, with organics

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB03-008 BORING NO. SB03

DATE/TIME COLLECTED: 10-22-08 / 1012 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^{0} C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Sandy silt (ML) - Hard, moist, light reddish-gray, homogeneous, with decreasing caliche

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB03-012 BORING NO. SB03

DATE/TIME COLLECTED: 10-22-08 / 1017 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Silty sand (SP) - medium dense, moist, light reddish-gray, fine-grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95- SB04-000 BORING NO. SB04

DATE/TIME COLLECTED: 10-22-08 / 1041 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Sandy silt (ML) - Hard, moist, dark brown to reddish-brown, with interstitial calcite (caliche)

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95- SB04-008 BORING NO. SB04

DATE/TIME COLLECTED: 10-22-08 /1048 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler /8-12'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 8-12' DESCRIPTION: Sandy Silt (ML) - Soft, moist, reddish-brown to light gray, fine-grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 95 - Northeast Stormwater Drainage Area** **PROJECT NO.** **16169930**

SAMPLE NO. C95-SB04-012 BORING NO. SB04

DATE/TIME COLLECTED: 10-22-08 / 1052 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 4 oz. glass jar	4^0 C	Arsenic (6010B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Sandy Silt (ML) - Hard, dry, light gray, with caliche

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** PROJECT NO. **16169930**

SAMPLE NO. C107-SB01-000 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 1250 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - Hard, dark brown to brown, homogeneous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** PROJECT NO. **16169930**

SAMPLE NO. C107-SB01-012 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 1310 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 12-16'

DESCRIPTION: Sandy Silt (ML) - stiff, dry, light gray, calcareous, becomes reddish with poorly graded, fine-grained sand

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** PROJECT NO. **16169930**

SAMPLE NO. C107 -SB01- 028 BORING NO. SB01

DATE/TIME COLLECTED: 10-22-08 / 1339 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 28-30'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 28-30' DESCRIPTION: Silty sand (SP) - medium dense, dry, reddish-brown, fine grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** PROJECT NO. **16169930**

SAMPLE NO. C107-SB02-000 BORING NO. SB02

DATE/TIME COLLECTED: 10-23-08 / 0710 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler 0-4'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - Stiff, dry, reddish-brown, homogeneous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** **PROJECT NO.** **16169930**

SAMPLE NO. C107-SB02-012 BORING NO. SB02

DATE/TIME COLLECTED: 10-23-08 / 0721 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: (YES) NO C107-SB02-112

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Sandy Silt (ML) - Stiff, dry, light reddish-brown to buff mottled, fine-grained, with caliche concretions.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** **PROJECT NO.** **16169930**

SAMPLE NO. C107-SB02-024 BORING NO. SB02

DATE/TIME COLLECTED: 10-23-08 /0737 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 24-28'

SAMPLE MEDIA: (SOIL) SEDIMENT / SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	↓
Boring	↓
Headspace	↓

SAMPLE DESCRIPTION

DEPTH: 24-28' DESCRIPTION: Sand (SP) - medium dense, dry, light gray, fine-grained, with decreasing silt

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** **PROJECT NO. 16169930**

SAMPLE NO. C107-SB03-004 BORING NO. SB03

DATE/TIME COLLECTED: 10-23-08 / 0755 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler 4-8'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: (YES) NO DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO) C107-SB03-204

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	0.0
Boring	0.0
Headspace	473

SAMPLE DESCRIPTION

DEPTH: 4-8' DESCRIPTION: Sandy Silt (ML) - Soft, moist, light gray to reddish-brown, with low plastic clay.

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** PROJECT NO. **16169930**

SAMPLE NO. C107-SB03-012 BORING NO. SB03

DATE/TIME COLLECTED: 10-23-08 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT / SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	0.0
Boring	0.0
Headspace	612

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Sandy silt (ML) - Soft, moist, light to gray to reddish-brown, with low plastic clay

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** PROJECT NO. **16169930**

SAMPLE NO. C107- SB03-024 BORING NO. SB03

DATE/TIME COLLECTED: 10-23-08 /0832 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macro core sampler / 24-27'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background	0.0
Breathing zone	0.0
Boring	0.0
Headspace	182

SAMPLE DESCRIPTION

DEPTH: 24-27 DESCRIPTION: Sand (SP) medium dense, dry, light gray, fine-grained

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** **PROJECT NO.** **16169930**

SAMPLE NO. C107-SB05-000 BORING NO. SB05

DATE/TIME COLLECTED: 10-23-08 / 0950 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: ~~Geoprobe~~ macrocore sampler / 0-4'

SAMPLE MEDIA: SOIL SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES NO SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES NO DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES NO

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone 0.0

Boring 0.0

Headspace 0.0 ppm

SAMPLE DESCRIPTION

DEPTH: 0-4' DESCRIPTION: Silt (ML) - medium stiff, reddish-brown, with trace clay

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** **PROJECT NO.** **16169930**

SAMPLE NO. C107 - SB05 - 012 BORING NO. SB05

DATE/TIME COLLECTED: 10-23-08 / 1006 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler 12-16'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 12-16' DESCRIPTION: Sandy Silt (ML) - Medium stiff, light reddish-gray, to light gray, homogeneous

GENERAL COMMENTS

URS

SOIL SAMPLE COLLECTION FIELD SHEET

GENERAL INFORMATION

SITE NAME: **SWMU 107 - Fire Department Training Area No. 3** **PROJECT NO.** **16169930**

SAMPLE NO. C107-SB05-028 BORING NO. SB05

DATE/TIME COLLECTED: 10-23-08 / 1025 PERSONNEL: T.S., S.W.

SAMPLE METHOD / DEPTH: Geoprobe macrocore sampler / 28 - 30'

SAMPLE MEDIA: (SOIL) SEDIMENT SLUDGE

SAMPLE QA SPLIT: YES (NO) SPLIT SAMPLE NO.

SAMPLE QC DUPLICATE: YES (NO) DUPLICATE SAMPLE NO.

MS/MSD REQUESTED: YES (NO)

SAMPLE CONTAINERS, PRESERVATIVES, ANALYSIS

Sample Container	Preservative	Analysis Requested
1 preweighed VOA vials with methanol	4^0 C	BTEX (8260B)
2 preweighed VOA vials with water	4^0 C	BTEX (8260B)
1 8 oz. wide mouth glass jar	4^0 C	TPH-DRO (8015B)
2 4 oz. glass jars	4^0 C	TPH-GRO (8015B)

OVA MEASUREMENTS

Background 0.0

Breathing zone

Boring

Headspace

SAMPLE DESCRIPTION

DEPTH: 28-30' DESCRIPTION: Silty sand (SP) - Dense, dry, light gray to buff, fine-grained

GENERAL COMMENTS

URS

TABLE B-1
FIELD DUPLICATE ANALYTICAL RESULTS COMPARISON FOR SOIL COLLECTED AT SWMUs 34, 78, 85, 91, 95 AND 107
CANNON AFB, NEW NEXICO

FIELD ID	C34-SS06-000				C34-SS06-200					C78-SS01-000				C78-SS01-200					C85-SB02-000			
DATE COLLECTED	October 18, 2008				October 18, 2008					October 20, 2008				October 20, 2008					October 22, 2008			
	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)																						
Benzene																						
Ethylbenzene																						
m,p-Xylenes																						
o-Xylene																						
Toluene																						
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																						
Diesel Range Organics	1.40E+01	1.00E+00	1.00E+01		1.60E+01	1.00E+00	1.00E+01		< 2X	4.10E+02	5.00E+00	5.00E+01		6.00E+02	1.00E+01	1.00E+02		3.76E+01				
Gasoline Range Organics	<	3.50E-01	1.20E+00	U	<	3.50E-01	1.20E+00	U	< 2X	<	3.50E-01	1.20E+00	U	<	3.60E-01	1.20E+00	U	< 2X				
METALS (mg/kg)																						
Lead	2.31E+01	9.00E-02	5.00E+00		1.93E+01	9.00E-02	5.00E+00		1.79E+01	8.94E+02	9.00E-01	5.00E+01		9.14E+02	9.00E-01	5.00E+01		2.21E+00				
Arsenic																			2.80E+00	9.00E-02	6.00E-01	

Notes:
< 2X = Difference between sample results was less than two times the reporting limit
> 2X = Difference between sample results was greater than two times the reporting limit
J = Estimated
MDL = Method Detection Limit
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
RPD = Relative Percent Difference
U = Nondetect
UJ = Estimated nondetect

TABLE B-1
FIELD DUPLICATE ANALYTICAL RESULTS COMPARISON FOR SOIL COLLECTED AT SWMUs 34, 78, 85, 91, 95 AND 107
CANNON AFB, NEW NEXICO

FIELD ID	C85-SB02-200					C95-SB01-000				C95-SB01-200					C107-SB03-004				C107-SB03-204				
DATE COLLECTED	October 22, 2008					October 22, 2008				October 22, 2008					October 23, 2008				October 23, 2008				
	Result	MDL	RL	Qual	RPD	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD	Result	MDL	RL	Qual	Result	MDL	RL	Qual	RPD
VOLATILE ORGANIC COMPOUNDS (mg/kg)																							
Benzene															<	2.30E-02	2.30E-01	U	2.00E-03	7.00E-04	2.00E-03	UJ	< 2X
Ethylbenzene															2.00E+00	2.30E-02	5.80E-01	J	2.00E-01	7.00E-04	6.00E-03	J	**1.64E+02**
m,p-Xylenes															1.20E+01	4.60E-02	5.80E-01	J	1.10E+00	5.00E-04	6.00E-03	J	**1.66E+02**
o-Xylene															6.50E+00	2.30E-02	5.80E-01	J	7.00E-01	7.00E-04	6.00E-03	J	**1.61E+02**
Toluene															2.00E-01	2.30E-02	5.80E-01	J	3.00E-02	7.00E-04	6.00E-03	J	< 2X
TOTAL PETROLEUM HYDROCARBONS (mg/kg)																							
Diesel Range Organics															7.80E+03	1.00E+02	1.00E+03		6.30E+03	1.00E+02	1.00E+03		2.13E+01
Gasoline Range Organics															6.50E+02	1.40E+01	4.60E+01	J	6.50E+02	3.40E+00	1.10E+01	J	0.00E+00
METALS (mg/kg)																							
Lead																							
Arsenic	3.10E+00	9.00E-02	6.00E-01		< 2X	4.60E+00	9.00E-02	6.00E-01		3.00E+00	9.00E-02	6.00E-01		4.21E+01									

Notes:
< 2X = Difference between sample results was less than two times the reporting limit
> 2X = Difference between sample results was greater than two times the reporting limit
J = Estimated
MDL = Method Detection Limit
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
RPD = Relative Percent Difference
U = Nondetect
UJ = Estimated nondetect

1.0 FULL VALIDATION OF GASOLINE AND DIESEL RANGE ORGANIC DATA (GRO-DRO) – SDG 57354

This section describes the full data validation for the diesel range organic (DRO) and gasoline range organic (GRO) data for four soil samples. All GRO samples were prepared following USEPA SW-846 Method 5035 and all DRO samples were prepared following USEPA SW-846 Method 3550B and all samples were analyzed following USEPA SW-846 Method 8015B. Samples were analyzed by Agriculture and Priority Pollutant Laboratories (APPL), of Fresno, California and submitted as part of sample delivery groups (SDG) 57354. Samples included as part of this validation are listed below:

Sample Identification
C107-SB02-012
C107-SB03-004
C107-SB03-012
C107-SB03-024

QA/QC criteria are identified in the RCRA Facility Investigation for SWMUs 34, 78, 85, 91, 95, and 107 QAPP Addendum (URS 2008) and USEPA SW-846 Method 8015B. Evaluation of the analytical data followed procedures outlined in the QAPP where applicable to USEPA SW-846 Method 8015B. Criteria evaluated included the following method performance criteria:

- Data package completeness
- Laboratory case narrative /cooler receipt form
- Holding times and sample preservation
- Initial calibration
- Calibration verification
- Blank samples
- Surrogate spike recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) samples
- Laboratory control sample/laboratory control sample duplicate (LCS/LCSD)
- Target compound identification and quantitation
- Overall data assessment

1.1 Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with

requested QC documentation for the respective methods. The data package was complete.

1.2 Laboratory Case Narrative / Cooler Receipt Form

The case narrative indicated TPH-GRO surrogate recoveries were outside evaluation criteria. This issue is addressed further in the appropriate section below. The cooler receipt did not indicate any problems.

1.3 Holding Times and Sample Preservation

Review of the sample collection and analysis dates involved comparing the chain-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. Both GRO and DRO samples were preserved properly, including temperature (4°C $\pm$ 2°C). GRO samples were extracted and analyzed within 14 days of sample collection. DRO samples were extracted within 14 days of sample collection and analyzed within 40 days of sample collection for DRO.

1.4 Initial Calibration

Initial calibration (ICAL) criteria were established to assess whether the analytical instrumentation was capable of producing acceptable qualitative and quantitative data for DRO analysis. Samples included in this SDG for DRO were analyzed using instrument "Apollo" and GRO samples were analyzed using instrument "Harpo". The initial calibrations were performed on 11-11-2008 and 7-23-2008 for instruments "Apollo" and "Harpo" respectively. An ICAL was analyzed prior to the beginning of the run sequence and at least five concentration standards were used as required by USEPA SW-846 Method 8015B. Calibration factors (CFs) were determined for each of the six DRO and seven GRO concentration standards. A second source verification was analyzed following the initial calibration. All percent deviation values were within 15%. No qualification of data was required.

The relative standard deviation (%RSD) for the CFs was below the method criteria of 20% for GRO. The initial calibration for DRO was determined using least square linear regression and the correlation coefficient was greater than 0.990 as required by USEPA SW-846 Method 8015B. Recalculations of the CFs, the average CF and the %RSD values were completed and no errors in calculation were noted. No qualifications to the data were required.

1.5 Calibration Verification

The laboratory performed calibration verifications (CVs) every 12 hours of analysis or every 20 samples analyzed, as required by Method 8015B. For GRO the percent difference (%D) and for DRO the percent drift between each CV and the ICAL was within the evaluation criteria (15%) for all of the CVs in these SDGs. Recalculations of

the %Ds were completed, and no errors in calculation were noted. No qualifications to the data were required.

1.6 Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8015B. All target compounds were reported as non-detect in blank samples.

1.7 Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per sample basis. All surrogate recoveries were within the method acceptance criteria for the validated samples with the exception of TPH-GRO surrogate *o*-Terphenyl. Surrogate recoveries outside evaluation criteria are included in the table below.

Field ID	Parameter	Surrogate	Recovery	Criteria
C107-SB03-004	TPH-GRO	4-Bromofluorobenzene	**176**	60-140
C107-SB03-012	TPH-GRO	4-Bromofluorobenzene	**390**	60-140
C107-SB03-024	TPH-GRO	4-Bromofluorobenzene	**150**	60-140

Analytical data that required qualification based on surrogate data are included in the table below. Analytical data which were reported as nondetect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

Field ID	Parameter	Analyte	Qualification
C107-SB03-004	TPH	GRO	**J**
C107-SB03-012	TPH	GRO	**J**
C107-SB03-024	TPH	GRO	**J**

A minimum of 20 percent of the surrogate recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted No qualification of data was required.

1.8 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD spike samples are analyzed to assess the accuracy and precision of an analytical sample. The validated samples were not spiked as part of this SDG. No qualification of data was required.

1.9 Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD)

LCS/LCSDs were analyzed with each analytical batch as required by USEPA SW-846 Method 8015B. Review of the LCS/LCSD summary forms indicated the LCS/LCSD recoveries were within evaluation criteria for DRO and GRO analysis. LCS/LCSD recoveries were recalculated and no transcription errors were noted. No qualification of data was required.

1.10 Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified. For the validation of compound quantitation, approximately 10% of the detected compound results were recalculated from the raw data, and no calculation errors were noted. No qualification of the data was required.

1.11 Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses are accepted for their intended use. Acceptable levels of accuracy and precision, based on LCS/LCSD, and surrogate data were achieved for these SDGs. In addition, completeness defined to be the percentage of analytical results judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

1.0 FULL VALIDATION OF ARSENIC DATA – SDG 57334

This section describes the full data validation for four soil samples which were prepared by USEPA SW-846 Method 3050B and analyzed by USEPA SW-846 Method 6010B. Samples were analyzed for arsenic by Agriculture and Priority Pollutant Laboratories (APPL), Inc., of Fresno, California and submitted as part of sample delivery group (SDG) 57334. Samples included as part of this validation are listed below:

Sample Identification #
C85-SB01-008
C85-SB01-108
C85-SB01-012
C85-SB02-000

QA/QC criteria are identified in the RCRA Facility Investigation for SWMUs 34, 78, 85, 91, 95, and 107 QAPP Addendum (URS 2008) and USEPA SW-846 Method 6010B. Evaluation of the analytical data followed procedures outlined in the QAPP where applicable to USEPA SW-846 Method 6010B.

Criteria evaluated included the following method performance criteria:

- Data package completeness
- Laboratory case narrative \ cooler receipt form
- Sample preservation and holding times
- Blank contamination
- Initial calibration
- Calibration verification
- Laboratory control spike (LCS)
- Matrix spike (MS)
- Laboratory duplicate sample
- ICP serial dilution
- ICP interference check samples (ICS)
- Sample result verification
- Overall assessment of data

1.1 Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods. The data package was complete for this SDG.

1.2 Laboratory Case Narrative \ Cooler Receipt Form

The laboratory case narrative and cooler receipt form did not indicate any problems.

1.3 Sample Preservation and Holding Times

Review of the sample collection and analysis dates involved comparing the chain-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were received by the laboratory at 4°C $\pm$ 2 °C, and analyzed within 6 months for arsenic. No qualification of data was required based on holding time criteria or sample preservation.

1.4 Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Blank samples were all reported nondetect for arsenic. No qualification of data was required.

1.5 Initial Calibration

Initial calibration (ICAL) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An ICAL was analyzed at the beginning of the run sequence. The ICAL curve was established using a blank and three standards for arsenic and had a correlation coefficient > 0.995. The initial calibration verification (ICV) recovery was within evaluation criteria of 90-110 percent for arsenic. The ICAL curve and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

1.6 Calibration Verification

Calibration Verification (CV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data was established by the ICAL. The laboratory analyzed CV samples at a frequency of 10 percent as specified by the methodologies. CV samples associated with the validated samples had recoveries within the evaluation criteria of 90-110 percent for arsenic. One hundred percent of the CV sample recoveries were recalculated and compared to the raw data and no calculation or transcription errors were noted.

1.7 Laboratory Control Spike (LCS)

LCS samples were analyzed to assess the accuracy of the analytical method and to demonstrate laboratory performance. All LCS recoveries were within evaluation criteria (80-120 percent). One hundred percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

1.8 Matrix Spike (MS)

MS samples were analyzed to assess the accuracy and effects of matrix interference during the analysis of a particular sample. The laboratory spiked and analyzed sample C85-SB01-108 for arsenic. The MS recovery for arsenic was within evaluation criteria. One hundred percent of the data was recalculated and compared to the raw data. No calculation or transcription errors were noted. No qualification of data was required.

1.9 Laboratory Duplicate Sample

Laboratory duplicate samples were analyzed to assess the precision of a particular sample. The laboratory analyzed sample C85-SB01-108 for arsenic in duplicate. Laboratory duplicate sample RPDs were within evaluation criteria (20 percent). One hundred percent of the data was recalculated and compared to the raw data. No calculation or transcription errors were noted. No qualification of data was required.

1.10 ICP Serial Dilutions

Serial dilutions were analyzed to assess the potential significant physical or chemical interferences due to sample matrix. The laboratory analyzed the serial dilution on sample C85-SB01-108. The serial dilution %D for arsenic was within evaluation criteria of ± 10 percent. No qualification of data was required.

One hundred percent of the serial dilution %Ds for detected compounds were recalculated and compared to the raw data; no transcription and calculation errors were noted. No qualification of data was required.

1.11 ICP Interference Check Sample

Interference Check Samples (ICSs) were analyzed to verify the contract laboratory's interelement and background correction factors for analysis of arsenic by ICP. The laboratory analyzed the ICS at the beginning of the analytical run as specified in Method 6010B. The ICS recoveries were within evaluation criteria (80-120 percent), therefore, no qualification of the ICP data was required. One hundred of the ICS recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted. No qualification of data was required.

1.12 Sample Result Verification

One hundred percent of the validated sample results was recalculated to validate that analyte quantitation was derived accurately, and no calculation errors were noted. Data summary forms were reviewed and compared to the raw data package. No transcription errors were noted and the correct reporting limits were used.

1.13 Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, was 100 percent for this SDG.

1.0 FULL VALIDATION OF LEAD DATA – SDG 57289

This section describes the full data validation for three soil samples which were prepared by USEPA SW-846 Method 3050B and analyzed by USEPA SW-846 Method 6010B. Samples were analyzed for lead by Agriculture and Priority Pollutant Laboratories (APPL), Inc., of Fresno, California and submitted as part of sample delivery group (SDG) 57289. Samples included as part of this validation are listed below:

Sample Identification #
C34-SS03-000
C34-SS03-100
C34-SS04-000

QA/QC criteria are identified in the RCRA Facility Investigation for SWMUs 34, 78, 85, 91, 95, and 107 QAPP Addendum (URS 2008) and USEPA SW-846 Method 6010B. Evaluation of the analytical data followed procedures outlined in the QAPP where applicable to USEPA SW-846 Method 6010B.

Criteria evaluated included the following method performance criteria:

- Data package completeness
- Laboratory case narrative \ cooler receipt form
- Sample preservation and holding times
- Blank contamination
- Initial calibration
- Calibration verification
- Laboratory control spike (LCS)
- Matrix spike (MS)
- Laboratory duplicate sample
- ICP serial dilution
- ICP interference check samples (ICS)
- Sample result verification
- Overall assessment of data

1.1 Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods. The data package was complete for this SDG.

1.2 Laboratory Case Narrative \ Cooler Receipt Form

The laboratory case narrative indicated that the MS recovery for lead was outside evaluation criteria in sample C34-SS03-100. This issue is addressed further in the appropriate section below. The cooler receipt form did not indicate any problems.

