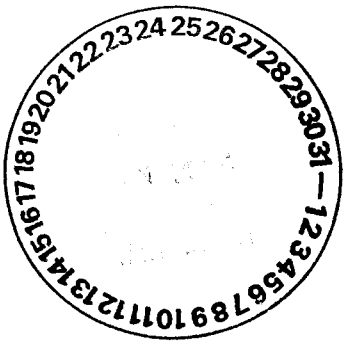
HAFB2004

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT
Mr. Cornelius Amindyas
Hazardous Waste Bureau
4131 Montgomery NE
Albuquerque, NM 87109



FROM: 49 CES/CEV
550 Tabosa Ave
Holloman AFB NM 88330-8458

SUBJECT: Hazardous and Solid Waste Amendments (HSWA) Quarterly Report for Apr – Jun 2003, EPA ID NM6572124422

1. In accordance with Module IV, Section E, of the Holloman AFB HSWA permit, attached please find the Jan-March, 2004 Quarterly Report.

2. If you have any questions please contact me at (505) 572-5395.

Chuck Schuck /Per
Daniel K. Holmquist

Environmental Restoration 49 CES/CEV

Attachment: *HSWA Quarterly Report, Jan-March, 2004* (1 copy)
Cc (w/attachment):

Ms. James Bearzie
Hazardous Waste Bureau
2905 Rodeo Park Drive East
Santa Fe, NM 87505-6303

Steve Jetter NMED-HWD
Hazardous Waste Bureau
4131 Montgomery NE
Albuquerque, NM 87109

James Harris
USEPA, Region 6 PD-N,
1445 Ross Ave., Ste 12
Dallas, TX 75202-2733

HOLLOMAN AIR FORCE BASE
NEW MEXICO

HAZARDOUS AND SOLID WASTE AMENDMENT

QUARTERLY ACTIVITY REPORT

EPA ID NM6572124422

Activity Period:
January 1 to March 31, 2004

1.0 INTRODUCTION

This quarterly report has been prepared in accordance with the Resource Conservation and Recovery Act (RCRA) Permit and the Hazardous and Solid Waste Amendments (HSWA) Permit for Holloman Air Force Base (HAFB or Holloman). These permits require periodic reporting of activities related to corrective actions at Solid Waste Management Units (SWMUs) located at HAFB.

The report summarizes activities and available data concerning corrective actions at actively remediated SWMUs across HAFB between January 1, 2003 and March 31, 2004. Table 1 briefly summarizes the status of each site undergoing the corrective action process. Table 1 provides the SWMU number, site name, corresponding Environmental Restoration Program (ERP) site number, the status of each site, the activities conducted during the reporting period and the schedule for additional activities (if needed).

Section 2.0 provides the details of specific activities such as work plan preparation, report preparation, investigations and remediation activities. Section 3.0 summarizes planned future activities for each site during next quarter. The report certification statement is presented in Section 4.0

2.0 CORRECTIVE ACTION ACTIVITIES THIS QUARTER

Between January 1 and March 31, 2004, preparations for further remediation activities were conducted, work plans were submitted and approved by NMED, and investigations were initiated at SWMU 123, AOC-2, SS-61 (AOC-1001), SS-57 (Officer's Club) and DP62 (Ritas Draw). The FT-31 draft report was completed and submitted to NMED for review. In February, a petition for site closeout and removal of SWMUs from the RCRA permit was submitted to NMED. During a February 2004 site meeting, NMED rejected the petition for some sites because these sites lack characterization of the subsurface beneath the waste placement. A scope of work was negotiated to characterize site conditions at several of these sites. If the additional characterization is favorable, NMED can then remove these sites from the Base permit.

Remediation related activities conducted during the period consisted of more pothole excavations and free product measurements at SS-59 (T-38) and landfarm compliance sampling although the Landfarm remained empty during this quarter.

The Base met with the NMED Air Quality Bureau (AQB) in January to present the results of modeling emissions from the existing FT-31 Landfarm and the proposed T-38 Landfarm. The emissions issue was raised internally at the Base and was presented to NMED AQB in order to determine if the Base Title V Air Permit could be impacted by the landfarm operation.

2.1 Old Fire Training Area FT-31 (SWMUs 39, 127, 135, 170, 171)

The Draft Report was submitted for review by NMED. Comments from NMED are pending. A final report will be issued when these comments are received and resolved.

2.2 T-38 Test Cell (SS-59)

Continued remediation activities at T-38 consisted of gauging fluid levels in test pits. Late in Q1, work began to remove clean soil overburden from above the contaminated zone.

The treatment for soil at T-38 is landfarming. Preparations for siting and constructing the landfarm were initiated in quarter 3 of 2003 but were halted by a potential conflict with emissions from the landfarm and the Base-wide Title V Air Permit. Activities resumed in Q1. Historical soil and recent analytical results (test pits) were used to model potential air emissions using multiple configurations of the Landfarm (both size and lift thickness). In January, the model results were submitted to NMED AQB so they could review and determine if they wished to regulate the landfarm activities under the Base's Title V Air Permit.

The discharge permit for the T-38 Landfarm was submitted to the NMED Groundwater Quality Bureau in March 2004. Internal Base clearances for utilities and siting procedures were also initiated during Q1. Landfarm construction will begin when the Air emission issue is resolved.

