



HAFB 04

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 49TH FIGHTER WING (ACC)  
HOLLOMAN AIR FORCE BASE, NEW MEXICO

NOV 10 2004

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT

Attn: Mr. James P. Bearzi  
Hazardous Waste Bureau  
2905 Rodeo Park Dr., East, Bldg. 1  
Santa Fe, NM 87505-6303



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

SUBJECT: Statement of Basis for Approval of No Further Action for 10 Solid Waste Management Units, RCRA Corrective Action Program, Holloman AFB, New Mexico

1. We are submitting the Statement of Basis for Approval of No Further Action for 10 Solid Waste Management Units for your review. The objective of this submittal is a finding by the New Mexico Environment Department of no further action for the ten solid waste management units identified and subsequent permit modification.

2. If you have any questions, please contact Mr. Dan Holmquist at (505) 572-5395.

A. DAVID BUDAK  
Deputy Base Civil Engineer

Attachment: Statement of Basis for Approval of No Further Action for 10 Solid Waste Management Units, RCRA Corrective Action Program, Holloman AFB, New Mexico

cc (w/Atch):

Mr. Cornelius Amindyas  
Hazardous Waste Bureau  
4131 Montgomery NE  
Albuquerque, NM 87109

Mr. Steve Jetter  
NMED DOE OB  
H & Pennsylvania Street  
Albuquerque, NM 87116

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

**LIBRARY COPY**

**STATEMENT OF BASIS FOR APPROVAL  
OF  
NO FURTHER ACTION FOR 10 SOLID  
WASTE MANAGEMENT UNITS**

**RCRA Corrective Action Program**

**HOLLOMAN AFB,  
NEW MEXICO**



**Prepared By:  
49 CES/CEV  
Environmental Flight  
Holloman Air Force Base  
New Mexico**

**NOVEMBER 2004**

**STATEMENT OF BASIS FOR APPROVAL  
OF  
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MANAGEMENT UNITS**

**RCRA Corrective Action Program  
HOLLOMAN AFB, NEW MEXICO**

Prepared By:

**49 CES/CEV  
Environmental Flight  
550 Tabosa Avenue  
Holloman Air Force Base  
New Mexico**

**November 2004**

**STATEMENT OF BASIS FOR APPROVAL OF NO  
FURTHER ACTION FOR 10 SOLID WASTE  
MANAGEMENT UNITS**

**RCRA Corrective Action Program  
HOLLOMAN AFB, NEW MEXICO**

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## **A. INTRODUCTION**

The New Mexico Environment Department (NMED) has made a final determination to approve the Holloman Air Force Base (AFB) request to remove 10 Solid Waste Management Units (SWMUs) from the Hazardous and Solid Waste Amendments (HSWA) Corrective Action module Resource Conservation and Recovery Act (RCRA) permit No. NM 657214422-1

## **B. FACILITY DESCRIPTION**

Holloman AFB is located on approximately 59,827 acres of land in Otero County in south central New Mexico (Figure 1). The Base lands are situated in the northern Chihuahuan Desert in the region known as the Tularosa Basin. The basin is bound to the east and west by the Sacramento and San Andreas Mountains, respectively. The Base is located adjacent to White Sands Missile Range, and White Sands National Monument is located west of the Base.

The nearest population center is the city of Alamogordo, located approximately seven miles to the east. Regional metropolitan centers include El Paso, Texas located 90 miles south-southwest and Las Cruces, located 70 miles southwest of the facility. The primary transportation route for the facility is Highway 70 that transverses the southern boundary of the Base.

Currently, Holloman AFB hosts the Air Combat Command 49<sup>th</sup> Fighter Wing, which includes pilot training, mobility support, and combat support operation. The primary Air Force Materiel Command component located at Holloman AFB is the 46<sup>th</sup> Test Group, which is responsible for evaluation of propulsion and navigational systems for aircraft, space vehicles and missiles. A variety of tenant organizations are assigned to Holloman AFB such as the German Air Force Tornado Squadron, the 4<sup>th</sup> Space Surveillance Squadron, and Detachment 4 of the 55<sup>th</sup> Weather Squadron. Figure 1, is a general map of the Base. Locations of SWMUs are identified on Figure 2.