1.3 Sample Preservation and Holding Times

Review of the sample collection and analysis dates involved comparing the chain-of-custody, the sample preparation logs, the analysis run logs, and raw data forms for holding time compliance. The samples were received by the laboratory at 4°C $\pm$ 2 °C, and analyzed within 6 months for lead. No qualification of data was required based on holding time criteria or sample preservation.

1.4 Blank Contamination

The purpose of blank samples was to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Blank samples were all reported nondetect for lead. No qualification of data was required.

1.5 Initial Calibration

Initial calibration (ICAL) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for metals analyses. An ICAL was analyzed at the beginning of the run sequence. The ICAL curve was established using a blank and three standards for lead and had a correlation coefficient > 0.995. The initial calibration verification (ICV) recovery was within evaluation criteria of 90-110 percent for lead. The ICAL curve and ICV recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted. No qualification of the data was required based on ICV data.

1.6 Calibration Verification

Calibration Verification (CV) criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data was established by the ICAL. The laboratory analyzed CV samples at a frequency of 10 percent as specified by the methodologies. CV samples associated with the validated samples had recoveries within the evaluation criteria of 90-110 percent for lead. One hundred percent of the CV sample recoveries were recalculated and compared to the raw data and no calculation or transcription errors were noted.

1.7 Laboratory Control Spike (LCS)

LCS samples were analyzed to assess the accuracy of the analytical method and to demonstrate laboratory performance. All LCS recoveries were within evaluation criteria (80-120 percent). One hundred percent of LCS recoveries were recalculated and compared to the raw data; no calculation or transcription errors were noted.

1.8 Matrix Spike (MS)

MS samples were analyzed to assess the accuracy and effects of matrix interference during the analysis of a particular sample. The laboratory spiked and analyzed sample C34-SS03-100 for lead. The MS recovery for lead (64.5%) was outside evaluation criteria 80-120 percent in sample C34-SS03-100.

Analytical data that required qualification based on MS/MSD data are included in the table below.

Field ID	Parameter	Analyte	Qualification
C34-SS03-000	Metals	Lead	**J**

One hundred percent of the data was recalculated and compared to the raw data. No calculation or transcription errors were noted. No qualification of data was required.

1.9 Laboratory Duplicate Sample

Laboratory duplicate samples were analyzed to assess the precision of a particular sample. The laboratory analyzed sample C34-SS03-100 for lead in duplicate. Laboratory duplicate sample RPDs were within evaluation criteria (20 percent). One hundred percent of the data was recalculated and compared to the raw data. No calculation or transcription errors were noted. No qualification of data was required.

1.10 ICP Serial Dilutions

Serial dilutions were analyzed to assess the potential significant physical or chemical interferences due to sample matrix. The laboratory analyzed the serial dilution on sample C34-SS03-100. The serial dilution %D for lead (25%) was outside evaluation criteria of ± 10 percent. Sample C34-SS03-000 was previously qualified due to low MS recovery. No qualification of data was required.

One hundred percent of the serial dilution %Ds for detected compounds were recalculated and compared to the raw data; no transcription and calculation errors were noted. No qualification of data was required.

1.11 ICP Interference Check Sample

Interference Check Samples (ICSs) were analyzed to verify the contract laboratory's interelement and background correction factors for analysis of lead by ICP. The laboratory analyzed the ICS at the beginning of the analytical run as specified in Method 6010B. The ICS recoveries were within evaluation criteria (80-120 percent), therefore, no qualification of the ICP data was required. One hundred of the ICS recoveries were recalculated and compared to the raw data; no transcription and calculation errors were noted. No qualification of data was required.

1.12 Sample Result Verification

One hundred percent of the validated sample results was recalculated to validate that analyte quantitation was derived accurately, and no calculation errors were noted. Data summary forms were reviewed and compared to the raw data package. No transcription errors were noted and the correct reporting limits were used.

1.13 Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Completeness, defined to be the percentage of analytical results that are judged to be valid, including estimated (**J**) data, was 100 percent for this SDG.

1.0 FULL VALIDATION OF VOC DATA – SDG 57354

This section describes the full validation for two soil samples, which were prepared by USEPA SW-846 Method 5035 and were analyzed for the project specific VOCs: benzene, toluene, ethylbenzene, and xylenes (BTEX) by USEPA SW-846 Method 8260B. Samples were analyzed by Agriculture and Priority Pollutant Laboratories (APPL), of Fresno, California and submitted as part of sample delivery groups (SDG) 57354. Samples included as part of this validation are listed below:

Sample Identification
C107-SB03-004
C107-SB03-012

QA/QC criteria are identified in the RCRA Facility Investigation for SWMUs 34, 78, 85, 91, 95, and 107 QAPP Addendum (URS 2008) and USEPA SW-846 Method 8260B. Evaluation of the analytical data followed procedures outlined in the QAPP where applicable to USEPA SW-846 Method 8260B.

Criteria evaluated included the following method performance criteria:

- Data package completeness
- Laboratory case narrative/cooler receipt form
- Sample preservation and holding times
- Instrument performance
- Initial calibration
- Initial calibration verification
- Calibration verification
- Method blank samples
- Surrogate spike recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) samples
- Internal standard areas and retention times
- Laboratory control sample (LCS)
- Target compound identification and quantitation
- Overall data assessment

1.1 Data Package Completeness

The data package was reviewed to make certain that it contained the data contractually required in the deliverable. This included checking the data package for the results of each analyte requested for each field sample submitted in the analytical batch, along with requested QC documentation for the respective methods. The data package was complete.

1.2 Laboratory Case Narrative/Cooler Receipt Form

The laboratory case narrative indicated that toluene was detected in the method blank. This issue is addressed further in the appropriate section below. The cooler receipt form did not indicate any problems.

1.3 Sample Preservation and Holding Times

Review of the sample collection and analysis dates involved comparing the chain-of-custody, the summary forms, the raw data forms, and the chromatograms for accuracy, consistency, and holding time compliance. The cooler receipt form indicated the cooler temperatures were $4\,^{o}C \pm 2^{o}C$ upon receipt at the laboratory. The samples were frozen by the laboratory in three 40-mL vials (two organic free water, one methanol) within 48 hours of sampling and analyzed within holding time criteria of 14 days. No qualification of data was required due to the sample preservation or holding time criteria.

1.4 Instrument Performance

GC/MS instrument performance checks were performed to ensure mass resolution, identification, and instrument sensitivity. Criteria for evaluation of instrument performance included possible transcription/calculation errors, adherence to instrument tuning frequency requirements, mass assignments, and ion abundance criteria. Instrument performance check samples were evaluated against the laboratory tuning criteria established in USEPA SW-846 Method 8260B.

Based on the raw data, the ion abundance criteria were within evaluation criteria for all masses, so no qualification of the data was required. The raw data forms were checked against the summary forms and no calculation or transcription errors were noted.

1.5 Initial Calibration

Calibration criteria were established to assess whether the instrument was capable of producing acceptable qualitative and quantitative data for volatiles analyses. Samples included in these SDGs were analyzed using instrument “Neo”. The initial calibration for instrument “Neo” was performed on 10-28-2008. At least five concentration standards were used to establish the initial calibration curve as required by Method 8260B. An average response factor (RF) was determined for each target analyte for the initial calibration. Since the project specific analyte list consisted of BTEX, the system performance check compounds (SPCCs) and calibration check compounds (CCCs) data were not target analytes; therefore, were not included by the laboratory. The RFs were

reviewed and were greater than 0.05 for all project specific analytes. Review of the initial calibration summary forms indicated %RSDs were < 15 percent for target analytes; therefore, no qualification of data was required. No qualifications of data were required. A recalculation of the RFs and %RSD for a compound associated with each internal standard was performed, and no transcription errors or errors in calculations were noted**.**

A recalculation of the RFs and %RSD for a compound associated with each internal standard was performed, and no transcription errors or errors in calculations were noted**.**

1.6 Initial Calibration Verification

Review of the sample chromatograms indicated the initial calibration verification (ICV) was performed immediately following the initial calibration. Review of CV summary forms indicated all percent differences (%Ds) met the evaluation criteria of $\leq$ 25 percent for all target analytes. Recalculation of the RFs and %Ds was completed and no errors in calculation were noted.

1.7 Calibration Verification

Review of the sample chromatograms indicated the calibration verifications (CVs) were performed at the required frequency of every 12 hours. Calibration verification data for the CCCs was not supplied by the laboratory since the target analyte list consisted of BTEX. Review of CV summary forms indicated all RFs met the evaluation criteria of greater than 0.05 for all target analytes. In addition, percent differences (%Ds) met the evaluation criteria of $\leq$ 20 percent for all target analytes. Recalculation of the RFs and %Ds was completed and no errors in calculation were noted.

1.8 Method Blank Samples

The purpose of the method blank samples is to evaluate the existence and magnitude of contamination problems emanating from laboratory activities. Method blank samples were analyzed with each analytical batch as required by USEPA SW-846 Method 8260B. Review of chromatograms indicated all peaks present were either surrogate compounds, internal standards or the concentrations detected were below the method detection limit.

Toluene (0.02 mg/kg) was detected in method blank AN081104-BLK. Toluene results were nondetect or at concentrations greater than five times (5X) the associated blank concentration; therefore, no qualification of data was required.

1.9 Surrogate Spike Recoveries

Surrogate compounds were used to evaluate the overall laboratory sample preparation efficiency on a per-sample basis. All surrogate recoveries were within evaluation criteria and no qualification of data was required. A minimum of 20 percent of the surrogate recoveries were recalculated, and the summary forms versus the raw data were verified. No calculation or transcription errors were noted.

1.10 Matrix Spike/Matrix Spike Duplicate (MS/MSD) Samples

MS/MSD spike samples are analyzed to assess the accuracy and precision of an analytical sample. The validated samples were not spiked as part of this SDG. No qualification of data was required.

1.11 Internal Standard Areas and Retention Times

Internal standard (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during each analytical run. IS areas must be within -50 percent to +100 percent, and the IS retention times must be within 30 seconds of the IS continuing calibration retention time. IS areas and retention times for the samples in this SDG were within evaluation criteria. The summary forms were verified to the raw data, and no transcription errors were noted.

1.12 Laboratory Control Sample (LCS)

LCSs were analyzed to assess the accuracy of the analytical process. All LCS recoveries were within evaluation criteria, no qualification of data was required. A minimum of 20 percent of the spiking compound recoveries for the LCS were recalculated from the raw data and verified using the LCS summary forms, and no calculation or transcription errors were noted.

1.13 Target Compound Identification and Quantitation

For validation of the compound identification, chromatograms were reviewed to verify the major peaks were identified, the spectra of the identified compounds were verified against the library spectra, and the relative retention time was no greater than 0.06 different from the associated CV retention times. A minimum of ten percent of the detected target analytes was verified. No anomalies were noted with the identification of the target compounds in the samples.

For the validation of compound quantitation, a minimum of 10% of the detected target analytes were recalculated from the raw data, and no calculation errors were noted. Additionally, the reporting limits were verified to determine if reporting limits (RLs) were adjusted for dilutions. No qualification of the data was required and review of the data indicated the correct RLs were reported.

1.14 Overall Data Assessment

Based on the criteria outlined, it is recommended that the results reported for these analyses be accepted for their intended use. Acceptable levels of accuracy and precision, based on LCS, and surrogate data were achieved for this SDG with the noted exceptions. In addition, completeness defined to be the percentage of analytical results, which are judged to be valid, including, estimated (**J**) data, was 100 percent for these SDGs.

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			C34-SS01-000				C34-SS01-006				C34-SS02-000			
DATE COLLECTED			October 18, 2008				October 18, 2008				October 18, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26												
Diesel Range Organics	6.20E+01	6 / 6	6.20E+01	1.00E+00	1.00E+01						5.40E+01	1.00E+00	1.00E+01	
Gasoline Range Organics	ND	0 / 6	<	3.50E-01	1.20E+00	U					<	3.50E-01	1.20E+00	U
METALS (mg/kg)														
Lead	6.82E+02	31 / 31					6.82E+02	4.50E-01	2.50E+01		1.02E+02	9.00E-02	5.00E+00	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			C34-SS03-000				C34-SS04-000				C34-SS05-000			
DATE COLLECTED			October 18, 2008				October 18, 2008				October 18, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26												
Diesel Range Organics	6.20E+01	6 / 6	4.30E+01	1.00E+00	1.00E+01		3.80E+01	1.00E+00	1.00E+01		1.50E+01	1.00E+00	1.00E+01	
Gasoline Range Organics	ND	0 / 6	<	3.50E-01	1.20E+00	U	<	3.40E-01	1.10E+00	U	<	3.40E-01	1.10E+00	U
METALS (mg/kg)							4.70E+01	9.00E-02	5.00E+00					
Lead	6.82E+02	31 / 31	9.24E+01	9.00E-02	5.00E+00	J					2.18E+01	9.00E-02	5.00E+00	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			C34-SS05-006				C34-SS06-000				1-1			
DATE COLLECTED			October 18, 2008				October 18, 2008				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26									2.00E+02 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6					1.40E+01	1.00E+00	1.00E+01					
Gasoline Range Organics	ND	0 / 6					<	3.50E-01	1.20E+00	U				
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	2.57E+01	9.00E-02	5.00E+00		2.31E+01	9.00E-02	5.00E+00		1.10E+02	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			1-2				2-1				2-2			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	<	5.00E+00	N/A	U	1.20E+02 *	5.00E+00	N/A		6.60E+00 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	8.60E+00	3.00E-01	N/A		5.00E+02	3.00E-01	N/A		6.60E+00	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			3-1				4-1				5-1			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	5.40E+02 *	5.00E+00	N/A		2.80E+02 *	5.00E+00	N/A		5.70E+01 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	1.20E+02	3.00E-01	N/A		2.60E+01	3.00E-01	N/A		6.70E+01	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			5-2				6-1				6-2			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	<	5.00E+00	N/A	U	1.50E+01 *	5.00E+00	N/A		<	5.00E+00	N/A	U
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	5.60E+00	3.00E-01	N/A		2.50E+01	3.00E-01	N/A		8.20E+00	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			7-1				8-1				9-1			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	<	5.00E+00	N/A	U	1.20E+02 *	5.00E+00	N/A		1.20E+02 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	6.20E+01	3.00E-01	N/A		3.20E+01	3.00E-01	N/A		3.20E+01	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			9-2				10-1				11-1			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	<	5.00E+00	N/A	U	9.10E+02 *	5.00E+00	N/A		2.80E+02 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	7.60E+00	3.00E-01	N/A		6.20E+01	3.00E-01	N/A		8.00E+01	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			12-1				13-1				13-2			
DATE COLLECTED			March 12, 1987				March 12, 1987				March 12, 1987			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	3.20E+ 02 *	5.00E+00	N/A		1.50E+02 *	5.00E+00	N/A		<	5.00E+00	N/A	U
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	9.00E+01	3.00E-01	N/A		3.50E+01	3.00E-01	N/A		1.60E+01	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			15-1				20-1				0341-0000			
DATE COLLECTED			March 13, 1987				March 13, 1987				October 24, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	1.20E+ 02 *	5.00E+00	N/A		7.50E+01 *	5.00E+00	N/A		1.18E+03 *	5.00E+00	N/A	
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	5.50E+01	3.00E-01	N/A		4.50E+01	3.00E-01	N/A		4.07E+01	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			0341-0001				0342-0001				0342-0005			
DATE COLLECTED			December 8, 1991				October 22, 1991				October 22, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	3.97E+02 *	5.00E+00	N/A		<	5.00E+00	N/A	U	<	5.00E+00	N/A	U
Diesel Range Organics	6.20E+01	6 / 6												
Gasoline Range Organics	ND	0 / 6												
METALS (mg/kg)														
Lead	6.82E+02	31 / 31	3.81E+01	3.00E-01	N/A		6.50E+00	3.00E-01	N/A		5.10E+00	3.00E-01	N/A	

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-1
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

FIELD ID			0342-0009			
DATE COLLECTED			October 22, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
Total Petroleum Hydrocarbons	1.18E+03	17 / 26	<	5.00E+00	N/A	U
Diesel Range Organics	6.20E+01	6 / 6				
Gasoline Range Organics	ND	0 / 6				
METALS (mg/kg)						
Lead	6.82E+02	31 / 31				

Notes:
RLs were unavailable for all data collected in 1987 and 1991
* Historical result, TPH levels have likely naturally attenuated based on recent analytical results
mg/kg = milligram per kilogram
ID= Identification
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
SWMU= Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			C78-SS01-000				C78-SS02-000				C78-SS03-000			
DATE COLLECTED			October 20, 2008				October 20, 2008				October 20, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12												
Diesel Range Organics	4.10E+02	3 / 3	4.10E+02	5.00E+00	5.00E+01		2.80E+02	5.00E+00	5.00E+01		3.40E+02	5.00E+00	5.00E+01	
Gasoline Range Organics	ND	0 / 3	<	3.50E-01	1.20E+00	U	<	3.40E-01	1.10E+00	U	<	3.20E-01	1.10E+00	U
METALS (mg/kg)														
Lead	8.94E+02	3 / 3	8.94E+02	9.00E-01	5.00E+01		3.90E+02	4.50E-01	2.50E+01		3.92E+02	4.50E-01	2.50E+01	

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analytical results
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			0781-0.5				0781-6				0781-12			
DATE COLLECTED			October 13, 1991				October 12, 1991				October 12, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	2.20E+03 **	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U
Diesel Range Organics	4.10E+02	3 / 3												
Gasoline Range Organics	ND	0 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3												

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analyti
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			0782-0.5				0782-6				0782-12			
DATE COLLECTED			October 13, 1991				October 13, 1991				October 13, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	1.97E+03 **	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U
Diesel Range Organics	4.10E+02	3 / 3												
Gasoline Range Organics	ND	0 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3												

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analyti
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			0783-0.5				0784-0.5				0785-0.5			
DATE COLLECTED			October 12, 1991				October 13, 1991				October 13, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	4.08E+03**	N/A	N/A		9.80E+02 **	N/A	N/A		1.25E+04**	N/A	N/A	J
Diesel Range Organics	4.10E+02	3 / 3												
Gasoline Range Organics	ND	0 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3												

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analyti
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			0786-0.5				6A-1				6A-2			
DATE COLLECTED			October 13, 1991				1985 *				1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12	<	N/A	N/A	U								
Diesel Range Organics	4.10E+02	3 / 3												
Gasoline Range Organics	ND	0 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3												

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analyti
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			6A-3				6B-1				6B-2			
DATE COLLECTED			1985 *				1985 *				1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Total Petroleum Hydrocarbons	1.25E+04	6 / 12												
Diesel Range Organics	4.10E+02	3 / 3												
Gasoline Range Organics	ND	0 / 3												
METALS (mg/kg)														
Lead	8.94E+02	3 / 3												

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analyti
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-2
SUMMARY OF RFI SOIL TPH AND LEAD DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

FIELD ID			6B-3			
DATE COLLECTED			1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
Total Petroleum Hydrocarbons	1.25E+04	6 / 12				
Diesel Range Organics	4.10E+02	3 / 3				
Gasoline Range Organics	ND	0 / 3				
METALS (mg/kg)						
Lead	8.94E+02	3 / 3				

Notes:
* Precise data of collection could not be determined
** Historical result, TPH levels have likely naturally attenuated based on recent analyti
ID = Identification
J = Estimated
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-3
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

FIELD ID			C85-SS01-000				C85-SB01-000				C85-SB01-008			
DATE COLLECTED			October 18, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	6.00E+00	10 / 10	6.00E+00	9.00E-02	6.00E-01		3.30E+00	9.00E-02	6.00E-01		2.80E+00	9.00E-02	6.00E-01	

Notes:
* Precise date of collection could not be determined
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit

TABLE C-3
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

FIELD ID			C85-SB01-012				C85-SB02-000				C85-SB02-008			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	6.00E+00	10 / 10	2.00E+00	9.00E-02	6.00E-01		2.80E+00	9.00E-02	6.00E-01		1.60E+00	9.00E-02	6.00E-01	

Notes:
* Precise date of collection could not be determined
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit

TABLE C-3
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

FIELD ID			C85-SB02-012				ST-1				ST-2			
DATE COLLECTED			October 22, 2008				1985 *				1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	6.00E+00	10 / 10	2.00E+00	9.00E-02	6.00E-01		1.60E+00	N/A	N/A		1.80E+00	N/A	N/A	

Notes:
* Precise date of collection could not be determined
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit

TABLE C-3
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

FIELD ID			ST-3			
DATE COLLECTED			1985 *			
	Maximum	Frequency	Result	MDL	RL	Qual
METALS (mg/kg)						
Arsenic	6.00E+00	10 / 10	1.50E+00	N/A	N/A	

Notes:
* Precise date of collection could not be determined
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit

TABLE C-4
SUMMARY OF RFI SOIL TPH DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

FIELD ID			C91-SB01-000				C91-SB01-008				C91-SB01-012			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	ND	0 / 9	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U
Gasoline Range Organics	ND	0 / 9	<	3.40E-01	1.10E+00	U	<	3.40E-01	1.10E+00	U	<	3.50E-01	1.20E+00	U

Notes:
ID = Identification
mg/kg = milligram per kilogram
MDL = Method Detection Limit
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect
SWMU = Solid Waste Management Unit

TABLE C-4
SUMMARY OF RFI SOIL TPH DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

FIELD ID			C91-SB02-000				C91-SB02-008				C91-SB02-012			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	ND	0 / 9	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U
Gasoline Range Organics	ND	0 / 9	<	3.50E-01	1.20E+00	U	<	3.40E-01	1.10E+00	U	<	3.50E-01	1.20E+00	U

Notes:
ID = Identification
mg/kg = milligram per kilogram
MDL = Method Detection Limit
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect
SWMU = Solid Waste Management Unit

TABLE C-4
SUMMARY OF RFI SOIL TPH DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

FIELD ID			C91-SB03-000				C91-SB03-008				C91-SB03-012			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	ND	0 / 9	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U
Gasoline Range Organics	ND	0 / 9	<	3.40E-01	1.10E+00	U	<	3.50E-01	1.20E+00	U	<	3.40E-01	1.10E+00	U