2.3 Landfarm at FT-31

No soil was placed in the Landfarm during Q1. However, quarterly monitoring and sampling as required by the temporary discharge permit was performed during February. A draft discharge permit was presented by NMED for review by HAFB in late February. The quarterly report, prepared in accordance with the discharge permit, was submitted to the NMED Groundwater Quality Bureau on March 12, 2004.

2.4 Ritas Draw (DP-62)

Field work (additional soil sampling and laboratory analysis) including debris removal was completed during Q1 (late March). When available (Q2) a draft report will be prepared and submitted to NMED for review. In addition to summarizing the soil results, the report will document debris removal.

2.5 AOC-2 Tower Site

Approval with modifications to the AOC-2 work plan was received from NMED in February 2004. The field investigation (collection and analysis of soil and groundwater samples) is scheduled for Q2 (April).

2.6 SS-61 (AOC-1001) Building 1001

The workplan for SS-61 was submitted to NMED and USACE for review in November 2003 and approved in January 2004. The first round of groundwater monitoring and gauging was conducted in February 2004. The next round will be conducted in May 2004. Due to an internal Air Force requirement, an interim Feasibility Report without the complete four quarters of data will be prepared for delivery to Air Combat Command in September 2004.

2.6 SWMU-123 POL Yard

NMED completed review of the work plan and provided comments in February. An additional boring was incorporated into the field program. Soil sampling was initiated in late March. A DRAFT summary of the soil data for the site is attached. Groundwater sampling is scheduled for April 2004.

2.7 SS-57 Officer's Club

Soil, groundwater and vapor samples were collected in March 2004 to support a risked-based closure of this site. Preliminary DRAFT data collected at the site is attached.

3.0 ACTIVITES FOR SCHEDULED FOR THE NEXT QUARTER

Activities for the next quarter (Fourth Quarter, January 1 to March 31, 2004) will include:

1. Delivery of Draft Final Ritas Draw Report (DP-62)
2. Delivery of Draft Final FT-31 Closure Report.
3. Completion of field activities at POL Yard Wash Rack and Tank (SWMU 123).
4. Continuation of groundwater monitoring for natural attenuation at SS-61 (AOC-1001).
5. Construction of the T-38 Landfarm.
6. Finalization of the operating permit at the FT-31 Landfarm.
7. Resolution of the air quality issues pertaining to Landfarm operation.

4.0 CERTIFICATION STATEMENT

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to be the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Daniel K. Holmquist
Name

49 CES/CEVR
Organization

Remedial Project Manager
Position

Cindy Schule /Por
Signature/Date

TABLES

TABLE 1
QUARTER 1, 2004 STATUS SUMMARY
(JANUARY 1 TO MARCH 31, 2004)
ONGOING CORRECTION ACTION SITES
HOLLOMAN AIR FORCE BASE, NEW MEXICO

SWMU NO.	SITE NAME	SITE STATUS	ACTIVITES CONDUCTED (THIS PERIOD)	SCHEDULED ACTIVITIES
39,127,135, 170 & 171	Fire Training Area (ERP Site FT-31)	Field Activities Complete	Draft Report to NMED for Review in March 2004	Deliver Closure Report by end of Q1, 2004
123	Building 704 Waste Oil Tank (ERP Site N/A)	Undergoing Corrective Action	NMED approved the work plan in Feb 2004. Field work began in late March with soil sampling.	Field work to completed in Q2 2004.
136	King 1 Bio Vent Site (ERP Site)	Corrective Action Complete	Placed on Basis for Determination (Permit Modification)	Awaiting final removal from permit by NMED.
139 & 140	Lake Holloman (139) Lake Stinky (140)	Corrective Action Complete	Placed on Basis for Determination (Permit Modification)	Awaiting final removal from permit by NMED.
141	Pad 9 Washrack ERP Site	Site Requires Additional Characterization	None. Work plan complete and approved by NMED Funding will be available in FY05.	None until funding is available in FY05.

TABLE 1
QUARTER 1, 2004 STATUS SUMMARY
(JANUARY 1 TO MARCH 31, 2004)
ONGOING CORRECTION ACTION SITES
HOLLOMAN AIR FORCE BASE, NEW MEXICO

148 to 154	Holloman Sewage Lagoons	Corrective Action Complete	Routine inspection and maintenance to fences conducted in Q1. Minor repairs as needed.	Routine inspection and maintenance in FY05
229	T-38 Test Cell (ERP Site SS-59)	Undergoing Corrective Action	Continued pothole excavation and fluid level measurements in November 2003. Began removal of clean overburden at the site. Submitted application for Landfarm to NMED Met with NMED Air Quality Bureau about the relationship of the Landfarm to the Base Title V Air Permit .	Construct Landfarm in Q2. Excavate at site in Q3 and Q4.
AOC-2	North Tower Site	Investigation Requested	Work Plan approved by NMED with modification to analytical regiment in February 2004.	Perform Field work and investigation in Q2.
AOC-Q	BX Service Station (ERP Site SS-17)	Undergoing Corrective Action	None	Resume excavation and landfarming of soil in Q3 and Q4 2004.
AOC-T	Main POL Spill (EPR Sites SS-02 and SS-05)	Undergoing Corrective Action	Work Plan approved in January 2004.	Excavation scheduled for Q2 and Q3 of 2004.