Notes:
ID = Identification
mg/kg = milligram per kilogram
MDL = Method Detection Limit
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect
SWMU = Solid Waste Management Unit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			C95-SB01-000				C95-SB01-008				C95-SB01-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	4.60E+00	9.00E-02	6.00E-01		2.70E+00	9.00E-02	6.00E-01		3.00E+00	9.00E-02	6.00E-01	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			C95-SB02-000				C95-SB02-006				C95-SB02-015			
DATE COLLECTED			October 21, 2008				October 21, 2008				October 21, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.70E+00	9.00E-02	6.00E-01		3.70E+00	9.00E-02	6.00E-01		2.40E+00	9.00E-02	6.00E-01	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			C95-SB03-000				C95-SB03-008				C95-SB03-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.50E+00	9.00E-02	6.00E-01		3.80E+00	9.00E-02	6.00E-01		2.60E+00	9.00E-02	6.00E-01	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			C95-SB04-000				C95-SB04-008				C95-SB04-012			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.70E+00	9.00E-02	6.00E-01		2.80E+00	9.00E-02	6.00E-01		2.60E+00	9.00E-02	6.00E-01	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			0951-0.5 (0953)				0951-04 (0953)				0951-06 (0953)			
DATE COLLECTED			December 7, 1991				December 7, 1991				December 7, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	3.90E+00	N/A	N/A		1.50E+00	N/A	N/A		2.30E+00	N/A	N/A	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			0951-10 (0953)				0952-0.5 (0954)				0952-04 (0954)			
DATE COLLECTED			December 7, 1991				December 8, 1991				December 8, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)														
Arsenic	4.60E+00	20 / 20	1.30E+00	N/A	N/A		2.20E+00	N/A	N/A		1.90E+00	N/A	N/A	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-5
SUMMARY OF RFI SOIL ARSENIC DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

FIELD ID			0952-06 (0954)				0952-10 (0954)			
DATE COLLECTED			December 8, 1991				December 8, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual
METALS (mg/kg)										
Arsenic	4.60E+00	20 / 20	1.80E+00	N/A	N/A		1.90E+00	N/A	N/A	

Notes:
MDLs and RLs were unavailable for MDLS and RLs with N/A
mg/kg = milligram per kilogram
MDL = Method Detection Limit
N/A = Not Applicable
Qual = Qualifier
RL = Reporting Limit

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB01-000				C107-SB01-012				C107-SB01-028			
DATE COLLECTED			October 22, 2008				October 22, 2008				October 22, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	7.00E-04	2.00E-03	U	<	7.00E-04	2.00E-03	U	<	6.00E-04	2.00E-03	U
Ethylbenzene	2.00E+00 J	7 / 49	<	7.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U
m,p-Xylenes	1.20E+01 J	3 / 12	<	4.00E-04	5.00E-03	U	<	5.00E-04	6.00E-03	U	<	4.00E-04	5.00E-03	U
o-Xylene	6.50E+00 J	3 / 12	<	7.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U
Toluene	6.90E+00 J	7 / 38	<	7.00E-04	5.00E-03	U	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U
Xylene	9.40E+01	5 / 33												
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12	1.40E+01	1.00E+00	1.00E+01		<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U
Gasoline Range Organics	6.50E+02 J	3 / 12	<	3.30E-01	1.10E+00	U	<	3.40E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent analytical results
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB02-000				C107-SB02-012				C107-SB02-024			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	7.00E-04	2.00E-03	U	<	7.00E-04	2.00E-03	U	<	7.00E-04	2.00E-03	U
Ethylbenzene	2.00E+00 J	7 / 49	<	7.00E-04	6.00E-03	U	<	7.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U
m,p-Xylenes	1.20E+01 J	3 / 12	<	4.00E-04	6.00E-03	U	<	4.00E-04	5.00E-03	U	<	4.00E-04	5.00E-03	U
o-Xylene	6.50E+00 J	3 / 12	<	7.00E-04	6.00E-03	U	<	7.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U
Toluene	6.90E+00 J	7 / 38	<	7.00E-04	6.00E-03	U	<	7.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U
Xylene	9.40E+01	5 / 33												
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12	8.80E+00	1.00E+00	1.00E+01	J	<	1.00E+00	1.00E+01	U	<	1.00E+00	1.00E+01	U
Gasoline Range Organics	6.50E+02 J	3 / 12	<	3.30E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB03-004				C107-SB03-012				C107-SB03-024			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	2.30E-02	2.30E-01	U	<	2.30E-02	2.30E-01	U	<	1.10E-02	1.10E-01	U
Ethylbenzene	2.00E+00 J	7 / 49	2.00E+00	2.30E-02	5.80E-01	J	1.80E+00	2.30E-02	5.70E-01		1.00E-01	1.10E-02	2.80E-01	J
m,p-Xylenes	1.20E+01 J	3 / 12	1.20E+01	4.60E-02	5.80E-01	J	7.60E+00	4.50E-02	5.70E-01		3.00E-01	2.30E-02	2.80E-01	
o-Xylene	6.50E+00 J	3 / 12	6.50E+00	2.30E-02	5.80E-01	J	3.90E+00	2.30E-02	5.70E-01		1.00E-01	1.10E-02	2.80E-01	J
Toluene	6.90E+00 J	7 / 38	2.00E-01	2.30E-02	5.80E-01	J	5.70E-01	2.30E-02	5.70E-01	J	2.00E-02	1.10E-02	2.80E-01	J
Xylene	9.40E+01	5 / 33												
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12	7.80E+03	1.00E+02	1.00E+03		3.70E+03	5.00E+01	5.00E+02		4.50E+03	5.00E+01	5.00E+02	
Gasoline Range Organics	6.50E+02 J	3 / 12	6.50E+02	1.40E+01	4.60E+01	J	3.50E+02	1.70E+00	5.70E+00	J	1.80E+02	6.80E+00	2.30E+01	J
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			C107-SB05-000				C107-SB05-012				C107-SB05-028			
DATE COLLECTED			October 23, 2008				October 23, 2008				October 23, 2008			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	7.00E-04	2.00E-03	U	<	6.00E-04	2.00E-03	U	<	7.00E-04	2.00E-03	U
Ethylbenzene	2.00E+00 J	7 / 49	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U
m,p-Xylenes	1.20E+01 J	3 / 12	<	4.00E-04	6.00E-03	U	<	4.00E-04	5.00E-03	U	<	4.00E-04	5.00E-03	U
o-Xylene	6.50E+00 J	3 / 12	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U
Toluene	6.90E+00 J	7 / 38	<	7.00E-04	6.00E-03	U	<	6.00E-04	5.00E-03	U	<	7.00E-04	5.00E-03	U
Xylene	9.40E+01	5 / 33												
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12	1.40E+02	2.00E+00	2.00E+01		8.40E+00	1.00E+00	1.00E+01	J	1.00E+01	1.00E+00	1.00E+01	
Gasoline Range Organics	6.50E+02 J	3 / 12	<	3.40E-01	1.10E+00	U	<	3.20E-01	1.10E+00	U	<	3.30E-01	1.10E+00	U
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			8-1-2				8-2-8				8-3-60			
DATE COLLECTED			1984 *				1984 *				1984 *			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49												
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38												
Xylene	9.40E+01	5 / 33												
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1071-0				1071-5				1071-10			
DATE COLLECTED			October 11, 1991				October 8, 1991				October 8, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	2.87E+03**	N/A	N/A		7.42E+01	N/A	N/A		<	N/A	N/A	U

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1071-20				1071-30				1072-0			
DATE COLLECTED			October 8, 1991				October 9, 1991				October 23, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	<	N/A	N/A	U	<	N/A	N/A	U	9.63E+02**	N/A	N/A	

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1072-4				1072-10				1072-20			
DATE COLLECTED			October 24, 1991				October 24, 1991				October 24, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1072-30				1073-0				1073-4			
DATE COLLECTED			October 25, 1991				October 23, 1991				October 25, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	7.30E-02	N/A	N/A	J	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	<	N/A	N/A	U	6.08E+03**	N/A	N/A		<	N/A	N/A	U

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1073-10				1073-20				1073-30			
DATE COLLECTED			October 25, 1991				October 25, 1991				October 25, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1074-0				1074-4				1074-10			
DATE COLLECTED			October 23, 1991				October 25, 1991				October 25, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	1.30E+01	N/A	N/A	J	1.50E+01	N/A	N/A	J
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	6.90E+00	N/A	N/A	J	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33					9.40E+01	N/A	N/A		8.70E+01	N/A	N/A	
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	3.61E+03**	N/A	N/A		1.83E+04	N/A	N/A		9.22E+03	N/A	N/A	

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1074-20				1074-30				1074-45			
DATE COLLECTED			October 25, 1991				October 25, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23												
Ethylbenzene	2.00E+00 J	7 / 49	5.80E+00	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	2.70E+00	N/A	N/A	J	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	2.80E+01	N/A	N/A		4.90E+00	N/A	N/A	J	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	1.15E+04	N/A	N/A		4.71E+03	N/A	N/A		4.19E+01	N/A	N/A	

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1074-50				1074-60				1075-4			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23									<	N/A	N/A	U
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	4.40E-03	N/A	N/A	J	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20	<	N/A	N/A	U	<	N/A	N/A	U				

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1075-10				1075-20				1075-30			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Ethylbenzene	2.00E+00 J	7 / 49	1.50E+01	N/A	N/A	J	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	8.70E+01	N/A	N/A		<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1075-40				1075-50				1076-4			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1076-10				1076-20				1076-30			
DATE COLLECTED			October 26, 1991				October 26, 1991				October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual	Result	MDL	RL	Qual	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)														
Benzene	ND	0 / 23	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12												
o-Xylene	6.50E+00 J	3 / 12												
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U	<	N/A	N/A	U	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)														
Diesel Range Organics	7.80E+03	8 / 12												
Gasoline Range Organics	6.50E+02 J	3 / 12												
Total Petroleum Hydrocarbons	1.83E+04	10 / 20												

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE C-6
SUMMARY OF RFI SOIL TPH AND BTEX DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

FIELD ID			1076-30.3			
DATE COLLECTED			October 26, 1991			
	Maximum	Frequency	Result	MDL	RL	Qual
VOLATILE ORGANIC COMPOUNDS (mg/kg)						
Benzene	ND	0 / 23	<	N/A	N/A	U
Ethylbenzene	2.00E+00 J	7 / 49	<	N/A	N/A	U
m,p-Xylenes	1.20E+01 J	3 / 12				
o-Xylene	6.50E+00 J	3 / 12				
Toluene	6.90E+00 J	7 / 38	<	N/A	N/A	U
Xylene	9.40E+01	5 / 33	<	N/A	N/A	U
TOTAL PETROLEUM HYDROCARBONS (mg/kg)						
Diesel Range Organics	7.80E+03	8 / 12				
Gasoline Range Organics	6.50E+02 J	3 / 12				
Total Petroleum Hydrocarbons	1.83E+04	10 / 20				

Notes:
* Precise data of collection could not be determined
** Historical resultm near surface TPH levels have likely naturally attenuated baed on recent anal
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes
ID = Identification
mg/kg = milligram per kilogram
J = Estimated
MDL = Method Detection Limit
N/A = Not Applicable
ND = Not Detected
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUS

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), BTEX (8260B), TS

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	TS	Remarks
10-23-08	1224		X	C91-SB01-000	Soil	2	4 oz Jar	X				4°C
	1224	X		"		1	8 oz Jar		X			4°C
	1234		X	C91-SB01-008		2	4 oz Jar	X				4°C
	1234	X		"		1	8 oz Jar		X			4°C
	1239		X	C91-SB01-012		2	4 oz Jar	X				4°C
	1239	X		"		1	8 oz Jar		X			4°C
	1249		X	C91-SB02-000		2	4 oz Jar	X				4°C
	1249	X		"		1	8 oz Jar		X			4°C
	1259		X	C91-SB02-008		2	4 oz Jar	X				4°C
	1259	X		"		1	8 oz Jar		X			4°C
	1304		X	C91-SB02-012		2	4 oz Jar	X				4°C
	1304	X		"		1	8 oz Jar		X			4°C
	1339		X	C91-SB03-000		2	4 oz Jar	X				4°C
	1339	X		"		1	8 oz Jar		X			4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-23-08	1730
Received by:		
Relinquished by:		
Received for Laboratory by:	10-24-08	0950

Shipping Details

Method of Shipment: FEDEX

Airbill No.: 863479883503

Lab Address: APPL, 4203 W. Swift Ave, Fresno CA, 93722

Special Instructions

Call Tony Sedlacek with any questions (402) 699-1077

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), BTEX (8260B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	Remarks
10-23-08	1348		X	C91-SB03-008	Soil	2	4oz Jar	X			4°C
	1348	X		"		1	8oz Jar		X		4°C
	1353		X	C91-SB03-012		2	4oz Jar	X			4°C
	1353	X		"		1	8oz Jar		X		4°C
	0950		X	C107-SB05-000		2	4oz Jar	X			4°C
	0950	X		"		1	8oz Jar		X		4°C
	0950		X	"		2	40mL VOA			X	4°C + water
	0950		X	"		1	40mL VOA			X	4°C + methanol
	1005		X	C107-SB05-012		2	4oz Jar	X			4°C
	1005	X		"		1	8oz Jar		X		4°C
	1005		X	"		2	40mL VOA			X	4°C + water
	1005		X	"		1	40mL VOA			X	4°C + methanol
	1025		X	C107-SB05-028		2	4oz Jar	X			4°C
	1025	X		C107-SB05-028		1	8oz Jar		X		4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-23-08	1730
Received by:		
Relinquished by:		
Received for Laboratory by: Anne Marie Maul	10-24-08	0950

Shipping Details:

Method of Shipment: FEDEX

Airbill No.: 863479883503

Lab Address: APPL, 4203 W Swift Ave, Fresno CA, 93722

Special Instructions: Call Tony Sedlacek with any questions (402) 699-1077

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CHAIN OF CUSTODY RECORD

Project Name: RFI for GSWMUS

Project No.: 16699 30.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	Analytical Parameters: BTEX (8260B)									Remarks
10-23-08	1025		X	C107-SB05-028	Soil	2	40mL VOA	X									4°C + water
10-23-08	1025		X	"	Soil	1	40mL VOA	X									4°C + methanol

Tony Sedlacek

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10-23-08	1730	Method of Shipment: FEDEX	Call Tony Sedlacek with questions (402) 699-1077
Received by:			Airbill No.: 8634798 83503	
Relinquished by:			Lab Address: APPL 4203 W Swift Ave Fresno CA 93722	
Received for Laboratory by: [signature]	10-24-08	0950		

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6SWMUS

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis, NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wright

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), BTEX (8260B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	Remarks
10-23-08	0710		X	C107-SB02-050	Soil	2	4 oz Jar	X			4°C
	0710	X		"		1	8 oz Jar		X		4°C
	0710		X	"		2	40 mL VOA			X	4°C + water
	0710		X	"		1	40 mL VOA			X	4°C + methanol
	0721		X	C107-SB02-012		2	4 oz Jar	X			4°C
	0721	X		C107-SB02-012		1	8 oz Jar		X		4°C
	0721		X	"		2	40 mL VOA			X	4°C
	0721		X	"		1	40 mL VOA			X	4°C
	0721		X	C107-SB02-112 MS/MSD		2	40 mL VOA			X	4°C + water + MS/MSD
	0721		X	"		1	40 mL VOA			X	4°C + methanol + MS/MSD
	0721		X	"		2	40 mL VOA			X	4°C + water + MS/MSD
	0721		X	"		1	40 mL VOA			X	4°C + methanol + MS/MSD
	0737		X	C107-SB02-024		2	4 oz Jar	X			4°C
	0737	X		"		1	8 oz Jar		X		4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	102308	1730
Received by:		
Relinquished by:		
Received for Laboratory by:	10-24-08	~~0950~~ 0950

Shipping Details

Method of Shipment: FEDEX

Airbill No.: 863479883503

Lab Address: APPL, 4203 W. Swift Ave, Fresno CA 93722

Special Instructions

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16168930.58350

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), BTEX (8260B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	Remarks
10-23-08	0737		X	C107-SB02-024	Soil	2	40mL VOA			X	4°C water
	0737		X	"		1	40mL VOA			X	4°C methanol
	0755		X	C107-SB03-004		3	4oz Jar	X			4°C
	0755	X		"		1	8oz Jar		X		4°C
	0755		X	"		2	40mL VOA			X	4°C water
	0755		X	"		1	40mL VOA			X	4°C methanol
	0600		X	C107-SB03-204		3	4oz Jar	X			4°C
	0600	X		"		1	8oz Jar		X		4°C
	0600		X	"		2	40mL VOA			X	4°C water
	0600		X	"		1	40mL VOA			X	4°C methanol
	0810		X	C107-SB03-012		3	4oz Jar	X			4°C
	0810	X		"		1	8oz Jar		X		4°C
	0810		X	"		2	40mL VOA			X	4°C water
	0810		X	"		1	40mL VOA			X	4°C methanol

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-23-08	1770
Received by:		
Relinquished by:		
Received for Laboratory by: [illegible]	10-24-08	0950

Shipping Details:

Method of Shipment: FEDEX

Airbill No.: 8634798835 03

Lab Address: APPL, 4203 W Sheaff Ave, Fresno, CA 93722

Special Instructions: Call Tony Sedlacek with any questions 402-689-6077

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16169930.05350

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Walker

Sampler(s):

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), BTEX (8260B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	Remarks
10-23-08	0832		X	C107-SB03-024	Soil	3	4oz Jar	X			4°C
	0832	X		"		1	8oz Jar		X		4°C
	0832		X	"		2	40mL VOA			X	4°C + water
	0832		X	"		1	40mL VOA			X	4°C + methanol

Tony Sedlacek 10-23-08

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-23-08	1730
Received by:		
Relinquished by:		
Received for Laboratory by: Anne Marie	10-24-08	0950

Shipping Details:

Method of Shipment: FEDEX

Airbill No.: 863479883503

Lab Address: APPL, 4203 W. Swift Ave, Fresno CA 93722

Special Instructions: Call Tom Sedlacek with questions (402) 699-1077

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	Analytical Parameters: Arsenic (6010B)	Remarks
10-22-08	0837	X		C85-SB01-000	Soil	1	4 oz Jar	X	4°C
	0846	X		C85-SB01-008		1	4 oz Jar	X	4°C
	0846	X		C85-SB01-108 MS/MSD		1	4 oz Jar	X	4°C + MS/MSD
	0851	X		C85-SB01-012		1	4 oz Jar	X	4°C
	0905	X		C85-SB02-000		1	4 oz Jar	X	4°C
	0730	X		C85-SB02-200		1	4 oz Jar	X	4°C
	0912	X		C85-SB02-008		1	4 oz Jar	X	4°C
	0916	X		C85-SB02-012		1	4 oz Jar	X	4°C
10-21-08	1201	X		C95-SB02-000		1	4 oz Jar	X	4°C
	1246	X		C95-SB02-006		1	4 oz Jar	X	4°C
	1346	X		C95-SB02-015		1	4 oz Jar	X	4°C
10-22-08	1022	X		C95-SB01-000		1	4 oz Jar	X	4°C
	0645	X		C95-SB01-200		1	4 oz Jar	X	4°C
	1033	X		C95-SB01-008		1	4 oz Jar	X	4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-22-08	1700
Received by:		
Relinquished by:		
Received for Laboratory by:	10-23-08	0940

Shipping Details:

Method of Shipment: FEDEX

Airbill No.: 8634 7988 3488

Lab Address: APPL, 4203 W. Swift Ave, Fresno, CA 93722

Special Instructions: Call Tony Sedlacek with any questions (402) 699-1077

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CHAIN OF CUSTODY RECORD

Page 2 of 2

Project Name: RFI for 6 SWMUs

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: Arsenic (6010B), TPH-GRO (8015B), TPH-DRO (8015B), BTEX (8260B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	Arsenic (6010B)	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	Remarks
10-22-08	1037	X		C95-SB01-012	Soil	1	4oz Jar	X				4°C
	0958	X		C95-SB03-000		1	4oz Jar	X				4°C
	1012	X		C95-SB03-008		1	4oz Jar	X				4°C
	1017	X		C95-SB03-012		1	4oz Jar	X				4°C
	1041	X		C95-SB04-000		1	4oz Jar	X				4°C
	1048	X		C95-SB04-008		1	4oz Jar	X				4°C
	1052	X		C95-SB04-012		1	4oz Jar	X				4°C
	~~1250~~		~~X~~	~~C107-SB01-000~~		~~2~~	~~4oz Jar~~	~~X~~				~~4°C~~ TS
	~~1250~~	~~X~~		"		~~1~~	~~8oz Jar~~		~~X~~			~~4°C~~ TS
	~~1250~~		~~X~~	"		~~2~~	~~40-mL VOA~~			~~X~~		~~4°C + Water~~ TS
	~~1250~~		~~X~~	"		~~1~~	~~40mL VOA~~			~~X~~		~~4°C + Methanol~~ TS
	~~1310~~		~~X~~	~~C107-SB01-012~~		~~2~~	~~4oz Jar~~	~~X~~				~~4°C~~ TS
	~~1310~~	~~X~~		"		~~1~~	~~8oz Jar~~		~~X~~			~~4°C~~ TS
	~~1310~~		~~X~~	"		~~2~~	~~40-mL VOA~~			~~X~~		~~4°C + Water~~ TS

Tony Sedlacek

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-22-08	1700
Received by:		
Relinquished by:		
Received for Laboratory by: [illegible]	10-23-08	0940

Shipping Details

Method of Shipment: FEDEX

Airbill No.: 8634 7988 3488

Lab Address: APPL, 4203 W. Swift Ave., Fresno, CA 93722

Special Instructions

Call Tony Sedlacek with any questions (402) 699-1077

Please analyze all C95-SBXX-0XX for arsenic only.