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QUARTER 1, 2004 STATUS SUMMARY
(JANUARY 1 TO MARCH 31, 2004)
ONGOING CORRECTION ACTION SITES
HOLLOMAN AIR FORCE BASE, NEW MEXICO

AOC-V	Officer's Club (EPR Site SS-57)	Undergoing Corrective Action	Performed additional investigation in March 2004. Results will be evaluated by the RAM Group	Perform additional field investigations in Q1, 2004
AOC-1	Chemical Agent Site (ERP Site DP-64)	Undergoing Corrective Action Preliminary Grid walk and visual site inspection for additional exposed agent conducted in FY 2000.	Huntsville USACE mobilized to site in March 04. Work to begin in April as planned.	Initiation of field activities scheduled for Q2 and early Q3 2004.
AOC-3	Ammunition Disposal Site (ERP Site DP-63)	Undergoing Corrective Action PA/SI Completed 2000	Received funding from USACE to Bhate and UXO subcontractor.	Field work will be performed during 2004. If money becomes available, work plan for additional work will be prepared.
AOC-4	West POL Fuel Spill Site	Corrective Action Complete	None. No funding available in 2004. Requested funding for FY05	No work planned in FY04
AOC-1001	Building 1001 (ERP Site SS-61)	Undergoing Corrective Action	Work Plan approved by NMED in January 04 Field work (quarterly groundwater sampling and gauging) initiated in February 2004.	Field work scheduled for Q2, Q3 & Q4

DRAFT

DRAFT
PRELIMINARY DATA TABULATION AT SWMU 123

DRAFT

Chemical	Soil Screening Levels: Calculated (µg/kg) Residential	Calculated (µg/kg) Industrial	NMED (µg/kg)§ Residential	NMED (µg/kg)§ Industrial	SDG No.	129202	129202	129364	129364	129365	129365
					Sample No.	MW-1	MW-1a	MW-2	MW-3	MW-4	MW-5
Carbon Chain (µg/kg)											
C06 - C10 (DRO)	NA	NA				8.4	9.3	0.52	ND	ND	ND
C10 - C22 (GRO)						26.0	25.0	1.50	ND	ND	ND
C22 - C32 (ORO)						ND	ND	ND	ND	ND	ND
Total (C10 - C32)	893,333	2,233,333									
VOCs (µg/kg)											
1,2,4-Trimethylbenzene	59,600	197,000	52,200	191,000		429	481	ND	ND	ND	ND
1,3,5-Trimethylbenzene*	25,600	69,100	22,300	68,900		112	127	ND	ND	ND	ND
Benzene	11,200	24,500	27,000	73,600		2,280	2,520	1,080	ND	ND	ND
Ethylbenzene*	86,600	86,600	10,600,000	25,400,000		1,460	1,670	337	ND	ND	ND
Isopropylbenzene*	265,000	369,000	700,000	2,730,000		122	139	17J	ND	ND	ND
n-Propylbenzene*	62,100	62,100	53,200	53,200		153	174	13J	ND	ND	ND
Naphthalene[1*]	61,200	61,200	71,900	98,300		129	142	ND	ND	ND	ND
p-Isopropyltoluene*	63,000	63,000				34J	38J	ND	ND	ND	ND
sec-Butylbenzene						29J	30J	ND	ND	ND	ND
Toluene*	219,000	219,000	248,000	248,000		7,330	7,490	ND	ND	ND	ND
Xylenes, total*	81,200	81,200	132,000	132,000		2,560	2,920	136	ND	ND	ND
								ND	ND	ND	ND
SVOCs (µg/kg)											
2,4-Dimethylphenol						27	31				
2-Methylnaphthalene						38	57	ND	ND	ND	ND
2-Methylphenol						105	115				
4-Methylphenol						62	71				
Naphthalene						55	76	ND	ND	ND	ND
Phenol						29	34				
Metals (mg/kg)											
Antimony						ND	ND	ND	ND	ND	ND
Arsenic			4	18		0.014	0.020	0.070	0.061	0.068	0.078
Barium			5,450	78,300		0.165	0.190	0.081	0.026	0.032	0.049
Beryllium						ND	ND	ND	ND	ND	ND
Cadium			74	8,600		ND	ND	ND	ND	ND	ND
ChromiumVI			234	3,400		0.034	0.039	0.029	0.010	0.023	0.025
Cobolt						0.009	0.010	0.004	ND	ND	ND
Copper						0.016	0.017	0.011	0.008	0.012	0.015
Lead			400	750		0.021	0.025	ND	ND	ND	ND
Molybdenum						0.051	0.056	0.043	0.037	0.117	0.11
Nickel						.019J	0.023	0.015	0.003	0.004	0.006
Selenium			391	5,680		ND	ND	0.182	0.161	0.253	0.261
Silver			391	5,680		0.016	0.004	ND	0.004	ND	ND
Thallium						ND	ND	ND	ND	ND	ND
Vanadium						0.038	0.035	0.056	ND	0.075	0.151
Zinc						0.116	0.182	0.085	0.030	0.038	0.163
Mercury (elmental)			100,000	341		ND	ND	ND	ND	ND	ND
Organic Lead (tetraethyl)			6.11	0.07							
Chromium III			100,000	100,000							
Methyl Mercury			6.11	68.4							

$$C_d = C_w\left(1+\frac{\theta_w}{\rho_b}\right)$$

J denot[illegible] Detection Limit for Reporting (DLR).

SSL for C10 - C32 are averaged TPH values of Diesel#2/crankcase oil, #3 and #6 fuel oil, and Kerosene and jet fuel in the NMED TPH Screening Guidelines.

SSL for VOCs are calculated values using the data and equations provided in the NMED, Technical Background Document for Development of Soil Screening Levels.

1: Values in ( ) are results by Method 8260B, not 8270C.

* Saturated concentration was used when calculating HAFB site specific SSL values.

§ Denotes February 2004 NMED SSL values.

** Denotes samples from SDG 128044, analyzed 4/26/04

Note: The lab concentrations were on wet-wt basis. The detected concentrations were converted to dry-wt. bases using the following relationship.

$$C_d = C_w\left(1+\frac{\theta_w}{\rho_b}\right)$$

where,

C_d = concentrations on dry-wt. basis

C_w = concentrations on wet-wt. basis

θ_w = water content (0.26 g/cm^3-soil)

ρ_b = bulk density of soil (1.55 g/cm^3)

Soil Screening Levels

Chemical	Calculated (µg/kg)		NMED (µg/kg)§		OP03-10	OP03-11	OP04-10	OP04-11	OP07-9	OP07-10	OP08-8	OP08-9
	Residential	Industrial	Residential	Industrial								
Carbon Chain (µg/kg)												
C06 - C10	NA	NA			238	114	535	1,050	ND	ND	ND	9.50
C10 - C22 (GRO)					150	162	481	1,270	ND	ND	ND	11.00
C22 - C32 (ORO)									ND	ND	ND	ND
Total (C10	893,333	2,233,333			388	276	1,016	2,320	ND	ND	ND	ND
VOCs (µg/kg)												
1,2,4-Trim	59,600	197,000	52,200	191,000					ND	ND	ND	ND
1,3,5-Trim	25,600	69,100	22,300	68,900					ND	ND	ND	ND
Benzene	11,200	24,500	27,000	73,600					ND	ND	ND	ND
Ethylbenz	86,600	86,600	10,600,000	25,400,000					ND	ND	ND	ND
Isopropylb	265,000	369,000	700,000	2,730,000					ND	ND	ND	ND
n-Propylb	62,100	62,100	53,200	53,200					ND	ND	ND	ND
Naphthale	61,200	61,200	71,900	98,300	627	279J	1,210	2,210	ND	ND	ND	ND
p-Isopropy	63,000	63,000							ND	ND	ND	ND
Toluene*	219,000	219,000	248,000	248,000					ND	ND	ND	ND
Xylenes, t	81,200	81,200	132,000	132,000					ND	ND	ND	ND
2-Methylnaphthalene					1,130	493	3,400	4,590	ND	ND	ND	ND
Metals (mg/kg)												
Arsenic			4	18	1.57	1.59	1.69	1.31	2.24	2.34	2.45	1.88
Barium			5,450	78,300	30.00	32.90	16.00	21.70	43.50	17.60	23.40	20.70
Cadium			74	8,600					ND	ND	ND	ND
ChromiumVI			234	3,400	2.33	2.57	1.34	2.87	3.34	1.14	2.24	2.23
Lead			400	750					ND	ND	ND	ND
Selenium			391	5,680					ND	0.63	ND	ND
Silver			391	5,680					ND	ND	0.74	0.20
Mercury (elmental)			100,000	341					ND	ND	ND	ND
Organic Lead (tetraethyl)			6.11	0.07								
Chromium III			100,000	100,000								
Methyl Mercury			6.11	68.4								

J denotes value between MDL and Detection Limit for Reporting (DLR).

SSL for C10 - C32 are averaged TPH values of Diesel#2/crankcase oil, #3 and #6 fuel oil, and Kerosene and jet fuel in the NMED TPH Screening Guidelines.

SSL for VOCs are calculated values using the data and equations provided in the NMED, Technical Background Document for Development of Soil Screening Levels.

1: Values in ( ) are results by Method 8260B, not 8270C.

* Saturated concentration was used when calculating HAFB site specific SSL values.

§ Denotes February 2004 NMED SSL values.

Note: The lab concentrations were on wet-wt.basis. The detected concentrations were converted to dry-wt. bases using the following relationship.

$$C_d = C_w\left(1+\frac{\theta_w}{\rho_b}\right)$$

where,

C_d = concentrations on dry-wt. basis

C_w = concentrations on wet-wt. basis

θ_w = water content (0.26 g/cm^3-soil)

ρ_b = bulk density of soil (1.55 g/cm^3)

DP Locations
South Excavation Confirmation Sample Results
(Collected by Bhate)