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUS

Project No.: 1669930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	BTEX (8260B)	Remarks
10-22-08	1250		X	C107-SB01-000	Soil	2	4 oz Jar	X			4°C
	1250	X		"		1	8 oz Jar		X		4°C
	1250		X	"		2	40mL VOA			X	4°C + Water
	1250		X	"		1	40mL VOA			X	4°C + Methanol
	1310		X	C107-SB01-012		2	4 oz Jar	X			4°C
	1310	X		"		1	8 oz Jar		X		4°C
	1310		X	"		2	40mL VOA			X	4°C + Water
	1310		X	"		1	40mL VOA			X	4°C + Methanol
	1324		X	C107-SB01-028		2	4 oz Jar	X			4°C
	1324	X		"		1	8 oz Jar		X		4°C
	1324		X	"		2	40mL VOA			X	4°C + Water
	1324		X	"		1	40mL VOA			X	4°C + Methanol

Tony Sedlacek

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10-22	1700	Method of Shipment: FEDEX	Call Tony Sedlacek with any questions (402) 699-1077
Received by:			Airbill No.: 8634 7988 3488	
Relinquished by:			Lab Address: APPL 4203 W. Swift Ave Fresno, CA 93722	
Received for Laboratory by:	10-23-08	0940		

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CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), PP Lead (6010B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	PP Lead (6010B)	Remarks
10-18-08	0919		X	C34-SS01-000	Soil	2	4oz Jar	X			4°C
	0919	X		"		1	8oz Jar		X		4°C
	0937	X		C34-SS01-006		1	4oz Jar			X	4°C
	1010		X	C34-SS02-000		2	4oz Jar	X			4°C
	1010	X		"		1	8oz Jar		X		4°C
	1010	X		"		1	4oz Jar			X	4°C
	1114		X	C34-SS03-000		2	4oz Jar	X			4°C
	1114	X		"		1	8oz Jar		X	X	4°C
	1114		X	C34-SS03-100		2	4oz Jar	X			4°C+MS/MSD
	1114	X		"		1	8oz Jar		X	X	4°C+MS/MSD
	1216		X	C34-SS04-000		2	4oz Jar	X			4°C
	1216	X		"		1	8oz Jar		X	X	4°C
	1243		X	C34-SS05-000		2	4oz Jar	X			4°C
	1243	X		"		1	8oz Jar		X	X	4°C

Signatures	Date	Time
Relinquished by: Tony Sedlacek	10-20-08	1430
Received by:		
Relinquished by:		
Received for Laboratory by:	10-21-08	0950

Shipping Details:

Method of Shipment: FedEx

Airbill No.: 8634 7988 3477

Lab Address: APPL, 4203 W. Swift Ave, Fresno, CA 93722

Special Instructions: Call Tony Sedlacek on cell with any questions (402) 699-1077

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

122412

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16169930.00300

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	Lead (6010B)								Remarks
10-18-08	1247	X		C34-SS05-006	Soil	1	4 oz Jar			X								4°C
	1314		X	C34-SS06-000		2	4 oz Jar	X										4°C
	1314	X		"		1	8 oz Jar		X	X								4°C
	0700		X	C34-SS06-200		2	4 oz Jar	X										4°C
	0700	X		"		1	8 oz Jar		X	X								4°C

Tony Sedlacek 10-20-08

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10-20-08	1430	Method of Shipment: FedEx	Call Tony Sedlacek with questions. (402) 699-1077
Received by:			Airbill No.: 8634 7988 3477	
Relinquished by:			Lab Address: APPL 4203 W. Swift Ave Fresno, CA 93722	
Received for Laboratory by:	10-21-08	0950		

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

122413

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 16169930.00300

Project Location: Cannon AFB Clovis, NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Analytical Parameters: TPH-GRO (8015B), TPH-DRO (8015B), Lead (6010B), Arsenic (6010B)

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-GRO (8015B)	TPH-DRO (8015B)	Lead (6010B)	Arsenic (6010B)	Remarks
10-18-08	1523	X		C85-5501-000	Soil	1	4 oz Jar			X		4°C
10-20-08	0837		X	C78-5501-000		2	4 oz Jar	X				4°C
	0837	X		"		1	8 oz Jar		X			4°C
	0837	X		"		1	4 oz Jar			X		4°C
	0800		X	C78-5501-200		2	4 oz Jars	X				4°C
	0800	X		"		1	8 oz Jar		X			4°C
	0800	X		"		1	4 oz Jar			X		4°C
	0912		X	C78-5502-000		2	4 oz Jar	X				4°C
	0912	X		"		1	8 oz Jar		X			4°C
	0912	X		"		1	4 oz Jar			X		4°C
	1028		X	C78-5503-000		2	4 oz Jar	X				4°C
	1028	X		"		1	8 oz Jar		X			4°C
	1028	X		"		1	4 oz Jar			X		4°C
	1035		X	C78-5503-106		2	4 oz Jar	X				4°C + ms/msD

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10-20-08	1430	Method of Shipment: FEDEX	Call Tony Sedlacek with any questions (402) 699-1077
Received by:			Airbill No.: 8634 7988 3477	
Relinquished by:			Lab Address: APPL 4203 W. Swift Ave Fresno, CA, 93722	
Received for Laboratory by:	10-21-08	0950		

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

122414

URS Corporation

12120 Shamrock Plaza Suite 300, Omaha, NE 68154 (402) 334-8181 Fax (402) 334-1984

CHAIN OF CUSTODY RECORD

Project Name: RFI for 6 SWMUs

Project No.: 1616 9930.00350

Project Location: Cannon AFB, Clovis NM

Project Manager: Jeff Voelker

Sampler(s): Tony Sedlacek, Skip Wrightson

Sample Date	Sample Time	Type Comp.	Type Grab	Sample Identification	Matrix	Containers No.	Containers Type	TPH-DRO (8015B)	Remarks
10-20-08	1035	X		~~C98~~ C78-SS03-106	Soil	1	8 oz Jar	X	4°C + MS/MSD

Tony Sedlacek 10-20-08

Signatures	Date	Time	Shipping Details	Special Instructions
Relinquished by: Tony Sedlacek	10-20-08	1430	Method of Shipment: FEDEX	Call Tony Sedlacek with any questions (402) 699-1077
Received by:			Airbill No.: 8634 7988 3477	
Relinquished by:			Lab Address: APPL 4203 W. Sewift Ave Fresno, CA 93722	
Received for Laboratory by:	10-21-08	0950		

Custody.frm/jdg 3-09-92

White copy - Laboratory Yellow copy - Laboratory Pink copy - WCC

122415

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.

Manifest Doc. No. 1

2. Page 1 of 1

GENERATOR

3. Generator's Name and Mailing Address
Cannon Air Force Base
506 N. DL Ingram Blvd.
Cannon AFB, NM 88103

4. Generator's Phone (575)784-6391

506 N. DL Ingram Blvd.
Cannon AFB, NM 88103

5. Transporter 1 Company Name
Diamondback Disposal

6. US EPA ID Number
NA

A. Transporter's Phone
(575) 392-9996

7. Transporter 2 Company Name

8. US EPA ID Number

B. Transporter's Phone

9. Designated Facility Name and Site Address
DP-619- 8 miles south of
Hobbs on hwy 18
Lea County, NM

10. US EPA ID Number
NA

C. Facility's Phone
(575) 392-9996

11. Waste Shipping Name and Description	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Hydrocarbon impacted soils	2	DR		
b. Hydrocarbon impacted water	1	DR		
c.				
d.				

D. Additional Descriptions for Materials Listed Above
#5 Address-PO Box 2491
Hobbs, NM 88241

E. Handling Codes for Wastes Listed Above
NA

15. Special Handling Instructions and Additional Information
Non-Hazardous

16. **GENERATOR'S CERTIFICATION:** I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.

Printed/Typed Name: Gerald M. Pelfrey
Signature: Gerald M. Pelfrey
Month Day Year: Mar 16 09

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Brandon Price
Signature: [signature]
Month Day Year: 03 16 09

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of waste materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Linsey Dyer
Signature: [signature]
Month Day Year: 13 16 09

Printed by J. J. KELLER & ASSOCIATES, INC.
Neenah, WI 54957-0368

ORIGINAL – RETURN TO GENERATOR

12-BLS-C5 Rev. 12/98

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		TPH			Acetone			Methylene Chloride			1,1,1-Trichloroethane			1,1,2-Trichloroethane		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987	2.00E+02			<		U	<		U	<		U	<		U
1-2	March 12, 1987	<		U	<		U	<		U	<		U	<		U
2-1	March 12, 1987	1.20E+02			<		U	<		U	<		U	<		U
2-2	March 12, 1987	6.60E+00			<		U	<		U	<		U	<		U
3-1	March 12, 1987	5.40E+02			<		U	<		U	<		U	<		U
4-1	March 12, 1987	2.80E+02			<		U	<		U	<		U	<		U
5-1	March 12, 1987	5.70E+01			<		U	<		U	<		U	<		U
5-2	March 12, 1987	<		U	<		U	<		U	<		U	<		U
6-1	March 12, 1987	1.50E+01			<		U	<		U	<		U	<		U
6-2	March 12, 1987	<		U	1.30E-02		DUP	1.10E-01		DUP	<		U	<		U
7-1	March 12, 1987	<		U	<		U	<		U	<		U	<		U
8-1	March 12, 1987	1.20E+02			<		U	<		U	<		U	<		U
9-1	March 12, 1987	1.20E+02			<		U	<		U	<		U	<		U
9-2	March 12, 1987	<		U	<		U	<		U	<		U	<		U
10-1	March 12, 1987	9.10E+02			<		U	<		U	<		U	<		U
11-1	March 12, 1987	2.80E+02			<		U	3.80E-03			<		U	<		U
12-1	March 12, 1987	3.20E+02			<		U	<		U	<		U	<		U
13-1	March 12, 1987	1.50E+02			<		U	<		U	<		U	<		U
13-2	March 12, 1987	<		U	<		U	5.70E-03			<		U	<		U
15-1	March 13, 1987	1.20E+02			<		U	2.06E-02			<		U	<		U
20-1	March 13, 1987	7.50E+01														
0341-0000	October 24, 1991	1.18E+03			<		U	<		U	1.00E-03		J	1.00E-03		J
0341-0001	December 8, 1991	3.97E+02			<		U	<		U	<		U	<		U
0342-0001	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0342-0005	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0342-0009	October 22, 1991	<		U												
0343-0008	December 8, 1991				<		U	<		U	<		U	<		U
0344-0000	December 10, 1991				<		U	<		U	<		U	<		U

Notes:
Underlined data is TPH detections from previous investigations and the 2008 RFI Addendum data indicates these levels have decreased.
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Tetrachloroethene			Toluene			Anthracene			Benzo(a)anthracene			Benzo(a)pyrene		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987	<		U	<		U									
1-2	March 12, 1987	<		U	<		U									
2-1	March 12, 1987	<		U	<		U									
2-2	March 12, 1987	<		U	<		U									
3-1	March 12, 1987	<		U	<		U									
4-1	March 12, 1987	<		U	<		U									
5-1	March 12, 1987	<		U	<		U									
5-2	March 12, 1987	<		U	<		U									
6-1	March 12, 1987	<		U	<		U									
6-2	March 12, 1987	<		U	<		U									
7-1	March 12, 1987	<		U	<		U									
8-1	March 12, 1987	<		U	<		U									
9-1	March 12, 1987	<		U	<		U									
9-2	March 12, 1987	<		U	<		U									
10-1	March 12, 1987	<		U	<		U									
11-1	March 12, 1987	<		U	<		U									
12-1	March 12, 1987	<		U	<		U									
13-1	March 12, 1987	<		U	<		U									
13-2	March 12, 1987	<		U	<		U									
15-1	March 13, 1987	<		U	<		U									
20-1	March 13, 1987															
0341-0000	October 24, 1991	1.00E-03		J	1.00E-03		J	<		U	1.60E-01		J	2.00E-01		J
0341-0001	December 8, 1991	<		U	<		U	1.00E-01		J	3.40E-01		J	3.10E-01		J
0342-0001	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0342-0005	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0342-0009	October 22, 1991							<		U	<		U	<		U
0343-0008	December 8, 1991	<		U	<		U									
0344-0000	December 10, 1991	<		U	1.00E-03		J									

Notes:
Underlined data is TPH detections from previous inve:
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Benzo(b)fluoroanthene			Benzo(k)fluoroanthene			Carbozole			Chrysene			Dibenzo(a,h)anthracene		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987															
1-2	March 12, 1987															
2-1	March 12, 1987															
2-2	March 12, 1987															
3-1	March 12, 1987															
4-1	March 12, 1987															
5-1	March 12, 1987															
5-2	March 12, 1987															
6-1	March 12, 1987															
6-2	March 12, 1987															
7-1	March 12, 1987															
8-1	March 12, 1987															
9-1	March 12, 1987															
9-2	March 12, 1987															
10-1	March 12, 1987															
11-1	March 12, 1987															
12-1	March 12, 1987															
13-1	March 12, 1987															
13-2	March 12, 1987															
15-1	March 13, 1987															
20-1	March 13, 1987															
0341-0000	October 24, 1991	4.00E-01		J	<		U	<		U	2.00E-01		J	<		U
0341-0001	December 8, 1991	5.20E-01			2.00E-01		J	4.80E-02		J	3.70E-01		J	5.30E-02		J
0342-0001	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0342-0005	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0342-0009	October 22, 1991	<		U	<		U	<		U	<		U	<		U
0343-0008	December 8, 1991															
0344-0000	December 10, 1991															

Notes:
Underlined data is TPH detections from previous inve:
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Fluoranthene			Indeno(1,2,3-cd)pyrene			Phenanthrene			Pyrene			Aluminum		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987															
1-2	March 12, 1987															
2-1	March 12, 1987															
2-2	March 12, 1987															
3-1	March 12, 1987															
4-1	March 12, 1987															
5-1	March 12, 1987															
5-2	March 12, 1987															
6-1	March 12, 1987															
6-2	March 12, 1987															
7-1	March 12, 1987															
8-1	March 12, 1987															
9-1	March 12, 1987															
9-2	March 12, 1987															
10-1	March 12, 1987															
11-1	March 12, 1987															
12-1	March 12, 1987															
13-1	March 12, 1987															
13-2	March 12, 1987															
15-1	March 13, 1987															
20-1	March 13, 1987															
0341-0000	October 24, 1991	4.00E-01		J	2.40E-01		J	2.00E-01		J	2.70E-01		J	4.04E+03		
0341-0001	December 8, 1991	8.40E-01			2.50E-01		J	3.70E-01			6.00E-01			8.23E+03		
0342-0001	October 22, 1991	<		U	<		U	<		U	<		U	1.25E+04		
0342-0005	October 22, 1991	<		U	<		U	<		U	<		U	9.17E+03		
0342-0009	October 22, 1991	<		U	<		U	<		U	<		U			
0343-0008	December 8, 1991															
0344-0000	December 10, 1991															

Notes:
Underlined data is TPH detections from previous inve
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Antimony			Arsenic			Barium			Beryllium			Cadmium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987															
1-2	March 12, 1987															
2-1	March 12, 1987															
2-2	March 12, 1987															
3-1	March 12, 1987															
4-1	March 12, 1987															
5-1	March 12, 1987															
5-2	March 12, 1987															
6-1	March 12, 1987															
6-2	March 12, 1987															
7-1	March 12, 1987															
8-1	March 12, 1987															
9-1	March 12, 1987															
9-2	March 12, 1987															
10-1	March 12, 1987															
11-1	March 12, 1987															
12-1	March 12, 1987															
13-1	March 12, 1987															
13-2	March 12, 1987															
15-1	March 13, 1987															
20-1	March 13, 1987															
0341-0000	October 24, 1991	<		U	1.60E+00		J	1.48E+02		J	<		U	1.30E+00		
0341-0001	December 8, 1991	<		U	2.80E+00		J	1.61E+02		J	<		U	<		U
0342-0001	October 22, 1991	<		U	2.00E+00		J	9.48E+01			5.50E-01		J	<		U
0342-0005	October 22, 1991	<		U	2.00E+00		J	1.63E+02		J	4.90E-01		J	<		U
0342-0009	October 22, 1991															
0343-0008	December 8, 1991															
0344-0000	December 10, 1991															

Notes:
Underlined data is TPH detections from previous inve:
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Calcium			Chromium			Cobalt			Copper			Iron		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987															
1-2	March 12, 1987															
2-1	March 12, 1987															
2-2	March 12, 1987															
3-1	March 12, 1987															
4-1	March 12, 1987															
5-1	March 12, 1987															
5-2	March 12, 1987															
6-1	March 12, 1987															
6-2	March 12, 1987															
7-1	March 12, 1987															
8-1	March 12, 1987															
9-1	March 12, 1987															
9-2	March 12, 1987															
10-1	March 12, 1987															
11-1	March 12, 1987															
12-1	March 12, 1987															
13-1	March 12, 1987															
13-2	March 12, 1987															
15-1	March 13, 1987															
20-1	March 13, 1987															
0341-0000	October 24, 1991	3.92E+04			1.23E+01			2.80E+00		J	1.50E+01		J	4.68E+03		J
0341-0001	December 8, 1991	4.91E+04			1.04E+01			2.80E+00		J	2.07E+01		J	6.71E+03		J
0342-0001	October 22, 1991	6.97E+04			1.05E+01			4.20E+00		J	<		U	8.92E+03		
0342-0005	October 22, 1991	1.22E+05			8.10E+00			3.50E+00		J	<		U	6.45E+03		
0342-0009	October 22, 1991															
0343-0008	December 8, 1991															
0344-0000	December 10, 1991															

Notes:
Underlined data is TPH detections from previous inve:
DUP = Duplicate
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U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Lead			Magnesium			Manganese			Mercury			Nickel		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987	1.10E+02														
1-2	March 12, 1987	8.60E+00														
2-1	March 12, 1987	5.00E+02														
2-2	March 12, 1987	6.60E+00														
3-1	March 12, 1987	1.20E+02														
4-1	March 12, 1987	2.60E+01														
5-1	March 12, 1987	6.70E+01														
5-2	March 12, 1987	5.60E+00														
6-1	March 12, 1987	2.50E+01														
6-2	March 12, 1987	8.20E+00														
7-1	March 12, 1987	6.20E+01														
8-1	March 12, 1987	3.20E+01														
9-1	March 12, 1987	3.20E+01														
9-2	March 12, 1987	7.60E+00														
10-1	March 12, 1987	6.20E+01														
11-1	March 12, 1987	8.00E+01														
12-1	March 12, 1987	9.00E+01														
13-1	March 12, 1987	3.50E+01														
13-2	March 12, 1987	1.60E+01														
15-1	March 13, 1987	5.50E+01														
20-1	March 13, 1987	4.50E+01														
0341-0000	October 24, 1991	4.07E+01			1.53E+03			8.39E+01			<		U	<		U
0341-0001	December 8, 1991	3.81E+01			2.33E+03			1.73E+02		J	<		U	7.10E+00		J
0342-0001	October 22, 1991	6.50E+00			2.81E+03			1.20E+02			<		U	9.20E+00		
0342-0005	October 22, 1991	5.10E+00			3.32E+03			8.34E+01		J	<		U	7.10E+00		J
0342-0009	October 22, 1991															
0343-0008	December 8, 1991															
0344-0000	December 10, 1991															

Notes:
Underlined data is TPH detections from previous inve:
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34			SWMU 34			SWMU 34			SWMU 34		
ANALYTE		Potassium			Selenium			Silver			Sodium			Thallium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987															
1-2	March 12, 1987															
2-1	March 12, 1987															
2-2	March 12, 1987															
3-1	March 12, 1987															
4-1	March 12, 1987															
5-1	March 12, 1987															
5-2	March 12, 1987															
6-1	March 12, 1987															
6-2	March 12, 1987															
7-1	March 12, 1987															
8-1	March 12, 1987															
9-1	March 12, 1987															
9-2	March 12, 1987															
10-1	March 12, 1987															
11-1	March 12, 1987															
12-1	March 12, 1987															
13-1	March 12, 1987															
13-2	March 12, 1987															
15-1	March 13, 1987															
20-1	March 13, 1987															
0341-0000	October 24, 1991	8.60E+02		J	2.20E+00		J	<		U	3.19E+02		J	<		U
0341-0001	December 8, 1991	1.57E+03					R	<		U	<		U	<		U
0342-0001	October 22, 1991	2.14E+03					R	<		U	<		U	<		U
0342-0005	October 22, 1991	1.52E+03					R	<		U	<		U	<		U
0342-0009	October 22, 1991															
0343-0008	December 8, 1991															
0344-0000	December 10, 1991															

Notes:
Underlined data is TPH detections from previous inve:
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-1
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 34
CANNON AFB, NEW MEXICO

SITE		SWMU 34			SWMU 34		
ANALYTE		Vanadium			Zinc		
UNITS		mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual
1-1	March 12, 1987						
1-2	March 12, 1987						
2-1	March 12, 1987						
2-2	March 12, 1987						
3-1	March 12, 1987						
4-1	March 12, 1987						
5-1	March 12, 1987						
5-2	March 12, 1987						
6-1	March 12, 1987						
6-2	March 12, 1987						
7-1	March 12, 1987						
8-1	March 12, 1987						
9-1	March 12, 1987						
9-2	March 12, 1987						
10-1	March 12, 1987						
11-1	March 12, 1987						
12-1	March 12, 1987						
13-1	March 12, 1987						
13-2	March 12, 1987						
15-1	March 13, 1987						
20-1	March 13, 1987						
0341-0000	October 24, 1991	1.18E+01			2.37E+02		J
0341-0001	December 8, 1991	1.60E+01			6.03E+01		J
0342-0001	October 22, 1991	1.81E+01			2.20E+01		
0342-0005	October 22, 1991	1.91E+01			1.68E+01		J
0342-0009	October 22, 1991						
0343-0008	December 8, 1991						
0344-0000	December 10, 1991						

Notes:
Underlined data is TPH detections from previous inve
DUP = Duplicate
J = Estimated
mg/kg = milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78			SWMU 78			SWMU 78			SWMU 78		
ANALYTE		TPH			Oil & Grease			Purgeable Organics			Acetone			Toluene		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991	2.20E+03														
0781-6	October 12, 1991	<		U							<		U	1.00E-03		J
0781-12	October 12, 1991	<		U							<		U	<		U
0782-0.5	October 13, 1991	1.97E+03														
0782-6	October 13, 1991	<		U												
0782-12	October 13, 1991	<		U												
0783-0.5	October 12, 1991	4.08E+03														
0784-0.5	October 13, 1991	9.80E+02														
0785-0.5	October 13, 1991	1.25E+04		J												
0786-0.5	October 13, 1991	<		U							<		U	1.00E-02		J
0787-0.5	December 16, 1991	9.50E+01									<		U	<		U
0788-0.5	December 7, 1991	<		U							1.40E-02		J	<		UJ
0788-6	December 7, 1991															
0788-12	December 7, 1991															
7810-0.5	December 7, 1991													<		U
7811-0.5	December 16, 1991										1.00E-02		J	<		U
6A-1	1985 *				2.00E+03			<	U					<		
6A-2	1985 *				2.80E+03			<	U							
6A-3	1985 *				1.70E+03			<	U							
6B-1	1985 *				5.20E+02			<	U							
6B-2	1985 *				1.40E+02			<	U							
6B-3	1985 *				3.10E+02			<	U							

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous investigations and the 2008 RFI Addendum data indicates these levels have decreased.
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78			SWMU 78			SWMU 78			SWMU 78		
ANALYTE		TCA			TCE			Vinyl Chloride			Xylene			4,4-DDD		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991													1.50E-01		
0781-6	October 12, 1991	<		U	<		U	<		U	<		U	2.30E-02		
0781-12	October 12, 1991	<		U	<		U	<		U	<		U	1.40E-02		
0782-0.5	October 13, 1991													9.10E-02		
0782-6	October 13, 1991													<		UJ
0782-12	October 13, 1991													<		UJ
0783-0.5	October 12, 1991													2.00E+00		
0784-0.5	October 13, 1991													6.60E-01		
0785-0.5	October 13, 1991													1.60E-01		
0786-0.5	October 13, 1991	1.00E-03		J	2.00E-03		J	<		U	4.00E-03		J	<		U
0787-0.5	December 16, 1991	<		U	<		U	<		U	<		U			
0788-0.5	December 7, 1991	<		UJ	3.00E-03		J	1.10E-02		J	<		UJ			
0788-6	December 7, 1991															
0788-12	December 7, 1991															
7810-0.5	December 7, 1991	<		U	1.00E-03		J	<		U	2.00E-03		J			
7811-0.5	December 16, 1991	<		U	<		U	<		U	<		U			
6A-1	1985 *															
6A-2	1985 *															
6A-3	1985 *															
6B-1	1985 *															
6B-2	1985 *															
6B-3	1985 *															

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous inve
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78			SWMU 78			SWMU 78			SWMU 78		
ANALYTE		4,4-DDE			4,4-DDT			alpha-Chlordane			gamma-Chlordane			Aluminum		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991	5.70E-02		J	<		U	<		U	<		U	2.60E+04		J
0781-6	October 12, 1991	<		U	<		U	<		U	<		U	1.32E+04		J
0781-12	October 12, 1991	<		U	<		U	<		U	<		U	1.05E+04		J
0782-0.5	October 13, 1991	<		U	<		U	<		U	<		U	1.07E+04		J
0782-6	October 13, 1991	<		UJ	<		U	<		U	<		U	6.24E+03		J
0782-12	October 13, 1991	<		UJ	<		U	<		U	<		U	6.57E+03		J
0783-0.5	October 12, 1991	<		U	<		U	<		U	<		U	1.02E+04		J
0784-0.5	October 13, 1991	5.80E-02		J	<		U	<		U	<		U	9.11E+03		J
0785-0.5	October 13, 1991	1.10E-01			<		U	<		U	<		U	1.42E+04		J
0786-0.5	October 13, 1991	1.10E-03		J	2.80E-03		J	1.60E-03		J	1.20E-03		J	1.39E+04		J
0787-0.5	December 16, 1991															
0788-0.5	December 7, 1991															
0788-6	December 7, 1991															
0788-12	December 7, 1991															
7810-0.5	December 7, 1991															
7811-0.5	December 16, 1991															
6A-1	1985 *															
6A-2	1985 *															
6A-3	1985 *															
6B-1	1985 *															
6B-2	1985 *															
6B-3	1985 *															

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous inve
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78			SWMU 78			SWMU 78			SWMU 78		
ANALYTE		Arsenic			Barium			Beryllium			Cadmium			Calcium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991	1.90E+00		J	1.65E+02		J	<		U	2.16E+01			2.54E+03		
0781-6	October 12, 1991	2.70E+00			1.11E+02		J	5.90E-01		J	<		U	2.74E+04		
0781-12	October 12, 1991	2.10E+00		J	3.92E+02		J	5.00E-01		J	9.00E-01		U	7.35E+04		
0782-0.5	October 13, 1991	2.00E+00		J	1.42E+02		J	4.90E-01		J	1.05E+01			1.95E+03		
0782-6	October 13, 1991	1.80E+00		J	1.58E+02		J	<		U	<		U	9.64E+04		
0782-12	October 13, 1991	1.30E+00		J	1.01E+02		J	<		U	<		U	1.51E+04		
0783-0.5	October 12, 1991	1.80E+00		J	1.15E+02		J	<		U	3.30E+00			1.45E+03		
0784-0.5	October 13, 1991	1.60E+00		J	1.32E+02		J	5.30E-01		J	7.70E+00			1.29E+03		
0785-0.5	October 13, 1991	1.70E+00		J	2.20E+02		J	<		U	4.10E+00			8.32E+02		J
0786-0.5	October 13, 1991	2.50E+00		J	8.35E+01		J	<		U	<		U	1.22E+04		
0787-0.5	December 16, 1991															
0788-0.5	December 7, 1991															
0788-6	December 7, 1991															
0788-12	December 7, 1991															
7810-0.5	December 7, 1991															
7811-0.5	December 16, 1991															
6A-1	1985 *															
6A-2	1985 *															
6A-3	1985 *															
6B-1	1985 *															
6B-2	1985 *															
6B-3	1985 *															

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous inve
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
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UJ = Estimated Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78			SWMU 78			SWMU 78			SWMU 78		
ANALYTE		Chromium			Cobalt			Copper			Iron			Lead		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991	3.96E+01			2.00E+00		J	7.10E+02			7.10E+03			3.36E+02		
0781-6	October 12, 1991	1.13E+01			5.30E+00		J	1.26E+01			1.13E+04			1.63E+01		
0781-12	October 12, 1991	8.10E+00			3.60E+00		J	7.00E+00			7.88E+03			6.10E+00		
0782-0.5	October 13, 1991	1.67E+01			4.00E+00		J	1.12E+02			9.23E+03			2.92E+02		
0782-6	October 13, 1991	5.80E+00			2.20E+00		J	8.90E+00			5.06E+03			6.80E+00		
0782-12	October 13, 1991	5.60E+00			2.20E+00		J	6.00E+00			4.66E+03			3.80E+00		
0783-0.5	October 12, 1991	1.42E+01			3.30E+00		J	5.20E+01			8.95E+03			1.94E+02		
0784-0.5	October 13, 1991	1.34E+01			2.50E+00		J	8.47E+01			7.50E+03			2.71E+02		
0785-0.5	October 13, 1991	2.91E+01			1.90E+00		J	3.85E+02			6.58E+03			5.29E+02		
0786-0.5	October 13, 1991	1.21E+01			4.50E+00		J	1.30E+01			1.14E+04			2.56E+01		
0787-0.5	December 16, 1991															
0788-0.5	December 7, 1991															
0788-6	December 7, 1991															
0788-12	December 7, 1991															
7810-0.5	December 7, 1991															
7811-0.5	December 16, 1991															
6A-1	1985 *													4.50E+00		
6A-2	1985 *													3.20E+00		
6A-3	1985 *													2.80E+01		
6B-1	1985 *													3.80E+00		
6B-2	1985 *													2.30E+01		
6B-3	1985 *													1.80E+00		

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous inve
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78			SWMU 78			SWMU 78			SWMU 78		
ANALYTE		Magnesium			Manganese			Mercury			Nickel			Potassium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991	1.17E+03			2.25E+02			<		U	8.80E+00		J	1.45E+03		
0781-6	October 12, 1991	2.64E+03			2.14E+02			<		U	1.16E+01			2.07E+03		J
0781-12	October 12, 1991	4.37E+03			1.53E+02			<		U	8.80E+00		J	1.89E+03		
0782-0.5	October 13, 1991	1.41E+03			1.71E+02			1.10E-01			7.80E+00		J	1.90E+03		J
0782-6	October 13, 1991	2.49E+03			6.60E+01			<		U	5.80E+00		J	1.11E+03		
0782-12	October 13, 1991	4.29E+03			5.55E+01			<		U	7.40E+00		J	1.42E+03		
0783-0.5	October 12, 1991	1.39E+03			9.95E+01			1.20E-01			6.80E+00		J	1.88E+03		J
0784-0.5	October 13, 1991	1.29E+03			7.46E+01			<		U	5.60E+00		J	1.71E+03		J
0785-0.5	October 13, 1991	9.68E+02		J	5.11E+01			<		U	5.90E+00		J	1.11E+03		J
0786-0.5	October 13, 1991	2.02E+03			1.98E+02			<		U	8.80E+00		J	2.57E+03		J
0787-0.5	December 16, 1991															
0788-0.5	December 7, 1991															
0788-6	December 7, 1991															
0788-12	December 7, 1991															
7810-0.5	December 7, 1991															
7811-0.5	December 16, 1991															
6A-1	1985 *															
6A-2	1985 *															
6A-3	1985 *															
6B-1	1985 *															
6B-2	1985 *															
6B-3	1985 *															

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous inve
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-2
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 78
CANNON AFB, NEW MEXICO

SITE		SWMU 78			SWMU 78		
ANALYTE		Vanadium			Zinc		
UNITS		mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual
0781-0.5	October 13, 1991	1.44E+01			8.29E+02		
0781-6	October 12, 1991	2.34E+01			3.37E+01		
0781-12	October 12, 1991	2.50E+01			2.14E+01		
0782-0.5	October 13, 1991	1.87E+01			2.14E+02		
0782-6	October 13, 1991	1.64E+01			1.80E+01		
0782-12	October 13, 1991	1.52E+01			1.37E+01		
0783-0.5	October 12, 1991	1.92E+01			1.26E+02		
0784-0.5	October 13, 1991	1.54E+01			1.54E+02		
0785-0.5	October 13, 1991	1.41E+01			6.14E+02		
0786-0.5	October 13, 1991	2.43E+01			3.33E+01		J
0787-0.5	December 16, 1991						
0788-0.5	December 7, 1991						
0788-6	December 7, 1991						
0788-12	December 7, 1991						
7810-0.5	December 7, 1991						
7811-0.5	December 16, 1991						
6A-1	1985 *						
6A-2	1985 *						
6A-3	1985 *						
6B-1	1985 *						
6B-2	1985 *						
6B-3	1985 *						

Notes: *Precise date of collection could not be determined.
Underlined data is TPH detections from previous inve
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TCE = Trichloroethene
TPH = Total Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-3
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

SITE		SWMU 85			SWMU 85			SWMU 85			SWMU 85			SWMU 85		
ANALYTE		Arsenic			Barium			Cadmium			Chromium			Copper		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
S12-B1-0	January 13, 1988	5.03E+01			5.45E+02			3.00E+00			8.00E+00					
S12-B1-2	January 13, 1988	5.19E+01			4.35E+02			3.00E+00			7.00E+00					
S12-B1-4	January 13, 1988	8.84E+01			2.12E+02			3.00E+00			8.00E+00					
S12-B2-1.5	December 7, 1987	2.58E+01			1.96E+02			1.50E+01			5.70E+01					
S12-B2-4	December 7, 1987	2.25E+01			2.20E+02			1.40E+01			4.80E+01					
S12-B2-6.5	December 7, 1987	2.56E+01			2.29E+02			1.40E+01			4.80E+01					
S12-B2-9	December 7, 1987	2.22E+01			3.65E+02			1.70E+01			4.40E+01					
S12-B2-11.5	December 7, 1987	1.93E+01			1.73E+02			1.30E+01			5.20E+01					
S12-B2-16.5	December 7, 1987	2.33E+01			1.21E+02			1.30E+01			3.90E+01					
S12-B2-21.5	December 7, 1987	≤		U	3.00E+01			4.00E+00			1.30E+01					
S12-B2-26.5	December 7, 1987	≤		U	2.30E+01			6.00E+00			9.00E+00					
S12-B2-31.5	December 7, 1987	≤		U	1.40E+01			2.00E+00			1.10E+01					
S12-B3-1.5	December 7, 1987	≤		U	2.11E+02			1.50E+01			5.30E+01					
S12-B3-4	December 7, 1987	2.37E+01			2.36E+02			1.60E+01			5.60E+01					
S12-B3-6.5	December 7, 1987	≤		U	1.96E+02			1.10E+01			4.20E+01					
S12-B3-9	December 7, 1987	≤		U	9.80E+01			7.00E+00			3.00E+01					
S12-B3-11.5	December 7, 1987	1.99E+01			9.50E+01			1.00E+01			3.90E+01					
S12-B3-16.5	December 7, 1987	≤		U	4.70E+01			3.00E+00			1.20E+01					
S12-B3-21.5	December 7, 1987	≤		U	2.60E+01			2.00E+00			3.00E+00					
S12-B3-26.5	December 7, 1987	≤		U	3.70E+01			3.00E+00			7.00E+00					
S12-B3-31.5	December 7, 1987	≤		U	3.00E+01			4.00E+00			1.50E+01					
S12-B4-0	January 13, 1988	3.87E+01			6.05E+02			4.00E+00			2.90E+01					
S12-B4-2.5	January 13, 1988	5.61E+01			1.29E+02			5.00E+00			1.20E+01					
S12-B4-5	January 13, 1988	7.71E+01			6.70E+01			3.00E+00			9.00E+00					
S12-B4-7.5	January 13, 1988	6.94E+01			6.01E+02			1.00E+00			7.00E+00					
S12-B4-10	January 13, 1988	9.81E+01			5.33E+02			5.00E+00			1.10E+01					
S12-B4-15	January 13, 1988	6.17E+01			2.93E+02			3.00E+00			9.00E+00					
S12-B4-20	January 13, 1988	1.12E+02			6.90E+01			2.00E+00			3.00E+00					
S12-B4-25	January 13, 1988	5.62E+01			5.00E+00			2.00E+00			5.00E+00					
S12-B4-30	January 13, 1988	7.43E+01			5.00E+00			3.00E+00			4.00E+00					
S12-B5-10	January 14, 1988	7.35E+01			<		U	3.00E+00			6.00E+00					
S12-B5-12.5	January 14, 1988	1.11E+02			1.23E+02			1.00E+00			4.00E+00					
S12-B5-15	January 14, 1988	NR			NR			NR			NR					
S12-B5-17.5	January 14, 1988	9.22E+01			1.00E+00			1.00E+00			7.00E+00					
S12-B5-20	January 14, 1988	6.90E+01			2.00E+00			2.00E+00			6.00E+00					
S12-B5-25	January 14, 1988	4.01E+01			5.70E+01			2.00E+00			7.00E+00					
S12-B5-30	January 14, 1988	4.51E+01			1.23E+02			1.00E+00			4.00E+00					
S12-B5-35	January 14, 1988	5.26E+01			1.05E+02			2.00E+00			4.00E+00					
S12-B5-40	January 14, 1988	3.13E+01			1.25E+02			1.00E+00			4.00E+00					
S12-B6-10	January 13, 1988	6.73E+01			3.53E+02			3.00E+00			8.00E+00					
S12-B6-12.5	January 13, 1988	1.98E+01			1.74E+02			3.00E+00			7.00E+00					
S12-B6-15	January 13, 1988	3.39E+01			1.18E+02			3.00E+00			7.00E+00					
S12-B6-17.5	January 13, 1988	7.19E+01			1.31E+02			1.00E+00			4.00E+00					

TABLE D-3
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

SITE		SWMU 85			SWMU 85			SWMU 85			SWMU 85			SWMU 85		
ANALYTE		Arsenic			Barium			Cadmium			Chromium			Copper		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
S12-B6-20	January 13, 1988	4.54E+01			8.00E+01			3.00E+00			8.00E+00					
S12-B6-25	January 13, 1988	4.68E+01			9.70E+01			2.00E+00			6.00E+00					
S12-B6-30	January 13, 1988	3.01E+01			5.40E+01			2.00E+00			4.00E+00					
S12-B6-40	January 13, 1988	≤		U	2.21E+02			1.00E+00			5.00E+00					
S12-B7-1.5	December 7, 1987	2.90E+01			2.09E+02			1.40E+01			4.50E+01					
S12-B7-4	December 7, 1987	≤		U	1.32E+02			8.00E+00			3.60E+01					
S12-B7-6.5	December 7, 1987	≤		U	9.20E+01			8.00E+00			2.50E+01					
S12-B7-9	December 7, 1987	≤		U	1.13E+02			6.00E+00			2.00E+01					
S12-B7-11.5	December 7, 1987	≤		U	6.30E+01			6.00E+00			2.00E+01					
S12-B7-16.5	December 7, 1987	≤		U	8.30E+01			5.00E+00			1.30E+01					
S12-B7-31.5	December 7, 1987	≤		U	3.60E+01			4.00E+00			8.00E+00					
S12-B7-46.5	December 7, 1987	≤		U	9.70E+01			1.00E+00			5.00E+00					
S12-B7-61.5	December 7, 1987	≤		U	1.70E+01			<		U	9.00E+00					
S12-B8-10	January 13, 1988	≤		U	6.00E+01			4.00E+00			1.20E+01					
S12-B8-12.5	January 13, 1988	5.06E+01			2.62E+02			2.00E+00			8.00E+00					
S12-B8-15	January 13, 1988	≤		U	1.56E+02			2.00E+00			7.00E+00					
S12-B8-17.5	January 13, 1988	4.64E+01			2.27E+02			2.00E+00			5.00E+00					
S12-B8-20	January 13, 1988	6.57E+01			9.70E+01			2.00E+00			4.00E+00					
S12-B8-25	January 13, 1988	6.85E+01			8.10E+01			1.00E+00			4.00E+00					
S12-B8-40	January 13, 1988	4.17E+01			1.50E+01			3.00E+00			5.00E+00					
S12-B8-55	January 13, 1988	≤		U	2.10E+01			2.00E+00			4.30E-01					
S12-B8-70	January 13, 1988	3.38E+01			7.00E+00			4.00E+00			1.00E+00					
ST-1	1985 *	1.60E+00			4.80E+01			2.80E-01			5.50E+00			3.50E+00		
ST-2	1985 *	1.80E+00			7.00E+01			1.20E+00			1.80E+01			7.70E+00		
ST-3	1985 *	1.50E+00			1.10E+02			2.30E+00			2.80E+01			1.20E+01		

Notes: *Precise date of collection could not be determined.
Underlined values indicate that data is questionable and not valid and may be attributed to interelemental interference during the inception of new ICP method.
ICP = Inductively coupled plasma
mg/kg = milligram per kilogram
NR = not reported
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-3
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

SITE		SWMU 85			SWMU 85			SWMU 85			SWMU 85			SWMU 85			SWMU 85		
ANALYTE		Iron			Lead			Mercury			Nickel			Selenium			Zinc		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
S12-B1-0	January 13, 1988				5.70E+01			<		U				1.14E+02					
S12-B1-2	January 13, 1988				5.10E+01			<		U				1.80E+02					
S12-B1-4	January 13, 1988				5.80E+01			<		U				1.91E+02					
S12-B2-1.5	December 7, 1987				3.70E+01			<		U				<		U			
S12-B2-4	December 7, 1987				4.30E+01			1.30E-01						<		U			
S12-B2-6.5	December 7, 1987				2.90E+01			<		U				<		U			
S12-B2-9	December 7, 1987				3.40E+01			<		U				<		U			
S12-B2-11.5	December 7, 1987				4.00E+01			<		U				<		U			
S12-B2-16.5	December 7, 1987				2.00E+01			1.30E-01						4.96E+01					
S12-B2-21.5	December 7, 1987				2.20E+01			<		U				<		U			
S12-B2-26.5	December 7, 1987				2.20E+01			1.20E-01						<		U			
S12-B2-31.5	December 7, 1987				2.30E+01			1.10E-01						<		U			
S12-B3-1.5	December 7, 1987				2.40E+01			<		U				<		U			
S12-B3-4	December 7, 1987				4.20E+01			<		U				<		U			
S12-B3-6.5	December 7, 1987				3.60E+01			<		U				<		U			
S12-B3-9	December 7, 1987				3.00E+01			<		U				<		U			
S12-B3-11.5	December 7, 1987				2.20E+01			<		U				<		U			
S12-B3-16.5	December 7, 1987				<		U	<		U				<		U			
S12-B3-21.5	December 7, 1987				<		U	<		U				<		U			
S12-B3-26.5	December 7, 1987				<		U	<		U				<		U			
S12-B3-31.5	December 7, 1987				<		U	<		U				<		U			
S12-B4-0	January 13, 1988				2.90E+01			<		U				1.02E+02					
S12-B4-2.5	January 13, 1988				5.50E+01			<		U				8.44E+01					
S12-B4-5	January 13, 1988				5.80E+01			<		U				1.16E+02					
S12-B4-7.5	January 13, 1988				6.50E+01			<		U				1.39E+02					
S12-B4-10	January 13, 1988				6.30E+01			<		U				1.70E+02					
S12-B4-15	January 13, 1988				5.00E+01			<		U				1.21E+02					
S12-B4-20	January 13, 1988				7.50E+01			<		U				1.36E+02					
S12-B4-25	January 13, 1988				3.90E+01			<		U				1.06E+02					
S12-B4-30	January 13, 1988				4.80E+01			<		U				9.59E+01					
S12-B5-10	January 14, 1988				5.00E+01			<		U				1.02E+02					
S12-B5-12.5	January 14, 1988				6.30E+01			<		U				1.83E+02					
S12-B5-15	January 14, 1988				NR			<		U				NR					
S12-B5-17.5	January 14, 1988				4.20E+01			<		U				8.47E+01					
S12-B5-20	January 14, 1988				4.00E+01			<		U				1.04E+02					
S12-B5-25	January 14, 1988				3.70E+01			<		U				8.73E+01					
S12-B5-30	January 14, 1988				3.40E+01			<		U				5.66E+01					
S12-B5-35	January 14, 1988				4.00E+01			<		U				8.70E+01					
S12-B5-40	January 14, 1988				3.10E+01			<		U				7.04E+01					
S12-B6-10	January 13, 1988				5.60E+01			<		U				1.10E+02					
S12-B6-12.5	January 13, 1988				3.50E+01			<		U				5.37E+01					
S12-B6-15	January 13, 1988				4.30E+01			<		U				4.55E+01					
S12-B6-17.5	January 13, 1988				4.50E+01			<		U				5.88E+01					

TABLE D-3
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 85
CANNON AFB, NEW MEXICO