Chemical	Soil Screening Levels Calculated (ug/kg) Residential	Calculated (ug/kg) Industrial	NMED (ug/kg)* Residential	NMED (ug/kg)* Industrial	SDG No.	127927	127927	127927	127927	127927	127927	127927	127927	127927	127927	127927	127927	127927	127927	1261008	1261008	1261008	1261008	1261008	1261008	1261008	1261008	1261008	1261008	1261008	1261008
					Sample No.	DP01-4	DP01-4	DP01-10	DP01-11	DP01-11	DP02-8	DP02-9	DP02-10	DP02-10	DP03-10	DP03-11	DP04-10	DP04-11	DP05-9	DP05-9-1345	DP05-10	DP05-10-1345	DP06-7	DP06-7-1325	DP06-10	DP06-10-1325	DP09-7	DP09-7-1627	DP09-9	DP09-9-1627
Carbon Chain (ug/kg)																															
C06 - C10 (DRO)	NA	NA					ND	800.0		ND		12.0		61.0						ND		ND		ND		ND		ND		ND	
C10 - C32 (GRO)							ND	2270.0		ND		8.9		71.0						7.7		ND		ND		7.4		ND		ND	
C22 - C32 (ORO)							ND	ND		ND		ND		ND						24.0		ND		ND		44.0		ND		ND	
Total (C10 - C32)	883,333	2,233,333																													
VOCs (ug/kg)																															
1,2,4-Trimethylbenzene	58,800	197,000	52,200	191,000		ND	ND	38,200	ND	ND	ND	174	ND	4,350	13,500	9,870	21,800	17,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene*	25,600	89,100	22,300	86,900		ND	ND	13,400	ND	ND	ND	54	ND	1,310	5,030	3,810J	7,680	5,870	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	11,200	24,900	27,000	73,600		ND	ND		ND	ND	ND		ND		2,360J	2,140J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene*	86,800	86,800	10,800,000	25,400,000		ND	1.7J	52,700	ND	1.2J	ND	246	ND	3,830	17,200	13,200	42,000	31,700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene*	265,000	309,000	700,000	2,730,000		ND	ND	10,300	ND	ND	ND	132	ND	767	2,560J	1,980J	7,170	5,450	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene*	82,100	82,100	53,200	53,200		ND	ND	16,600	ND	ND	ND	229	ND	1,290	4,730J	3,430J	11,100	8,360	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene*	61,200	61,200	71,900	98,300		ND	ND	5,870	ND	ND	ND	93	ND	764	ND	ND	4,880J	4,290J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
p-Isopropyltoluene*	83,000	83,000				ND	ND	3,940	ND	ND	ND	27J	ND	397	1,200J	896J	3,290J	2,540J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene								5,280				103		305																	
Toluene*	219,000	219,000	248,000	248,000		ND	2.1J	52,800	ND	2.1J	ND		ND	17J	17,800	14,300	4,320J	3,050J	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Xylenes, total*	81,200	81,200	132,000	132,000		ND	1.7J	95,200	ND	1.2J	ND	133	ND	3,530	29,300	21,200	56,600	41,500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SVOCs (ug/kg)																															
Diethylphthalate												1,420																			
2-Methylnaphthalene						ND	ND	8,340	ND	ND	ND		ND		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene								3,410																							
Metals (mg/kg)																															
Antimony							ND	ND		ND		ND		ND																	
Arsenic			4	18			1.45	0.27		0.25		0.71		0.18						3.87		3.47		4.81		4.95		4.72		4.27	
Barium			5,450	78,300			43.5	18.8		25		15.1		15.1						58.10		39.60		66.70		77.10		37.10		41.60	
Beryllium							ND	ND		ND		ND		ND																	
Cadium			74	8,600			ND	ND		ND		ND		ND						ND		ND		ND		ND		ND		ND	
ChromiumVI			234	3,400			6.75	1.59		3.05		1.84		1.61						6.25		2.21		8.34		6.19		5.39		7.65	
Cobolt							2.7	0.64		1.04		0.85		0.64																	
Copper							3.13	0.83		1.4		1.04		0.53																	
Lead			400	750			ND	ND		ND		ND		ND						1.12		ND		2.41		2.51		0.54		1.77	
Molybdenum							0.58	ND		ND		0.55		ND																	
Nickel							4.85	1.48		2.17		1.77		1.34																	
Selenium			391	5,880			2.85	4.06		3.96		3.72		3.32						ND		ND		ND		ND		ND		ND	
Silver			391	5,880			ND	ND		ND		ND		ND						ND		ND		ND		ND		ND		ND	
Thallium							0.36	0.12		0.18		0.13		0.12																	
Vanadium							11.9	2.49		5.16		3.87		4.25																	
Zinc							19.1	3.79		7.81		3.92		3.59																	
Mercury (elemental)			100,000	341			ND	ND		ND		ND		ND						ND		ND		ND		0.22		ND		ND	
Organic Lead (tetraethyl)			6.11	0.07																											
Chromium III			100,000	100,000																											
Methyl Mercury			6.11	88.4																											
PCBs (mg/kg)																															
1016							ND			ND																					
1221							ND			ND																					
1232							ND			ND																					
1242							ND			ND																					
1248							ND			ND																					
1254							ND			ND																					
1260																															

J denotes value between MDL and Detection Limit for Reporting (DLR)
SSL for C10 - C32 are averaged TPH values of Diesel#2/crankcase oil, #3 and #6 fuel oil, and Kerosene and jet fuel in the NMED TPH Screening Guidelines.
SSL for VOCs are calculated values using the data and equations provided in the NMED, Technical Background Document for Development of Soil Screening Levels
1 Values in ( ) are results by Method 8260B, not 8270C
* Saturated concentration was used when calculating HAFB site specific SSL values.
§ Denotes February 2004 NMED SSL values

Note: The lab concentrations were on wet-wt basis. The detected concentrations were converted to dry-wt. bases using the following relationship:

$$C_d = C_w\left(1+\frac{\theta_w}{\rho_b}\right)$$

where,

C_d = concentrations on dry-wt. basis
C_w = concentrations on wet-wt. basis
θ_w = water content (0.26 g/cm^3 soil)
ρ_b = bulk density of soil (1.55 g/cm^3)

where,

C_s = concentrations on dry-wt. basis
C_w = concentrations on wet-wt. basis
θ_w = water content (0.26 g/cm^3 soil)
ρ_b = bulk density of soil (1.55 g/cm^3)

DP Locations
South Excavation Confirmation Sample Results
(Collected by Bhate)