SITE		SWMU 85			SWMU 85			SWMU 85			SWMU 85			SWMU 85			SWMU 85		
ANALYTE		Iron			Lead			Mercury			Nickel			Selenium			Zinc		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
S12-B6-20	January 13, 1988				4.70E+01			<		U				6.09E+01					
S12-B6-25	January 13, 1988				2.00E+01			<		U				7.82E+01					
S12-B6-30	January 13, 1988				2.40E+01			<		U				6.58E+01					
S12-B6-40	January 13, 1988				3.20E+01			<		U				<		U			
S12-B7-1.5	December 7, 1987				4.60E+01			<		U				5.47E+01					
S12-B7-4	December 7, 1987				2.00E+01			<		U				<		U			
S12-B7-6.5	December 7, 1987				2.30E+01			<		U				<		U			
S12-B7-9	December 7, 1987				1.50E+01			<		U				<		U			
S12-B7-11.5	December 7, 1987				<		U	<		U				<		U			
S12-B7-16.5	December 7, 1987				<		U	<		U				<		U			
S12-B7-31.5	December 7, 1987				<		U	<		U				5.43E+01					
S12-B7-46.5	December 7, 1987				<		U	<		U				<		U			
S12-B7-61.5	December 7, 1987				<		U	<		U				<		U			
S12-B8-10	January 13, 1988				8.00E+00			<		U				<		U			
S12-B8-12.5	January 13, 1988				5.10E+01			<		U				<		U			
S12-B8-15	January 13, 1988				3.20E+01			<		U				7.12E+01					
S12-B8-17.5	January 13, 1988				4.20E+01			<		U				9.90E+01					
S12-B8-20	January 13, 1988				4.20E+01			<		U				1.23E+02					
S12-B8-25	January 13, 1988				4.60E+01			<		U				4.92E+01					
S12-B8-40	January 13, 1988				3.40E+01			<		U				8.55E+01					
S12-B8-55	January 13, 1988				1.40E+01			<		U				<		U			
S12-B8-70	January 13, 1988				1.40E+01			<		U				<		U			
ST-1	1985 *	5.50E+03			5.30E+00			1.70E-01			3.30E+00			<		U	9.90E+00		
ST-2	1985 *	6.90E+03			3.30E+01			2.00E-01			4.40E+00			<		U	4.60E+01		
ST-3	1985 *	7.70E+03			7.40E+01			2.10E-01			6.10E+00			<		U	5.70E+01		

Notes: *Precise date of collection could not be determined.
Underlined values indicate that data is questionable
ICP = Inductively coupled plasma
mg/kg = milligram per kilogram
NR = not reported
Qual = Qualifier
RL = Reporting Limit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-4
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

SITE		SWMU 91			SWMU 91			SWMU 91			SWMU 91			SWMU 91		
ANALYTE		Acetone			Toluene			2-Butanone (MEK)			Methylene Chloride			TRPH		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
CAN091-0861-0004 (0867)	November 24, 1991	2.10E-02		J	<		U									
CAN091-0861-0008 (0867)	November 24, 1991	<		U	6.00E-03		J									
CAN091-0861-0013 [0867]	November 24, 1991	<		U	<		U									
CAN091-0861-0018 [0867]	November 24, 1991	5.70E+00			<		U									
CAN091-0861-0023 [0867]	November 24, 1991	1.30E-02		J	2.00E-03		J									
CAN091-0862-0000	October 10, 1991	<		U	4.00E-03		J									
CAN091-0862-0002 (0868)	November 24, 1991	6.60E-01			3.30E-02		J									
CAN091-0862-0004 (0868)	November 24, 1991	2.20E-01			<		U									
CAN091-0862-0008 (0868)	November 24, 1991	1.30E+00			<		U									
CAN091-0864-0000	October 10, 1991	1.70E-02		J	2.00E-03		J									
CAN091-0864-0002 (8610)	November 24, 1991	6.80E-02			1.00E-03		J									
CAN091-0864-0004 (8610)	November 24, 1991	2.90E-01			3.00E-03		J									
CAN091-0864-0008 (8610)	November 24, 1991	9.80E-02			<		U									
CAN086-8618-0000	October 10, 1991													8.10E+01		
CAN086-8618-0029	November 24, 1991															
CAN086-8618-0034	November 24, 1991															

Notes: Brackets indicate results from samples collected at deeper redrilled borings.
Parentheses indicate results are from samples collected from redrilled borings due to laboratory missed holding times.
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TRPH = Total Recoverable Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-4
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

SITE		SWMU 91			SWMU 91			SWMU 91			SWMU 91			SWMU 91		
ANALYTE		TPH-GRO			Aluminum			Antimony			Arsenic			Barium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
CAN091-0861-0004 (0867)	November 24, 1991							<		UJ				1.54E+02		
CAN091-0861-0008 (0867)	November 24, 1991							<		UJ				2.98E+02		
CAN091-0861-0013 [0867]	November 24, 1991															
CAN091-0861-0018 [0867]	November 24, 1991															
CAN091-0861-0023 [0867]	November 24, 1991															
CAN091-0862-0000	October 10, 1991							2.30E+00		J				3.90E+02		
CAN091-0862-0002 (0868)	November 24, 1991							<		UJ				1.28E+02		
CAN091-0862-0004 (0868)	November 24, 1991							<		UJ				7.81E+01		
CAN091-0862-0008 (0868)	November 24, 1991															
CAN091-0864-0000	October 10, 1991							8.74E+01		J				5.03E+02		
CAN091-0864-0002 (8610)	November 24, 1991							<		UJ				8.28E+01		
CAN091-0864-0004 (8610)	November 24, 1991							<		UJ				8.80E+01		
CAN091-0864-0008 (8610)	November 24, 1991							<		UJ				6.54E+01		
CAN086-8618-0000	October 10, 1991				1.02E+01						2.50E+00			1.77E+02		J
CAN086-8618-0029	November 24, 1991				4.10E+00						7.80E-01			1.29E+02		
CAN086-8618-0034	November 24, 1991				5.82E+03						7.70E-01			1.31E+02		J

Notes: Brackets indicate results from samples collected at deeper redrilled borings.
Parentheses indicate results are from samples collected from redrilled borings due to laboratory missed holding times.
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TRPH = Total Recoverable Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-4
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

SITE		SWMU 91			SWMU 91			SWMU 91			SWMU 91			SWMU 91		
ANALYTE		Beryllium			Cadmium			Calcium			Chromium			Cobalt		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
CAN091-0861-0004 (0867)	November 24, 1991				<		UJ				1.17E+01			5.00E+00		J
CAN091-0861-0008 (0867)	November 24, 1991				<		UJ				1.17E+01			5.00E+00		J
CAN091-0861-0013 [0867]	November 24, 1991															
CAN091-0861-0018 [0867]	November 24, 1991															
CAN091-0861-0023 [0867]	November 24, 1991															
CAN091-0862-0000	October 10, 1991				4.90E+00						6.78E+01			1.87E+01		
CAN091-0862-0002 (0868)	November 24, 1991				<		U				1.00E+01			5.10E+00		J
CAN091-0862-0004 (0868)	November 24, 1991				<		UJ				9.70E+00			4.10E+00		J
CAN091-0862-0008 (0868)	November 24, 1991															
CAN091-0864-0000	October 10, 1991				8.80E+00						1.13E+02			1.52E+01		J
CAN091-0864-0002 (8610)	November 24, 1991				<		U				1.20E+01			5.60E+00		J
CAN091-0864-0004 (8610)	November 24, 1991				<		U				1.01E+01			3.80E+00		J
CAN091-0864-0008 (8610)	November 24, 1991				<		UJ				8.30E+00			3.50E+00		J
CAN086-8618-0000	October 10, 1991	5.60E-01						6.41E+04			8.80E+00			3.60E+00		
CAN086-8618-0029	November 24, 1991							2.06E+05			9.70E+00					
CAN086-8618-0034	November 24, 1991	2.60E-01						6.89E+04			4.10E+00			1.40E+00		

Notes: Brackets indicate results from samples collected at deeper redrilled borings.
Parentheses indicate results are from samples collected from redrilled borings due to laboratory missed holding times.
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TRPH = Total Recoverable Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-4
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

SITE		SWMU 91			SWMU 91			SWMU 91			SWMU 91			SWMU 91		
ANALYTE		Copper			Iron			Lead			Magnesium			Manganese		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
CAN091-0861-0004 (0867)	November 24, 1991	1.04E+01						1.29E+01						1.32E+02		
CAN091-0861-0008 (0867)	November 24, 1991	1.04E+01						1.29E+01						1.32E+02		
CAN091-0861-0013 [0867]	November 24, 1991															
CAN091-0861-0018 [0867]	November 24, 1991															
CAN091-0861-0023 [0867]	November 24, 1991															
CAN091-0862-0000	October 10, 1991	5.64E+01						2.36E+02		J				3.83E+02		
CAN091-0862-0002 (0868)	November 24, 1991	1.00E+01						8.50E+00						2.93E+02		
CAN091-0862-0004 (0868)	November 24, 1991	7.50E+00						5.30E+00						8.63E+01		
CAN091-0862-0008 (0868)	November 24, 1991															
CAN091-0864-0000	October 10, 1991	4.70E+02		J				2.24E+02						2.29E+02		
CAN091-0864-0002 (8610)	November 24, 1991	8.70E+00						9.80E+00						2.19E+02		
CAN091-0864-0004 (8610)	November 24, 1991	7.90E+00						4.30E+00						1.10E+02		
CAN091-0864-0008 (8610)	November 24, 1991	7.40E+00						6.50E+00						1.23E+02		
CAN086-8618-0000	October 10, 1991	6.60E+00			8.96E+03			5.50E+00			2.90E+03			1.09E+02		
CAN086-8618-0029	November 24, 1991	2.40E+00		J	3.01E+03			1.50E+00			6.24E+03			2.81E+01		
CAN086-8618-0034	November 24, 1991	1.60E+00		J	4.16E+03			2.60E+00			5.04E+03			3.42E+01		

Notes: Brackets indicate results from samples collected at deeper redrilled borings.
Parentheses indicate results are from samples collected from redrilled borings due to laboratory missed holding times.
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TRPH = Total Recoverable Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-4
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 91
CANNON AFB, NEW MEXICO

SITE		SWMU 91			SWMU 91			SWMU 91			SWMU 91		
ANALYTE		Nickel			Potassium			Vanadium			Zinc		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
CAN091-0861-0004 (0867)	November 24, 1991	1.14E+01									2.56E+01		
CAN091-0861-0008 (0867)	November 24, 1991	1.14E+01									2.56E+01		
CAN091-0861-0013 [0867]	November 24, 1991												
CAN091-0861-0018 [0867]	November 24, 1991												
CAN091-0861-0023 [0867]	November 24, 1991												
CAN091-0862-0000	October 10, 1991	1.03E+02									3.00E+03		
CAN091-0862-0002 (0868)	November 24, 1991	9.50E+00									5.19E+01		
CAN091-0862-0004 (0868)	November 24, 1991	9.00E+00									<		U
CAN091-0862-0008 (0868)	November 24, 1991												
CAN091-0864-0000	October 10, 1991	5.44E+01		J							2.90E+03		J
CAN091-0864-0002 (8610)	November 24, 1991	1.01E+01									3.78E+01		
CAN091-0864-0004 (8610)	November 24, 1991	8.80E+00		J							<		U
CAN091-0864-0008 (8610)	November 24, 1991	8.80E+00		J							1.86E+01		
CAN086-8618-0000	October 10, 1991	9.90E+00			1.70E+03			1.94E+01			1.91E+01		
CAN086-8618-0029	November 24, 1991	4.90E+00		J	6.90E+02			1.37E+01			1.00E+01		
CAN086-8618-0034	November 24, 1991	4.70E+00			1.29E+03			1.04E+01			8.10E+00		

Notes: Brackets indicate results from samples collected at deeper redrilled borings.
Parentheses indicate results are from samples collected from redrilled borings due to laboratory missed holding times.
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TRPH = Total Recoverable Petroleum Hydrocarbons
U = Nondetect
UJ = Estimated Nondetect

TABLE D-5
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

SITE		SWMU 95			SWMU 95			SWMU 95			SWMU 95			SWMU 95		
ANALYTE		Acetone			2-Butanone (MEK)			Ethylbenzene			Toluene			Xylene (Total)		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0951-0.5 (0953)	December 7, 1991	1.40E-01		J	2.30E-02		J				<		U			
0951-04 (0953)	December 7, 1991	2.20E-02			<		U				<		U			
0951-06 (0953)	December 7, 1991	1.10E-02		J	<		U				<		U			
0951-10 (0953)	December 7, 1991	1.70E-02			<		U				3.00E-03		U			
0952-0.5 (0954)	December 8, 1991	<		U	<		UJ				1.20E-02		J			
0952-04 (0954)	December 8, 1991	2.10E-02			1.20E-02		J				<		U			
0952-06 (0954)	December 8, 1991	<		U	<		U				<		U			
0952-10 (0954)	December 8, 1991	<		UJ	<		UJ				<		UJ			
S20-B1-0	January 10, 1988	<		U	<		U				<		U			
S20-B1-2	January 11, 1988	<		U	<		U				<		U			
S20-B1-4	January 11, 1988	<		U	<		U				<		U			
S20-B2-0	January 12, 1988	<		U	<		U				<		U			
S20-B2-2	January 12, 1988	<		U	<		U				<		U			
S20-B2-4	January 12, 1988	<		U	<		U				<		U			
S20-B3-0	January 11, 1988	<		U	<		U				<		U			
S20-B3-2	January 11, 1988	<		U	<		U				<		U			
S20-B3-4 R	January 11, 1988	<		U	<		U				<		U			
S20-B4-0	January 8, 1988	<		U	<		U				<		U			
S20-B4-2	January 8, 1988	<		U	<		U				<		U			
S20-B4-4	January 8, 1988	<		U	<		U				<		U			
S20-B5-0	January 8, 1988	<		U	<		U				<		U			
S20-B5-2	January 8, 1988	<		U	<		U				<		U			
S20-B5-4	January 8, 1988	<		U	<		U				<		U			
S20-B6-0	January 9, 1988	<		U	<		U				<		U			
S20-B6-2.5	January 9, 1988	<		U	<		U				<		U			
S20-B6-5	January 9, 1988	<		U	<		U				<		U			
S20-B6-7.5	January 9, 1988	<		U	<		U				<		U			
S20-B6-10	January 9, 1988	<		U	<		U				<		U			
S20-B6-15	January 9, 1988															
S20-B6-20	January 9, 1988															
S20-B6-25	January 9, 1988															
S20-B6-30	January 9, 1988															
S20-B7-0	January 8, 1988	<		U	<		U				<		U			
S20-B7-2.5	January 8, 1988	<		U	<		U				<		U			
S20-B7-5	January 8, 1988	<		U	<		U				<		U			
S20-B7-7.5	January 8, 1988	<		U	<		U				<		U			
S20-B7-10	January 8, 1988	<		U	<		U				<		U			
S20-B7-15	January 8, 1988															
S20-B7-20	January 8, 1988															
S20-B7-25	January 8, 1988															
S20-B7-30	January 8, 1988															
S20-B8-0	January 7, 1988	<		U	<		U	3.70E-02			<		U	7.00E-02		
S20-B8-2.5	January 7, 1988	<		U	<		U				<		U			
S20-B8-5	January 7, 1988	<		U	<		U				<		U			
S20-B8-7.5	January 7, 1988	<		U	<		U				<		U			
S20-B8-10	January 7, 1988	<		U	<		U				<		U			
S20-B8-15	January 7, 1988															
S20-B8-20	January 7, 1988															
S20-B8-25	January 7, 1988															
S20-B8-30	January 7, 1988															
S20-B9-0	January 9, 1988	<		U	<		U				<		U			
S20-B9-2.5	January 9, 1988	<		U	<		U				<		U			
S20-B9-5	January 9, 1988	<		U	<		U				<		U			
S20-B9-7.5	January 9, 1988	<		U	<		U				<		U			
S20-B9-10	January 9, 1988	<		U	<		U				<		U			
S20-B9-15	January 9, 1988															
S20-B9-20	January 9, 1988															
S20-B9-25	January 9, 1988															
S20-B9-30	January 9, 1988															
S20-B10-0	January 12, 1988	<		U	<		U				<		U			
S20-B10-2.5	January 12, 1988	<		U	<		U				<		U			
S20-B10-5	January 12, 1988	<		U	<		U				<		U			
S20-B10-7.5	January 12, 1988	<		U	<		U				<		U			
S20-B10-10	January 12, 1988	<		U	<		U				<		U			
S20-B10-15	January 12, 1988															
S20-B10-20	January 12, 1988															
S20-B10-25	January 12, 1988															
S20-B10-30	January 12, 1988															
S020-B11-0	January 11, 1988	<		U	<		U				<		U			
S020-B11-2.5	January 11, 1988	<		U	<		U				<		U			
S020-B11-5	January 11, 1988	<		U	<		U				<		U			
S020-B11-7.5	January 11, 1988	<		U	<		U				<		U			
S020-B11-10	January 11, 1988	<		U	<		U				<		U			
S020-B11-15	January 11, 1988															
S020-B11-30	January 11, 1988															
S020-B11-45	January 11, 1988															
S020-B11-60	January 11, 1988															

TABLE D-5
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

SITE		SWMU 95			SWMU 95			SWMU 95			SWMU 95			SWMU 95		
ANALYTE		2-Methylnapthalene			Bis(2-Ethyl hexyl)phthalate			Butylbenzylphthalate			Aluminum			Arsenic		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0951-0.5 (0953)	December 7, 1991	1.30E+00		J	1.70E+00		J	<		U	2.18E+03			3.90E+00		
0951-04 (0953)	December 7, 1991	<		U	3.50E-01		J	<		U	4.56E+03			1.50E+00		J
0951-06 (0953)	December 7, 1991	<		U	<		U	<		U	9.84E+03			2.30E+00		
0951-10 (0953)	December 7, 1991	<		U	4.50E-02		J	2.40E-01		J	7.84E+03			1.30E+00		J
0952-0.5 (0954)	December 8, 1991	<		U	<		U	<		U	6.32E+03			2.20E+00		J
0952-04 (0954)	December 8, 1991	<		U	<		U	<		U	4.16E+03			1.90E+00		J
0952-06 (0954)	December 8, 1991	<		U	<		U	<		U	4.76E+03			1.80E+00		J
0952-10 (0954)	December 8, 1991	<		U	1.90E-01		J	<		U	5.24E+03			1.90E+00		J
S20-B1-0	January 10, 1988	<		U	<		U							8.03E+01		
S20-B1-2	January 11, 1988	<		U	<		U							7.16E+01		
S20-B1-4	January 11, 1988	<		U	<		U							9.20E+01		
S20-B2-0	January 12, 1988	<		U	<		U							≤		U
S20-B2-2	January 12, 1988	<		U	<		U							6.11E+01		
S20-B2-4	January 12, 1988	<		U	<		U							3.32E+01		
S20-B3-0	January 11, 1988	<		U	<		U							6.06E+01		
S20-B3-2	January 11, 1988	<		U	<		U							7.02E+01		
S20-B3-4 R	January 11, 1988	<		U	<		U							1.52E+02		
S20-B4-0	January 8, 1988	<		U	<		U							≤		U
S20-B4-2	January 8, 1988	<		U	<		U							≤		U
S20-B4-4	January 8, 1988	<		U	<		U							≤		U
S20-B5-0	January 8, 1988	<		U	<		U							≤		U
S20-B5-2	January 8, 1988	<		U	<		U							3.69E+01		
S20-B5-4	January 8, 1988	<		U	<		U							≤		U
S20-B6-0	January 9, 1988	<		U	<		U							5.96E+01		
S20-B6-2.5	January 9, 1988	<		U	<		U							4.96E+01		
S20-B6-5	January 9, 1988	<		U	<		U							3.11E+01		
S20-B6-7.5	January 9, 1988	<		U	<		U							≤		U
S20-B6-10	January 9, 1988	<		U	<		U							≤		U
S20-B6-15	January 9, 1988													5.74E+01		
S20-B6-20	January 9, 1988													9.00E+01		
S20-B6-25	January 9, 1988													3.20E+01		
S20-B6-30	January 9, 1988													≤		U
S20-B7-0	January 8, 1988	<		U	<		U							2.14E+01		
S20-B7-2.5	January 8, 1988	<		U	<		U							≤		U
S20-B7-5	January 8, 1988	<		U	<		U							≤		U
S20-B7-7.5	January 8, 1988	<		U	<		U							≤		U
S20-B7-10	January 8, 1988	<		U	<		U							≤		U
S20-B7-15	January 8, 1988													≤		U
S20-B7-20	January 8, 1988													≤		U
S20-B7-25	January 8, 1988													6.32E+01		
S20-B7-30	January 8, 1988													4.94E+01		
S20-B8-0	January 7, 1988	<		U	<		U							≤		U
S20-B8-2.5	January 7, 1988	<		U	<		U							2.31E+01		
S20-B8-5	January 7, 1988	<		U	<		U							≤		U
S20-B8-7.5	January 7, 1988	<		U	<		U							2.54E+01		
S20-B8-10	January 7, 1988	<		U	<		U							≤		U
S20-B8-15	January 7, 1988													≤		U
S20-B8-20	January 7, 1988													≤		U
S20-B8-25	January 7, 1988													≤		U
S20-B8-30	January 7, 1988													≤		U
S20-B9-0	January 9, 1988	<		U	<		U							≤		U
S20-B9-2.5	January 9, 1988	<		U	<		U							6.17E+01		
S20-B9-5	January 9, 1988	<		U	<		U							7.62E+01		
S20-B9-7.5	January 9, 1988	<		U	<		U							1.91E+01		
S20-B9-10	January 9, 1988	<		U	<		U							4.30E+01		
S20-B9-15	January 9, 1988													3.27E+01		
S20-B9-20	January 9, 1988													1.32E+02		
S20-B9-25	January 9, 1988													1.96E+01		
S20-B9-30	January 9, 1988													1.68E+01		
S20-B10-0	January 12, 1988	<		U	<		U							2.27E+01		
S20-B10-2.5	January 12, 1988	<		U	<		U							≤		U
S20-B10-5	January 12, 1988	<		U	<		U							3.05E+01		
S20-B10-7.5	January 12, 1988	<		U	<		U							3.63E+01		
S20-B10-10	January 12, 1988	<		U	<		U							≤		U
S20-B10-15	January 12, 1988													5.19E+01		
S20-B10-20	January 12, 1988													8.95E+01		
S20-B10-25	January 12, 1988													3.77E+01		
S20-B10-30	January 12, 1988													≤		U
S020-B11-0	January 11, 1988	<		U	<		U							6.63E+01		
S020-B11-2.5	January 11, 1988	<		U	<		U							9.26E+01		
S020-B11-5	January 11, 1988	<		U	<		U							1.01E+02		
S020-B11-7.5	January 11, 1988	<		U	<		U							1.03E+02		
S020-B11-10	January 11, 1988	<		U	<		U							8.74E+01		
S020-B11-15	January 11, 1988													9.30E+01		
S020-B11-30	January 11, 1988													5.97E+01		
S020-B11-45	January 11, 1988													5.02E+01		
S020-B11-60	January 11, 1988													≤		U