Soil Screen

Chemical	Calculated (ug/Kg)	
	Residential	Industrial
Calcium Chloride (ug/Kg)		
C06 - C10 (DRO)	NA	NA
C10 - C22 (GRO)		
C22 - C32 (ORO)		
Total (C10 - C32)	660,333	2,233,333
VOCs (ug/Kg)		
1,2,4-Trimethylbenzene	58,600	197,000
1,3,5-Trimethylbenzene*	25,600	69,100
Benzene	11,200	24,500
Ethylbenzene*	86,800	86,800
Isopropylbenzene*	265,000	369,000
n-Propylbenzene*	62,100	62,100
Naphthalene*	61,200	61,200
p-Isopropyltoluene*	83,000	83,000
sec-Butylbenzene		
Toluene*	219,000	219,000
Xylenes, total*	81,200	81,200

SVOCs (ug/Kg)
Diethylphthalate
2-Methylnaphthalene
Naphthalene

Metals (ug/Kg)
Antimony
Arsenic
Barium
Beryllium
Cadium
Chromium VI
Cobolt
Copper
Lead
Molybdenum
Nickel
Selenium
Silver
Thallium
Vanadium
Zinc
Mercury (elemental)
Organic Lead (tetraethyl)
Chromium III
Methyl Mercury

PCBs (ug/Kg)
1016
1221
1232
1242
1248
1254
1260

J denotes value between MDL and Detection Limit for Reports
SSL for C10 - C32 are averaged TPH values of Diesel/Solvent
SSL for VOCs are calculated values using the data and equat
1 Values in ( ) are results by Method 8260B, not 8270C
* Saturated concentration was used when calculating HAFB
§ Denotes February 2004 NMED SSL values

Note: The lab concentrations were on wet-wt basis. The data

$$C_d = C_w\left(1 + \frac{\theta_w}{\rho_b}\right)$$

where,

C_d = concentrations o
C_w = concentrations o
θ_w = water content (0.
ρ_b = bulk density of so

DRAFT

Groundwater Analytical Data for Officers Club (SS-57)

Holloman AFB, New Mexico

Sample	SB01	SB02	SB03	SB04	SB05	MW01	MW02	MW03	MW05	MW07	MW07- DUP
Date sampled	2/11/2004	2/10/2004	2/12/2004	2/11/2004	2/11/2004	2/13/2004	2/12/2004	2/13/2004	2/14/2004	2/13/2004	2/13/2004
Carbon Chain (µg/L)											
Date analysed	2/27/2004	2/27/2004	2/26/2004	2/27/2004	2/27/2004	2/26/2004	2/26/2004	2/26/2004	2/26/2004	2/26/2004	2/26/2004
C6 - C12 (GRO)	2200	2250	2250	2200	2200	2250	2150	2200	2150	2200	2200
C12 - C28 (DRO)	2200	**3400**	**3600**	**3200**	2200	2250	2150	2200	2150	2200	2200
C28 - C36 (ORO)	2200	2250	2250	2200	2200	2250	2150	2200	2150	2200	2200
Total (C12 - C36)	**4400**	**5650**	**5850**	**5400**	**4400**	**4500**	**4300**	**4400**	**4300**	**4400**	**4400**
VOCs (µg/L)											
Date analysed	2/19/2004	2/19/2004	2/20/2004	2/19/2004	2/19/2004	2/24/2004	2/20/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004
Acetone	**5.6**	5	5	0.5	5	5	5	5	120	5	5
Benzene	0.5	0.5	**0.23**	0.5	0.5	0.5	0.5	**0.3**	**0.35**	0.5	0.5
2-Butanone	**44**	**11**	5	5	5	5	5	5	5	5	5
Carbon disulfide	**0.48**	**3.5**	0.5	0.5	0.5	0.5	0.5	**1.3**	0.5	0.5	0.5
Chloroform	0.5	0.5	0.5	0.5	0.5	**0.36**	0.5	0.5	0.5	**3.2**	**3.9**
Cyclohexane	1	**0.79**	1	1	1	1	1	**0.86**	1	1	1
1,3-Dichlorobenzene	**0.38**	0.5	0.5	**0.58**	0.5	**0.37**	**0.43**	**0.42**	0.5	**0.59**	**0.58**
1,4-Dichlorobenzene	**0.93**	0.5	0.5	0.5	0.5	0.5	**0.69**	0.5	0.5	0.5	0.5
Dichlorodifluoromethane	1	1	1	1	1	0.5	1	**11**	1	1	1
Ethylbenzene	0.26	**40**	0.5	0.5	0.5	0.5	0.54	**8.4**	0.5	0.5	0.5
Hexane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Isopropylbenzene	0.5	**6**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Methyl cyclohexane	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**0.55**	0.5	0.5	0.5
Toluene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Trichloroethene	0.5	0.5	0.5	0.5	0.5	0.5	0.5	**3.5**	0.5	0.5	0.5
Trichlorofluoromethane	1	1	1	1	1	**0.63**	1	0.5	1	1	1
1,2,4-Trimethylbenzene	0.5	**0.56**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
1,3,5-Trimethylbenzene	0.5	**0.53**	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Xylenes, total	0.5	**2.1**	0.5	0.5	0.5	0.5	0.5	**0.28**	0.5	**0.25**	**0.27**

Notes:
Values in bold are detected values or J values, all other values are non-detect.
Non-detect values are taken as 1/2 detetion limit.
To calculate total TPH (C12 - C36), non-detect values were replaced with 1/2 detection limit.
NA denotes not available or not sampled.