TABLE D-5
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

SITE		SWMU 95			SWMU 95			SWMU 95			SWMU 95			SWMU 95		
ANALYTE		Barium			Beryllium			Cadmium			Calcium			Chromium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0951-0.5 (0953)	December 7, 1991	3.82E+03			<		U	1.80E+00			1.44E+05			1.15E+02		J
0951-04 (0953)	December 7, 1991	2.55E+02			<		U	<		U	2.23E+05			4.20E+00		
0951-06 (0953)	December 7, 1991	1.88E+02			5.40E-01		J	<		U	8.89E+04			7.60E+00		
0951-10 (0953)	December 7, 1991	5.09E+01			5.40E-01		J	<		U	1.09E+05			6.60E+00		
0952-0.5 (0954)	December 8, 1991	1.84E+02			<		U	<		U	1.37E+05			2.68E+01		J
0952-04 (0954)	December 8, 1991	7.43E+01			<		U	<		U	1.46E+05			4.40E+00		J
0952-06 (0954)	December 8, 1991	8.27E+01			<		U	<		U	1.27E+05			4.30E+00		J
0952-10 (0954)	December 8, 1991	2.39E+02			<		U	<		U	1.60E+05			4.40E+00		J
S20-B1-0	January 10, 1988	2.96E+02						3.60E+00						9.60E+00		
S20-B1-2	January 11, 1988	4.58E+02						4.50E+00						1.05E+01		
S20-B1-4	January 11, 1988	7.37E+02						4.10E+00						7.70E+00		
S20-B2-0	January 12, 1988	1.51E+02						3.80E+00						1.83E+01		
S20-B2-2	January 12, 1988	1.38E+02						2.90E+00						7.80E+00		
S20-B2-4	January 12, 1988	9.82E+01						2.50E+00						6.90E+00		
S20-B3-0	January 11, 1988	4.41E+02						5.50E+00						1.05E+01		
S20-B3-2	January 11, 1988	1.50E+03						5.50E+00						1.09E+01		
S20-B3-4 R	January 11, 1988	1.07E+02						2.40E+00						1.40E+00		
S20-B4-0	January 8, 1988	5.61E+02						4.60E+00						1.41E+01		
S20-B4-2	January 8, 1988	2.81E+02						3.30E+00						7.00E+00		
S20-B4-4	January 8, 1988	1.50E+02						1.30E+00						6.30E+00		
S20-B5-0	January 8, 1988	1.62E+02						4.00E+00						1.72E+01		
S20-B5-2	January 8, 1988	5.94E+02						1.80E+00						1.05E+01		
S20-B5-4	January 8, 1988	2.33E+02						2.10E+00						8.90E+00		
S20-B6-0	January 9, 1988	1.91E+02						4.60E+00						1.86E+01		
S20-B6-2.5	January 9, 1988	2.20E+02						1.10E+00						4.40E+00		
S20-B6-5	January 9, 1988	9.71E+01						2.00E+00						8.10E+00		
S20-B6-7.5	January 9, 1988	2.33E+02						1.70E+00						4.80E+00		
S20-B6-10	January 9, 1988	9.29E+01						1.70E+00						4.60E+00		
S20-B6-15	January 9, 1988	1.21E+02						1.70E+00						5.30E+00		
S20-B6-20	January 9, 1988	3.02E+02						2.00E+00						5.50E+00		
S20-B6-25	January 9, 1988	1.07E+02						<		U				2.50E+00		
S20-B6-30	January 9, 1988	3.60E+01						<		U				2.50E+00		
S20-B7-0	January 8, 1988	3.90E+02						3.70E+00						9.50E+00		
S20-B7-2.5	January 8, 1988	5.73E+02						2.20E+00						8.00E+00		
S20-B7-5	January 8, 1988	4.97E+02						2.90E+00						7.50E+00		
S20-B7-7.5	January 8, 1988	1.75E+02						2.70E+00						6.50E+00		
S20-B7-10	January 8, 1988	7.38E+01						2.50E+00						8.80E+00		
S20-B7-15	January 8, 1988	1.63E+02						3.20E+00						7.00E+00		
S20-B7-20	January 8, 1988	2.62E+02						7.00E-01						6.60E+00		
S20-B7-25	January 8, 1988	5.34E+01						3.60E+00						5.20E+00		
S20-B7-30	January 8, 1988	3.89E+01						2.40E+00						3.90E+00		
S20-B8-0	January 7, 1988	2.27E+02						2.60E+00						6.30E+00		
S20-B8-2.5	January 7, 1988	4.29E+03						4.50E+00						1.14E+01		
S20-B8-5	January 7, 1988	2.18E+02						2.70E+00						8.30E+00		
S20-B8-7.5	January 7, 1988	2.45E+02						2.40E+00						1.05E+01		
S20-B8-10	January 7, 1988	1.06E+02						2.40E+00						7.50E+00		
S20-B8-15	January 7, 1988	1.34E+02						4.90E+00						8.50E+00		
S20-B8-20	January 7, 1988	6.86E+01						1.60E+00						7.10E+00		
S20-B8-25	January 7, 1988	6.76E+01						9.00E-01						4.50E+00		
S20-B8-30	January 7, 1988	3.54E+01						1.60E+00						5.30E+00		
S20-B9-0	January 9, 1988	1.49E+02						4.90E+00						1.59E+01		
S20-B9-2.5	January 9, 1988	1.95E+02						1.90E+00						8.00E+00		
S20-B9-5	January 9, 1988	3.31E+02						3.30E+00						9.30E+00		
S20-B9-7.5	January 9, 1988	1.10E+02						1.20E+00						6.40E+00		
S20-B9-10	January 9, 1988	7.60E+01						1.70E+00						6.70E+00		
S20-B9-15	January 9, 1988	6.80E+01						<		U				4.50E+00		
S20-B9-20	January 9, 1988	4.11E+02						2.10E+00						4.50E+00		
S20-B9-25	January 9, 1988	9.64E+01						1.30E+00						6.00E+00		
S20-B9-30	January 9, 1988	3.48E+01						<		U				4.10E+00		
S20-B10-0	January 12, 1988	2.73E+02						1.05E+01						4.75E+01		
S20-B10-2.5	January 12, 1988	1.87E+02						3.10E+00						8.50E+00		
S20-B10-5	January 12, 1988	4.80E+02						2.50E+00						4.90E+00		
S20-B10-7.5	January 12, 1988	2.58E+02						3.60E+00						8.20E+00		
S20-B10-10	January 12, 1988	2.00E+00						1.00E+00						2.00E+00		
S20-B10-15	January 12, 1988	4.47E+02						3.10E+00						6.50E+00		
S20-B10-20	January 12, 1988	1.64E+02						2.40E+00						4.70E+00		
S20-B10-25	January 12, 1988	8.52E+01						1.40E+00						4.90E+00		
S20-B10-30	January 12, 1988	3.40E+01						1.70E+00						3.20E+00		
S020-B11-0	January 11, 1988	1.91E+02						5.20E+00						2.03E+01		
S020-B11-2.5	January 11, 1988	4.53E+02						1.20E+00						5.10E+00		
S020-B11-5	January 11, 1988	5.60E+02						2.80E+00						7.30E+00		
S020-B11-7.5	January 11, 1988	4.11E+02						3.60E+00						9.00E+00		
S020-B11-10	January 11, 1988	6.18E+02						2.40E+00						7.90E+00		
S020-B11-15	January 11, 1988	5.79E+02						3.10E+00						5.40E+00		
S020-B11-30	January 11, 1988	3.45E+01						1.10E+00						2.40E+00		
S020-B11-45	January 11, 1988	7.79E+01						<		U				3.70E+00		
S020-B11-60	January 11, 1988	1.34E+01						<		U				1.20E+00		

TABLE D-5
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

SITE		SWMU 95			SWMU 95			SWMU 95			SWMU 95			SWMU 95		
ANALYTE		Cobalt			Copper			Iron			Lead			Magnesium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0951-0.5 (0953)	December 7, 1991	1.26E+01			5.90E+01			4.12E+04			1.47E+02			2.74E+03		
0951-04 (0953)	December 7, 1991	2.70E+00		J	<		U	2.66E+03			1.60E+00			3.91E+03		
0951-06 (0953)	December 7, 1991	4.30E+00		J	<		U	6.53E+03			4.80E+00			4.50E+03		
0951-10 (0953)	December 7, 1991	3.00E+00		J	<		U	4.73E+03			3.10E+00			4.34E+03		
0952-0.5 (0954)	December 8, 1991	3.50E+00		J	<		U	6.31E+03			3.16E+01			2.61E+03		
0952-04 (0954)	December 8, 1991	1.50E+00		J	<		U	3.81E+03			3.60E+00			2.36E+03		
0952-06 (0954)	December 8, 1991	2.40E+00		J	<		U	3.88E+03			3.30E+00			2.29E+03		
0952-10 (0954)	December 8, 1991	3.10E+00		J	<		U	3.80E+03			2.90E+00			3.45E+03		
S20-B1-0	January 10, 1988										1.46E+02					
S20-B1-2	January 11, 1988										4.69E+01					
S20-B1-4	January 11, 1988										3.15E+01					
S20-B2-0	January 12, 1988										8.40E+01					
S20-B2-2	January 12, 1988										6.50E+01					
S20-B2-4	January 12, 1988										5.20E+01					
S20-B3-0	January 11, 1988										7.61E+01					
S20-B3-2	January 11, 1988										2.81E+01					
S20-B3-4 R	January 11, 1988										1.94E+01					
S20-B4-0	January 8, 1988										5.94E+01					
S20-B4-2	January 8, 1988										3.00E+01					
S20-B4-4	January 8, 1988										3.25E+01					
S20-B5-0	January 8, 1988										3.25E+01					
S20-B5-2	January 8, 1988										4.03E+01					
S20-B5-4	January 8, 1988										2.12E+01					
S20-B6-0	January 9, 1988										2.15E+02					
S20-B6-2.5	January 9, 1988										5.80E+01					
S20-B6-5	January 9, 1988										1.21E+02					
S20-B6-7.5	January 9, 1988										2.40E+01					
S20-B6-10	January 9, 1988										3.80E+01					
S20-B6-15	January 9, 1988										4.90E+01					
S20-B6-20	January 9, 1988										7.20E+01					
S20-B6-25	January 9, 1988										3.80E+01					
S20-B6-30	January 9, 1988										2.10E+01					
S20-B7-0	January 8, 1988										3.37E+01					
S20-B7-2.5	January 8, 1988										2.97E+01					
S20-B7-5	January 8, 1988										4.37E+01					
S20-B7-7.5	January 8, 1988										3.24E+01					
S20-B7-10	January 8, 1988										2.97E+01					
S20-B7-15	January 8, 1988										2.46E+01					
S20-B7-20	January 8, 1988										3.29E+01					
S20-B7-25	January 8, 1988										2.83E+01					
S20-B7-30	January 8, 1988										2.90E+01					
S20-B8-0	January 7, 1988										4.76E+01					
S20-B8-2.5	January 7, 1988										5.77E+01					
S20-B8-5	January 7, 1988										3.78E+01					
S20-B8-7.5	January 7, 1988										6.03E+01					
S20-B8-10	January 7, 1988										2.33E+01					
S20-B8-15	January 7, 1988										3.88E+01					
S20-B8-20	January 7, 1988										4.62E+01					
S20-B8-25	January 7, 1988										2.39E+01					
S20-B8-30	January 7, 1988										1.93E+01					
S20-B9-0	January 9, 1988										7.50E+01					
S20-B9-2.5	January 9, 1988										7.50E+01					
S20-B9-5	January 9, 1988										6.00E+01					
S20-B9-7.5	January 9, 1988										4.50E+01					
S20-B9-10	January 9, 1988										5.00E+01					
S20-B9-15	January 9, 1988										3.80E+01					
S20-B9-20	January 9, 1988										3.60E+01					
S20-B9-25	January 9, 1988										3.20E+01					
S20-B9-30	January 9, 1988										5.60E+01					
S20-B10-0	January 12, 1988										2.58E+02					
S20-B10-2.5	January 12, 1988										7.70E+01					
S20-B10-5	January 12, 1988										7.10E+01					
S20-B10-7.5	January 12, 1988										4.90E+01					
S20-B10-10	January 12, 1988										2.10E+01					
S20-B10-15	January 12, 1988										4.90E+01					
S20-B10-20	January 12, 1988										4.70E+01					
S20-B10-25	January 12, 1988										4.00E+01					
S20-B10-30	January 12, 1988										4.20E+01					
S020-B11-0	January 11, 1988										6.43E+01					
S020-B11-2.5	January 11, 1988										3.63E+01					
S020-B11-5	January 11, 1988										4.13E+01					
S020-B11-7.5	January 11, 1988										3.59E+01					
S020-B11-10	January 11, 1988										5.66E+01					
S020-B11-15	January 11, 1988										5.00E+01					
S020-B11-30	January 11, 1988										1.54E+01					
S020-B11-45	January 11, 1988										1.39E+01					
S020-B11-60	January 11, 1988										1.46E+01					

TABLE D-5
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

SITE		SWMU 95			SWMU 95			SWMU 95			SWMU 95			SWMU 95		
ANALYTE		Manganese			Mercury			Nickel			Potassium			Selenium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0951-0.5 (0953)	December 7, 1991	4.43E+02			3.80E-01			4.91E+01			4.48E+02		J	<		UJ
0951-04 (0953)	December 7, 1991	1.15E+02			<		U	5.60E+00		J	8.14E+02		J	<		UJ
0951-06 (0953)	December 7, 1991	1.03E+02			<		U	9.60E+00			2.03E+03			<		UJ
0951-10 (0953)	December 7, 1991	5.72E+01			<		U	6.80E+00		J	1.68E+03			<		UJ
0952-0.5 (0954)	December 8, 1991	1.65E+02			<		U	8.10E+00		J	1.13E+03		J	<		UJ
0952-04 (0954)	December 8, 1991	1.06E+02			<		U	4.70E+00		J	9.82E+02		J	<		UJ
0952-06 (0954)	December 8, 1991	9.99E+01			<		U	4.60E+00		J	1.11E+03		J	<		UJ
0952-10 (0954)	December 8, 1991	1.13E+02			<		U	4.90E+00		J	1.11E+03		J	<		UJ
S20-B1-0	January 10, 1988				<		U							<		U
S20-B1-2	January 11, 1988				<		U							1.74E+02		
S20-B1-4	January 11, 1988				<		U							1.86E+02		
S20-B2-0	January 12, 1988				6.10E-01									<		U
S20-B2-2	January 12, 1988				<		U							1.51E+02		
S20-B2-4	January 12, 1988				<		U							1.50E+02		
S20-B3-0	January 11, 1988				<		U							1.49E+02		
S20-B3-2	January 11, 1988				<		U							1.31E+02		
S20-B3-4 R	January 11, 1988				<		U							2.73E+02		
S20-B4-0	January 8, 1988				<		U							6.18E+01		
S20-B4-2	January 8, 1988				<		U							5.11E+01		
S20-B4-4	January 8, 1988				<		U							7.14E+01		
S20-B5-0	January 8, 1988				<		U							4.89E+01		
S20-B5-2	January 8, 1988				<		U							4.98E+01		
S20-B5-4	January 8, 1988				<		U							6.89E+01		
S20-B6-0	January 9, 1988				<		U							8.02E+01		
S20-B6-2.5	January 9, 1988				<		U							1.63E+02		
S20-B6-5	January 9, 1988				<		U							1.21E+02		
S20-B6-7.5	January 9, 1988				<		U							<		U
S20-B6-10	January 9, 1988				<		U							1.25E+02		
S20-B6-15	January 9, 1988				<		U							1.42E+02		
S20-B6-20	January 9, 1988				<		U							1.39E+02		
S20-B6-25	January 9, 1988				<		U							1.01E+02		
S20-B6-30	January 9, 1988				<		U							<		U
S20-B7-0	January 8, 1988				<		U							<		U
S20-B7-2.5	January 8, 1988				<		U							<		U
S20-B7-5	January 8, 1988				<		U							5.33E+01		
S20-B7-7.5	January 8, 1988				<		U							8.12E+01		
S20-B7-10	January 8, 1988				<		U							<		U
S20-B7-15	January 8, 1988				<		U							<		U
S20-B7-20	January 8, 1988				<		U							<		U
S20-B7-25	January 8, 1988				<		U							1.11E+02		
S20-B7-30	January 8, 1988				<		U							1.01E+02		
S20-B8-0	January 7, 1988				<		U							5.42E+01		
S20-B8-2.5	January 7, 1988				<		U							9.49E+01		
S20-B8-5	January 7, 1988				<		U							5.15E+01		
S20-B8-7.5	January 7, 1988				<		U							7.86E+01		
S20-B8-10	January 7, 1988				<		U							<		U
S20-B8-15	January 7, 1988				<		U							7.58E+01		
S20-B8-20	January 7, 1988				<		U							<		U
S20-B8-25	January 7, 1988				<		U							<		U
S20-B8-30	January 7, 1988				<		U							<		U
S20-B9-0	January 9, 1988				<		U							1.05E+02		
S20-B9-2.5	January 9, 1988				<		U							1.75E+02		
S20-B9-5	January 9, 1988				<		U							7.53E+01		
S20-B9-7.5	January 9, 1988				<		U							1.30E+02		
S20-B9-10	January 9, 1988				<		U							1.32E+02		
S20-B9-15	January 9, 1988				<		U							4.66E+01		
S20-B9-20	January 9, 1988				<		U							1.31E+02		
S20-B9-25	January 9, 1988				<		U							1.06E+02		
S20-B9-30	January 9, 1988				<		U							1.06E+02		
S20-B10-0	January 12, 1988				<		U							1.54E+02		
S20-B10-2.5	January 12, 1988				<		U							1.49E+02		
S20-B10-5	January 12, 1988				<		U							1.74E+02		
S20-B10-7.5	January 12, 1988				<		U							1.41E+02		
S20-B10-10	January 12, 1988				<		U							<		U
S20-B10-15	January 12, 1988				<		U							7.41E+01		
S20-B10-20	January 12, 1988				<		U							1.07E+02		
S20-B10-25	January 12, 1988				<		U							8.33E+01		
S20-B10-30	January 12, 1988				<		U							<		U
S020-B11-0	January 11, 1988				<		U							6.82E+01		
S020-B11-2.5	January 11, 1988				<		U							9.46E+01		
S020-B11-5	January 11, 1988				<		U							7.66E+01		
S020-B11-7.5	January 11, 1988				<		U							5.71E+01		
S020-B11-10	January 11, 1988				<		U							5.07E+01		
S020-B11-15	January 11, 1988				<		U							4.88E+01		
S020-B11-30	January 11, 1988				<		U							3.92E+01		
S020-B11-45	January 11, 1988				<		U							3.54E+01		
S020-B11-60	January 11, 1988				<		U							3.72E+01		

TABLE D-5
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 95
CANNON AFB, NEW MEXICO

SITE		SWMU 95			SWMU 95			SWMU 95			SWMU 95		
ANALYTE		Silver			Sodium			Vanadium			Zinc		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
0951-0.5 (0953)	December 7, 1991	<		U	6.41E+03			1.55E+01			4.67E+02		J
0951-04 (0953)	December 7, 1991	1.00E+00		J	5.57E+03			9.40E+00		J	7.60E+00		
0951-06 (0953)	December 7, 1991	<		U	3.14E+03			2.07E+01			1.74E+01		
0951-10 (0953)	December 7, 1991	<		U	1.17E+03			1.43E+01			1.13E+01		
0952-0.5 (0954)	December 8, 1991	<		U	1.85E+03			1.38E+01			6.26E+01		J
0952-04 (0954)	December 8, 1991	<		U	1.41E+03			1.25E+01			9.00E+00		
0952-06 (0954)	December 8, 1991	<		U	1.80E+03			1.15E+01		J	8.80E+00		
0952-10 (0954)	December 8, 1991	<		U	1.42E+03			1.16E+01		J	9.30E+00		J
S20-B1-0	January 10, 1988												
S20-B1-2	January 11, 1988												
S20-B1-4	January 11, 1988												
S20-B2-0	January 12, 1988												
S20-B2-2	January 12, 1988												
S20-B2-4	January 12, 1988												
S20-B3-0	January 11, 1988												
S20-B3-2	January 11, 1988												
S20-B3-4 R	January 11, 1988												
S20-B4-0	January 8, 1988												
S20-B4-2	January 8, 1988												
S20-B4-4	January 8, 1988												
S20-B5-0	January 8, 1988												
S20-B5-2	January 8, 1988												
S20-B5-4	January 8, 1988												
S20-B6-0	January 9, 1988												
S20-B6-2.5	January 9, 1988												
S20-B6-5	January 9, 1988												
S20-B6-7.5	January 9, 1988												
S20-B6-10	January 9, 1988												
S20-B6-15	January 9, 1988												
S20-B6-20	January 9, 1988												
S20-B6-25	January 9, 1988												
S20-B6-30	January 9, 1988												
S20-B7-0	January 8, 1988												
S20-B7-2.5	January 8, 1988												
S20-B7-5	January 8, 1988												
S20-B7-7.5	January 8, 1988												
S20-B7-10	January 8, 1988												
S20-B7-15	January 8, 1988												
S20-B7-20	January 8, 1988												
S20-B7-25	January 8, 1988												
S20-B7-30	January 8, 1988												
S20-B8-0	January 7, 1988												
S20-B8-2.5	January 7, 1988												
S20-B8-5	January 7, 1988												
S20-B8-7.5	January 7, 1988												
S20-B8-10	January 7, 1988												
S20-B8-15	January 7, 1988												
S20-B8-20	January 7, 1988												
S20-B8-25	January 7, 1988												
S20-B8-30	January 7, 1988												
S20-B9-0	January 9, 1988												
S20-B9-2.5	January 9, 1988												
S20-B9-5	January 9, 1988												
S20-B9-7.5	January 9, 1988												
S20-B9-10	January 9, 1988												
S20-B9-15	January 9, 1988												
S20-B9-20	January 9, 1988												
S20-B9-25	January 9, 1988												
S20-B9-30	January 9, 1988												
S20-B10-0	January 12, 1988												
S20-B10-2.5	January 12, 1988												
S20-B10-5	January 12, 1988												
S20-B10-7.5	January 12, 1988												
S20-B10-10	January 12, 1988												
S20-B10-15	January 12, 1988												
S20-B10-20	January 12, 1988												
S20-B10-25	January 12, 1988												
S20-B10-30	January 12, 1988												
S020-B11-0	January 11, 1988												
S020-B11-2.5	January 11, 1988												
S020-B11-5	January 11, 1988												
S020-B11-7.5	January 11, 1988												
S020-B11-10	January 11, 1988												
S020-B11-15	January 11, 1988												
S020-B11-30	January 11, 1988												
S020-B11-45	January 11, 1988												
S020-B11-60	January 11, 1988												

Note: Parentheses indicate results are from samples collected from redrilled borings due to laboratory missed holding times.
Underlined values indicate that data is questionable and not valid and may be attributed to interelemental interference during the inception of new ICP method
ICP = Inductively coupled plasma
J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
U = Nondetect
UJ = Estimated Nondetect

TABLE D-6
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

SITE		SWMU 107			SWMU 107			SWMU 107			SWMU 107		
ANALYTE		OIL & GREASE			TPH			Purgeable Organics			Ethylbenzene		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
8-1-2	1984 *	1.70E+03						<		U			
8-2-8	1984 *	3.80E+03						<		U			
8-3-60	1984 *	2.60E+03						<		U			
1071-0	October 11, 1991				2.87E+03						<		U
1071-5	October 8, 1991				7.42E+01						<		U
1071-10	October 8, 1991				<		U				<		U
1071-20	October 8, 1991				<		U				<		U
1071-30	October 9, 1991				<		U				<		U
1072-0	October 23, 1991				9.63E+02						<		U
1072-4	October 24, 1991				<		U				<		U
1072-10	October 24, 1991				<		U				<		U
1072-20	October 24, 1991				<		U				<		U
1072-30	October 25, 1991				<		U				<		U
1073-0	October 23, 1991				6.08E+03						<		U
1073-4	October 25, 1991				<		U				<		U
1073-10	October 25, 1991				<		U				<		U
1073-20	October 25, 1991				<		U				<		U
1073-30	October 25, 1991				<		U				<		U
1074-0	October 23, 1991				3.61E+03						<		U
1074-4	October 25, 1991				1.83E+04						1.30E+01		J
1074-10	October 25, 1991				9.22E+03						1.50E+01		J
1074-20	October 25, 1991				1.15E+04						5.80E+00		
1074-30	October 25, 1991				4.71E+03						<		U
1074-45	October 26, 1991				4.19E+01						<		U
1074-50	October 26, 1991				<		U				<		U
1074-60	October 26, 1991				<		U				<		U

Notes: *Precise date of collection could not be determined.

J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

TABLE D-6
SUMMARY OF RFI SOIL ANALYTICAL DATA COLLECTED AT SWMU 107
CANNON AFB, NEW MEXICO

SITE		SWMU 107			SWMU 107			SWMU 107			SWMU 107			SWMU 107		
ANALYTE		Toluene			Xylene			Trichloroethene			Lead			Chromium		
UNITS		mg/kg			mg/kg			mg/kg			mg/kg			mg/kg		
	Date Collected	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual	Result	RL	Qual
8-1-2	1984 *										3.70E+00					
8-2-8	1984 *										2.90E+00					
8-3-60	1984 *										1.70E+00					
1071-0	October 11, 1991	<		U	<		U				1.51E+02			5.10E+00		
1071-5	October 8, 1991	<		U	<		U	<		U	3.30E+00			5.70E+00		
1071-10	October 8, 1991	<		U	<		U	<		U	4.80E+00			7.70E+00		
1071-20	October 8, 1991	<		U	<		U	<		U	2.10E+00			5.60E+00		
1071-30	October 9, 1991	<		U	<		U	<		U	3.80E+00			6.40E+00		
1072-0	October 23, 1991	<		U	<		U				6.40E+00		J	3.50E+00		
1072-4	October 24, 1991	<		U	<		U	<		U	2.10E+00			3.30E+00		
1072-10	October 24, 1991	<		U	<		U	<		U	5.30E+00			5.00E+00		
1072-20	October 24, 1991	<		U	<		U	<		U	2.70E+00			4.90E+00		
1072-30	October 25, 1991	<		U	<		U	<		U	1.60E+00			1.03E+01		
1073-0	October 23, 1991	7.30E-02		J	<		U				8.70E+00			3.20E+00		
1073-4	October 25, 1991	<		U	<		U	<		U	2.90E+00			6.10E+00		
1073-10	October 25, 1991	<		U	<		U	<		U	4.80E+00			8.20E+00		
1073-20	October 25, 1991	<		U	<		U	<		U	4.10E+00			7.30E+00		
1073-30	October 25, 1991	<		U	<		U	<		U	1.90E+00			4.80E+00		
1074-0	October 23, 1991	<		U							3.22E+02			1.11E+01		
1074-4	October 25, 1991	6.90E+00		J	9.40E+01			<		U	1.04E+01			5.70E+00		
1074-10	October 25, 1991	<		U	8.70E+01			<		U	5.80E+00			5.20E+00		
1074-20	October 25, 1991	2.70E+00		J	2.80E+01			<		U	3.70E+00			7.30E+00		
1074-30	October 25, 1991	<		U	4.90E+00		J	<		U	3.60E+00			8.30E+00		
1074-45	October 26, 1991	<		U	<		U	<		U	1.80E+00			4.40E+00		
1074-50	October 26, 1991	<		U	<		U	<		U	1.50E+00			5.20E+00		
1074-60	October 26, 1991	4.40E-03		J	<		U	<		U	7.30E-01			2.70E+00		

Notes: *Precise date of collection could not be determined.

J = Estimated
mg/kg = Milligram per kilogram
Qual = Qualifier
RL = Reporting Limit
SWMU = Solid Waste Management Unit
TPH = Total Petroleum Hydrocarbons
U = Nondetect

No documentation of previous activities at the SWMUs discussed in this RFI Addendum Report was necessary.

JUNE 2005 INSPECTION PHOTOGRAPHIC LOG

RCRA Facility Investigation Cannon AFB, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 01	Date: 28-Jun-05

Description:

Area of SWMU 91 (Recovered Fuel Tank No. 5114), former AST containment and saddles, looking east-northeast

Photo No. 02	Date: 28-Jun-05

Description:

Area of SD-11 (Engine Test Cell), with which SWMU 91 (Recovered Fuel Tank No. 5114) is associated, looking east

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 01	Date: 18-Oct-08

Description: Sample locations at SWMU 34 – AGE Drainage Ditch indicated with wooden stakes and flagging

Photo No. 02	Date: 18-Oct-08

Description: Sample location behind small fuel storage area on south end of AGE drainage ditch at SWMU 34

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 03	Date: 18-Oct-08

Description: Near surface soil sample collection with stainless steel hand auger at location SS03 for lead at SWMU 78 – Fire Department Training Area No. 1

Photo No. 04	Date: 18-Oct-08

Description: Surface soil sample locations SS01 and SS02 at SWMU 78 – Fire Department Training Area No. 1

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 05	Date: 20-Oct-08

Description: Metal debris observed scattered on the ground at SWMU 78 – Fire Department Training Area No. 1

Photo No. 06	Date: 18-Oct-08

Description: SWMU 85 - Stormwater Collection Area following mid-October 2008 rain event

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 07	Date: 23-Oct-08

Description: SWMU 85 in March 2010 after concrete debris was removed.

Photo No. 08	Date: 23-Oct-08

Description: Peterson Drilling employees collecting subsurface soil sample with direct push rig at SWMU 91 – Recovered Fuel Tank No. 5114

Note: Concrete pad shown in 2005 photos has been removed.

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 09	Date: 21-Oct-08

Description: Peterson drilling completing subsurface soil boring SB01 with drill rig using hollow stem auger at SWMU 95 – Northeast Stormwater Drainage Area

Photo No. 10	Date: 21-Oct-08

Description: Poor sample recovery due to caliche causing refusal at 4.8 feet bgs at boring location SB01 at SWMU 95 – Northeast Stormwater Collection Area

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 11	Date: 21-Oct-08

Description: Backfilling soil boring SB02 with bentonite at SWMU 95 – Northeast Stormwater Collection Area

Photo No. 12	Date: 22-Oct-08

Description: Peterson Drilling employees collecting subsurface soil sample location SB01 with direct push rig at SWMU 95 – Northeast Stormwater Collection Area

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 13	Date: 21-Oct-08

Description: Peterson Drilling setting up decontamination pad at SWMU 107 – Fire Training Area No. 3

Photo No. 14	Date: 23-Oct-08

Description: Soil locations SB03 and SB04 at SMWU 107 – Fire Training Area No. 3

OCTOBER 2008 VISUAL INSPECTION PHOTOGRAPHIC LOG

RFI Addendum for SWMUs 34, 78, 85, 91, 95 and 107 Cannon Air Force Base, New Mexico	USACE – Omaha District	Contract No. W9128F-04-0001 Task Order 28

Photo No. 15	Date: 23-Oct-08
Description: Soil locations SB04 and SB05 at SMWU 107 – Fire Training Area No. 3	

RESPONSE TO COMMENTS
NOTICE OF DISAPPROVAL FINAL RCRA FACILITY INVESTIGATION FOR SWMUS 34, 78, 85, 91, 95 AND 107 ADDENDUM REPORT, JUNE 2009
EPA ID NO. NM7572124454
HWB-CAFB-06-007
CANNON AFB, NEW MEXICO

Comments by James P. Bearzi, Chief Hazardous Waste Bureau, NMED dated December 17, 2009.

The New Mexico Environment Department (NMED) has received Cannon Air Force Base's (Permittee) *Final RCRA Facility Investigation for SWMUs 34, 78, 85, 91, 95 and 107 Addendum Report* dated June 2009 (Report). NMED has reviewed the RFI Addendum Report and hereby issues this Notice of Disapproval (NOD). The Permittee must revise the RFI Addendum Report based on the comments presented below.

The Permittee must address all comments and submit a response by February 28, 2010. All submittals must be in the form of two paper copies of replacement pages and one complete electronic copy. The Permittee must also provide an electronic red-line strike out version of the revised RFI Addendum Report that shows all revisions made to the report.

General Comment:

The Report contains several typographical errors. On all seven pages of Table 6-1 values for maximum concentrations of diesel range organics and lead are not reported. "#REF!" is reported instead of concentrations. Section 10.2.1 contains discussion of results and conclusions of previous investigations for SWMU 95, but refers to SWMU 85 in the last sentence of page 10-1. NMED is sometimes typed NDEM. The Permittee must correct these typographical errors.

The Permittee should be aware that, in order to determine whether a site is eligible for Corrective Action Complete with or without Controls status, NMED requires that the Permittee conduct human health and ecological risk screening to determine if the contaminants potentially pose an unacceptable risk to human health and the environment. Cumulative risk must be evaluated at sites where multiple contaminants are present.

> **Response:** Agree. The entire report will be checked for typographical errors and corrected where necessary. Risk screenings will also be reviewed to ensure that they have been completed in accordance with NMED requirements.

Specific Comments:

Comment 1. Sections 6.3.1 Previous Investigation Results and 6.3.2 RFI Addendum Results for SWMU 34, Page 6-3:

The Permittee indicated that the industrial and construction worker Soil Screening Levels (SSLs) for lead are both 750 mg/kg. The Permittee must correct the statements to indicate the correct SSL for lead in industrial and construction worker soil as 800 mg/kg.

> **Response:** Agree. The industrial and construction worker Soil Screening Level in the text will be changed from 750 mg/kg to 800 mg/kg.

Comment 2. Section 6.3.4, Conceptual Site Model for SWMU 34, Page 6-4:

The Permittee indicates that exposure to human receptors to lead identified in the 6-12 inch interval as unlikely because exposure to humans would most likely occur at the surface interval (0-6 inch). The Permittee is referred to the NMED *Technical Background Document for Development of Soil Screening Levels, Revision 5.0.* Industrial/Occupational SSLs are based on exposure to surface and shallow subsurface soils (0-24 inch interval) that is expected to occur in the commercial or industrial scenario. Residential and construction Worker SSLs are based on exposure to soils in the 0-10 feet interval. The Permittee must follow NMED's guidance to determine whether or not an exposure pathway is complete.

> **Response:** Agree. The following text will replace the fourth and fifth sentences of the second paragraph: "*The soil exposure pathway was potentially complete for the adult general duty worker and the construction worker. However, the maximum lead concentration (682 mg/kg) fell below the industrial/occupational and construction worker SSLs (800 mg/kg), which indicated that the site does not pose a significant risk to workers. The maximum lead concentration (682 mg/kg) did exceed the residential SSL (400 mg/kg), but the average lead concentration at the site (77.4 mg/kg) did not. In addition, based on the depth of the maximum lead concentration (the 6- to 12-inch interval), as well as the site's configuration and location in a depression, exposure of future residents was considered an incomplete pathway.*"
>
> It is important to note that the NMED *Technical Background Document for Development of Soil Screening Levels, Revision 5.0* only lists subsurface soil exposures of 0-10 feet for constructions workers. For residential receptors this documents states, "Exposure to soil is expected to occur during home maintenance activities, yard work and landscaping, and outdoor play activities," without specifying depths of exposure. Given this description and the fact that the NMED residential land use scenario includes an exposure frequency of 350 days/year, we believe it is appropriately conservative to assume residential exposures are typically limited to the 0- to 6-inch interval.

Comment 3. Section 6.4, Summary for SWMU 34, Page 6-4:

The Permittee recommended Corrective Action Complete with Controls status for SWMU 34 due to the presence of lead in soil samples collected in October 2008. It appears to NMED that higher concentrations of lead in surface soil are limited to a small area. NMED recommends that the Permittee conduct limited soil removal in the area around samples identified as C34-SS01 and C34-SS02 in the October 2008 Addendum RFI. The Permittee should collect confirmatory

soil samples and analyze them for lead. Limited removal of surface soil around these two sample sites may result in residual lead concentrations well below residential soil SSLs and eliminate the need for controls and annual fees for maintaining the SWMU. The Permittee must submit a brief addendum work plan for review and approval by NMED prior to beginning the soil removal.

> **Response:** Comment noted. Because the maximum lead concentration (682 mg/kg) was below the industrial/occupational and construction worker SSLs (800 mg/kg) a limited soil removal action is not required to reduce human health risks for workers. In addition, lead results at C34-SS02 were below the residential SSL. **Note: Cannon AFB plans to complete additional soil investigation and limited investigation derived waste (IDW) disposal so that SWMU 34 may qualify for Corrective Action Complete without Controls. A work plan will be submitted as requested for NMED review and approval prior to beginning this fieldwork.**

Comment 4. Section 7.3.2, RFI Addendum Results for SWMU 78, Page 7-3:

In NMEDs Notice of Disapproval (NOD) dated July 27, 2007, the Permittee was directed to compare detected TPH concentrations at SWMU 78 (Fire Department Training Area No. 1) to the unknown oil values listed in Table 2a of NMED TPH Guidance. The values for residential and industrial direct exposures to unknown oil are 200 mg/kg. The maximum TPH-DRO concentration in near surface soils at SWMU 78 was 410 mg/kg. In addition, the maximum lead concentration exceeds both industrial and construction worker SSLs. Therefore, SWMU 78 does not qualify for Corrective Action Complete status. The Permittee must conduct further corrective action to achieve applicable cleanup levels for TPH and lead at SWMU 78 to ensure that it does not pose any unacceptable risk to human health or environment.

To qualify for corrective action complete status, the Permittee must remove TPH- and lead-contaminated soil to a minimum depth of 2 feet. The Permittee must collect confirmatory soil samples and analyze them for TPH (as DRO extended) and Target Analyte List (TAL) metals. Results of the RFI conducted in 1991 indicated that, in addition to lead, several metals (aluminum, cadmium, calcium, chromium, copper, iron, vanadium and zinc) were detected above CAFB background levels. Cumulative risk screening indicates noncarcinogenic risk greater than a hazard index (HI) of 1 due to the presence of metals in surface soils at SWMU 78. Removal of surface soils at SWMU 78 may reduce residual TPH concentrations to levels below residential soil SSLs as well as lead and other metal concentrations to levels below a cumulative HI of 1, which would eliminate the need for institutional controls. The Permittee must submit a work plan for review and approval by NMED no less than 90 days prior to beginning any soil removal.

> **Response:** Comment noted. The TPH results will be screened against the unknown oil screening guideline of **800 mg/kg for vapor migration and inhalation of groundwater (GW-2)**. The TPH-DRO results for samples collected during the RFI Addendum fell below the **800** mg/kg screening guideline, meaning that the TPH concentrations detected during the RFI Addendum investigation have decreased

significantly when compared to historical TPH concentrations at SWMU 78. This decrease in concentrations can likely be attributed to natural attenuation.

The values in Table 2a of the TPH Screening Guidelines are designed to be protective of potable groundwater, but historical TPH results were non-detect for depths greater than 0.5 feet. Please provide information (e.g., assumptions, etc.) regarding how the "unknown oil" screening guideline was calculated so that a site-specific guideline can be calculated by URS. **Note: In a conference call on March 16, 2010, NMED could not provide the requested information, but suggested that Table 2b of the TPH Screening Guidelines (NMED 2006) may be more appropriate for the sites at Cannon AFB. The first paragraph of this response was revised based on this suggestion (changes in bold), and the report tables will also be similarly revised.**

One lead result (894 mg/kg) exceeded both the residential (400 mg/kg) and industrial (800 mg/kg) SSLs. Based on the site's average lead concentration (180 mg/kg), the low frequency of the lead exceedance, the likelihood that TPH-DRO is naturally attenuating, and likely future land use for SWMU 78, further corrective action, including a removal action, is not required. **Note: Cannon AFB plans to complete additional soil investigation and limited IDW disposal so that SWMU 78 may qualify for Corrective Action Complete without Controls. A work plan will be submitted as requested for NMED review and approval prior to beginning this fieldwork.**

Comment 5. Section 8.4, Conceptual Site Model and Section 8.3.4, Summary for SWMU 85, Pages 8-3 and 8-4:

The purpose of the additional investigation conducted at SWMU 85, a nine-acre playa lake, was to refute high arsenic concentrations (reported in a previous investigation) that may have been due to inter-elemental interference that was not properly accounted for during laboratory analysis. The Permittee samples three locations within the boundaries of SWMU 85 in October 2008. Arsenic was detected above NMED residential soil SSLs in one surface soil (0-6 inch) soil sample. That sample was collected with a stainless steel hand auger, under 10 to 12 inches of standing water, near a large pile of concrete rubble. The Permittee indicated that arsenic in that sample may be attributed to soil that was adhered to and fell off of concrete rubble near the sample boring and that it may not be representative of SMWU 85. The Permittee subsequently recommended Corrective Action Complete with Controls status for SWMU 85.

The site does not qualify for Corrective Action Complete with Controls status because it is not adequately characterized. The Permittee must conduct additional investigation to determine arsenic concentrations in surface soils within the boundary of the SWMU 85. The Permittee must sample surface soils during dry conditions (i.e., not under standing water) at locations that are representative of storm water accumulation in the playa lake (i.e., not near the concrete rubble pile).

Response: Comment noted. The additional investigation completed at SMWU 85 did refute the high arsenic concentrations reported in a previous investigation. The RFI

Addendum arsenic results ranged from 1.5 to 6.0 mg/kg with an average concentration of 2.93 mg/kg, and demonstrated that the arsenic results from the previous investigation, which ranged from 19.3 to 112 mg/kg with an average concentration of 52.0 mg/kg, are invalid.

Unfortunately, the concrete rubble pile adjacent to sample SS-01 was located in the center of the playa basin which has standing water from stormwater runoff for much of the year. To compensate for this, the analytical results were corrected for moisture content.

Ten soil samples were collected within the playa lake basin at SWMU 85 with valid arsenic results. The site's average arsenic concentration (2.54 mg/kg) and all but one of the arsenic concentrations from the RFI Addendum (and previous valid investigations) were below the NMED residential soil SSL for arsenic. It can therefore be concluded that SWMU 85 has been adequately characterized and that the arsenic levels do not pose a risk to human receptors. In addition, it is unlikely that human receptors would be exposed to arsenic within the SWMU 85 boundary since the site is not easily accessible to human receptors. **Note: Cannon AFB plans to complete additional soil investigation at SWMU 85 as requested. A work plan will be submitted for NMED review and approval prior to beginning this fieldwork.**

To clarify with regard to surface soil sample C85-SS01, the seventh sentence in the last paragraph of Section 8.3.4 will be replaced with the following text: *"A concrete rubble pile near sample C85-SS01 may have contributed to the elevated arsenic concentration in sample C85-SS01; therefore, this concentration may not fully be representative of arsenic levels within the play lake basin."*

Comment 6. Section 9.2.2, RFI Addendum Activities, Pages 9-1 and 9-2.

The Permittee advanced three soil borings in the vicinity of the former above ground storage tank (AST) at SWMU 91. The Report indicates that, at the time the field work was conducted, "a portion of the area was under approximately 8-to 10-inches of water… [and] in the process of being re-graded with approximately 12 inches of fill material." It is not clear if the soil borings were advanced in the area that was under water or if the soil borings were advanced through 12 inches of fill material resulting in the 0-6 inch surface soil sample being composed of fill material. The Permittee must provide a figure depicting the location of the former AST, the area that was under water during field work, the area that was re-graded with the fill material and the locations of the three soil borings.

Response: Agree. The area that was under water during fieldwork and the area that was re-graded with the fill material will be added to Figure 9-1 of the Addendum Report (a copy of the revised figure is attached). The location of the former AST and the locations of the three soil borings are currently shown on Figure 9-1.