Soil Analytical Data for Officers Club (SS-57)
Holloman AFB, New Mexico

Sample	SB01	SB01	SB02	SB02	SB02	SB03	SB03	SB04	SB04	SB05	SB05
Depth (ft bgs)	1	2	1	2	2	1	2	1	2	1	2
Date Sampled	2/11/2004	2/11/2004	2/10/2004	2/10/2004	2/10/2004	2/11/2004	2/11/2004	2/10/2004	2/10/2004	2/10/2004	2/10/2004
Carbon Chain (ug/kg)											
Date Analysed	2/25/2004	2/25/2004	2/24/2004	2/24/2004	2/27/2004	2/25/2004	2/25/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004
C6 - C12	47000	65000	55000	130000	840000	50000	60000	60000	65000	47000	55000
>C12 - C	47000	65000	630000	8800000	9900000	50000	60000	60000	65000	47000	55000
>C28 - C	47000	65000	55000	**59000**	100000	50000	60000	60000	65000	47000	55000
Total (C12 - C36)	**94000**	**130000**	**685000**	**8859000**	**10000000**	**100000**	**120000**	**120000**	**130000**	**94000**	**110000**
VOCs (ug/kg)											
Date Analysed	2/18/2004	2/18/2004	2/12/2004	2/12/2004		2/18/2004	2/18/2004	2/12/2004	2/12/2004	2/12/2004	2/12/2004
Acetone	25.5	35	**22**	1200	NA	27.5	32.5	30.5	36	32.5	30
Benzene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
2-Butanone	25.5	35	28	1200	NA	27.5	32.5	30.5	36	32.5	30
Carbon disulfide	2.55	3.5	**3**	120	NA	2.75	3.25	3.05	3.6	3.25	3
Cyclohexane	5	7	5.5	245	NA	5.5	6.5	6	7	6.5	6
1,3-Dichlorobenzene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
1,4-Dichlorobenzene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
Ethylbenzene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
Hexane	2.55	**2.3**	**0.61**	**79**	NA	2.75	**1.2**	3.05	3.6	**0.82**	3
Isopropylbenzene	2.55	3.5	2.8	**87**	NA	2.75	3.25	3.05	3.6	3.25	3
Methyl cyclohexane	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
Toluene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
1,2,4-Trimethylbenzene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
1,3,5-Trimethylbenzene	2.55	3.5	2.8	120	NA	2.75	3.25	3.05	3.6	3.25	3
Xylenes, total	**2.3**	4.4	**1.2**	120	NA	**3.3**	**2.9**	**2.7**	**1.7**	**2.8**	**1.2**
SVOCs (ug/kg)											
Date Analysed	2/16/2004	2/16/2004	2/17/2004	2/17/2004		2/13/2004	2/16/2004	2/16/2004	2/16/2004	2/16/2004	2/17/2004
Acetophenone	185	235	4100	3800	NA	205	210	220	225	200	205
Benzo (a) anthracene	185	**530**	4100	3800	NA	205	210	220	225	200	205
Benzo (b) fluoranthene	185	**460**	4100	3800	NA	205	210	220	225	200	205
Benzo (k) fluoranthene	185	**370**	4100	3800	NA	205	210	220	225	200	205
Benzo (g,h,i) perylene	185	**260**	4100	3800	NA	205	210	220	225	200	205
Benzo (a) pyrene	185	**530**	4100	3800	NA	205	210	220	225	200	205
1,1'-Biphenyl	185	235	4100	3800	NA	205	210	220	225	200	205
Chrysene	185	660	4100	3800	NA	205	210	220	225	200	205
Dibenzofuran	185	235	4100	3800	NA	205	210	220	225	200	205
Fluoranthene	185	830	4100	3800	NA	NA	210	220	225	200	205
Fluorene	185	235	4100	3800	NA	NA	210	220	225	200	205
Indeno (1,2,3-cd)	185	220J	4100	3800	NA	NA	210	220	225	200	205
2-Methylnaphthalene	185	235	4100	3800	NA	NA	210	220	225	200	205
Naphthalene	185	235	4100	3800	NA	NA	210	220	225	200	205
Phenanthrene	185	**170**	4100	3800	NA	NA	210	220	225	200	205
Pyrene	185	**790**	4100	3800	NA	NA	210	220	225	200	205

Notes:
Values in bold are detected values or J values, all other values are non-detect.
Non-detect values are taken as 1/2 detection limit.
To calculate total TPH (C12 - C36) non-detect values were replaced with 1/2 detection limit and are shown bold.
NA: Not available or not sampled.
ft bgs: Feet below ground surface.

Soil Analytical Data for Officers Club (SS-57)
Holloman AFB, New Mexico

Sample	SV01	SV01	SV02	SV02	SV03	SV03	SV03 DUP
Depth (ft bgs)	2-3	7-8	2-3	7-8	2-3	7-8	7-8
Date Sampled	2/16/2004	2/16/2004	2/16/2004	2/16/2004	2/16/2004	2/16/2004	2/16/2004
Carbon Chain (ug/kg)							
Date Analysed	2/27/2004	2/27/2004	2/27/2004	2/27/2004	2/27/2004	2/27/2004	2/27/2004
C6 - C12	65000	55000	55000	60000	55000	65000	60000
>C12 - C	65000	55000	55000	60000	55000	65000	60000
>C28 - C	65000	55000	55000	60000	55000	65000	60000
Total (C12 - C36)	**130000**	**110000**	**110000**	**120000**	**110000**	**130000**	**120000**
VOCs (ug/kg)							
Date Analysed	2/19/2004	2/19/2004	2/19/2004	2/20/2004	2/19/2004	2/19/2004	2/19/2004
Acetone	31	30	31	35	25.5	27.5	27.5
Benzene	NA	NA	NA	NA	NA	NA	NA
2-Butanone	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA
Cyclohexane	NA	NA	NA	NA	NA	NA	NA
1,3-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA
1,4-Dichlorobenzene	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	3.1	3	3.1	3.5	2.55	2.75	2.75
Hexane	3.1	3	3.1	**0.81**	**0.82**	2.75	2.75
Isopropylbenzene	NA	NA	NA	NA	NA	NA	NA
Methyl cyclohexane	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA
1,2,4-Trimethylbenzene	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	NA	NA	NA	NA	NA	NA	NA
Xylenes, total	**2.9**	**1.2**	**1.2**	**3.6**	**1.4 J**	**1.3**	**1.2**
SVOCs (ug/kg)							
Date Analysed	2/24/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004	2/24/2004
Acetophenone	NA	NA	NA	NA	NA	NA	NA
Benzo (a) anthracene	NA	NA	NA	NA	NA	NA	NA
Benzo (b) fluoranthene	NA	NA	NA	NA	NA	NA	NA
Benzo (k) fluoranthene	NA	NA	NA	NA	NA	NA	NA
Benzo (g,h,i) perylene	NA	NA	NA	NA	NA	NA	NA
Benzo (a) pyrene	NA	NA	NA	NA	NA	NA	NA
1,1'-Biphenyl	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	NA	NA	NA	NA	NA
Fluorene	NA	NA	NA	NA	NA	NA	NA
Indeno (1,2,3-cd)	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NA	NA	NA	NA	NA	NA	NA
Pyrene	NA	NA	NA	NA	NA	NA	NA

Notes:
Values in bold are detected values or J values, all other values are non-detect.
Non-detect values are taken as 1/2 detection limit.
To calculate total TPH (C12 - C36) non-detect values were replaced with 1/2 detection limit and are shown bold.
NA: Not available or not sampled.
ft bgs: Feet below ground surface.

Soil Vapor Analytical Data for Officers Club, (SS-57)
Holloman, AFB New Mexico

Sample	SV01	SV01	SV02	SV02	SV03	SV03	SV03-Dup
Depth (ft bgs)	3	8	3	8	3	8	8
Date Sampled	4/19/2004	4/19/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004
Carbon Chain (mg/m^3)							
Date Analysed	4/23/2004	4/23/2004	4/23/2004	4/23/2004	4/23/2004	4/23/2004	4/23/2004
TPH (GRO)	0.31	0.30	0.34	0.53	0.20	0.21	NA
TPH (DRO)	35.715	35.715	35.715	35.715	35.715	35.715	35.715
VOCs (mg/m^3)							
Date Analysed	4/26/2004	4/26/2004	4/26/2004	4/26/2004	4/26/2004	4/26/2004	
Benzene	0.0013	0.0013	0.00135	0.00135	0.00135	0.0013	NA
Ethylbenzene	0.00175	0.00175	0.00185	0.00185	0.0018	0.00175	NA
Methyl tert-butyl ether	0.006	0.006	0.006	0.006	0.006	0.006	NA
2-Propanol	0.00395	**0.0020**	0.0042	0.0042	0.0041	0.00395	NA
Toluene	0.0015	0.0015	0.0016	0.0016	**0.0052**	0.0015	NA
m/p-Xylenes	0.00175	**0.0054**	0.00185	0.00185	0.0018	0.00175	NA
o-Xylene	**0.0039**	**0.0010**	0.00185	0.00185	0.0018	0.00175	NA
Naphthalene	**0.051**	0.0085	0.009	0.009	0.0085	0.0085	NA

Notes:
Values in bold are detected values or J values, all other values are non-detect.
Non-detect values are taken as 1/2 of the detection limit.
NA: Not available or not sampled.
Concentration for DRO was obtained as mass/volume. Volume was obtained by multiplying the flow rate (0.2L/min*7min=1.4L).
ft bgs : Feet below ground surface

Soil Geotechnical Parameters for Officers Club (SS-57)
Holloman AFB, New Mexico

Parameters	Unit	GB-0106	SV01-ST	SV01-ST	SV02-ST	SV02-ST	SV03-ST	SV03-ST
Depth	ft bgs	4-6	2-4	7-9	2-4	7-9	2-4	7-9
Date analysed	--	2/25/2004	2/25/2004	2/25/2004	2/25/2004	2/25/2004	2/25/2004	2/25/2004
Volumetric air	cm^3-air/cm^3-soil	0.244	0.138	0.142	0.190	0.152	0.183	0.233
Volumetric water content	cm^3-water/cm^3-soil	0.092	0.288	0.252	0.192	0.253	0.255	0.054
Total soil porosity	--	0.336	0.426	0.394	0.382	0.405	0.438	0.287
Bulk density	g-soil/cm^3-soil	1.73	1.53	1.59	1.66	1.57	1.47	1.86
Fractional organic carbon (foc)	--	0.013	0.016	0.012	0.007	0.006	0.008	0.011

Notes:
fts bgs: Feet below groundsurface