## **C. HISTORY OF INVESTIGATION**

At Holloman AFB, investigation and remediation of SWMUs is conducted under both the Air Force's Environmental Restoration Program (ERP) and the RCRA Corrective Action Program. The ERP program [formerly the Installation Restoration Program (IRP)] was initiated in 1983 and the RCRA Facility Assessment (RFA) was conducted in 1987. A HSWA permit was issued to Holloman AFB in 1991 and became effective on September 25, 1991.



The HSAW portion of the RCRA permit identified sites at the Base requiring a RCRA Facility Investigation (RFI). RFI activities were conducted in two phases. The Phase I RFI was conducted between 1987 and 1992. Phase II of the RFI was conducted between 1992 and 1995. A total of 236 potential SWMUs and 29 Areas of Concern (AOC) were investigated. Additionally, five remote sites such as radar sites, well fields and reservoirs were investigated under the RFI. A total of 265 sites were identified and investigated during this process. At the completion of the RFI and RFA processes and through the use of decision documents, only 119 SWMUs and AOCs remained on the RCRA permit.

In 1999, Holloman AFB submitted a request to remove 104 SWMUs and AOCs sites from the RCRA permit. In February 2000, NMED determined that 69 of the 104 SWMUs and AOCs would be considered appropriate for removal. A detailed document describing conditions at these sites and basis for removal was submitted to NMED in October 2000. In February 2001, NMED granted a Class III Permit Modification to remove 69 sites from the Base RCRA Permit.

Currently, a total of 64 SWMUs and AOCs remain of the Base RCRA permit. This document has been prepared to provide NMED with the basis for removing an additional 10 SWMUs and AOCs from the Base permit (Figure 2).

#### **D. INVESTIGATION RESULTS**

Since the removal of 69 sites in February 2001, additional sites have undergone remediation or corrective action as directed by NMED. At present, 10 sites have been identified for no further action (NFA). Section I of this document contains a brief description of each of each site, the actions performed, the basis for removal from the permit, and references concerning the site.

#### **E. PERMIT MODIFICATION**

The administrative record for this proposed action consists of a legal notice, fact sheet, the NMED statement of basis for removal, the request for Permit Modification, related correspondence, documents and the modified permit. The administrative record may be reviewed during normal business hours at:

Mr. John Kieling  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303

(505) 428-2500

The legal notice, fact sheet, the NMED Statement of Basis, and modified permit may also be reviewed at:

Public Library of Alamogordo  
2400 Scenic Drive  
Alamogordo, New Mexico 883310

## **F. SELECTED REMEDY**

The NMED determination that NFA is required at these SWMUs is based on sampling and analytical data, field surveys, documentation of remediation, historical records, aerial photographs, and employee interviews regarding operations at these sites. The determination for permit removal is based one or more of the following criteria:

- NFA Criterion 1: The SWMU/AOC cannot be located, does not exist or is a duplicate SWMU/AOC.
- NFA Criterion 2: The SWMU/AOC has never been used for the management (i.e. generation, treatment, storage and/or disposal) of RCRA solid waste or hazardous waste and/or constituents, or other Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances.
- NFA Criterion 3: No release to the environment has occurred or is likely to occur in the future from the SWMU/AOC
- NFA Criterion 4: A release from the SWMU/AOC to the environment has occurred, but the SWMU/AOC was characterized and/or remediated under another authority (such as the NMED Petroleum Storage Tank or Groundwater Quality Bureaus).
- NFA Criterion 5: The SWMU/AOC has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

Each site approved by NMED for NFA is summarized in Table 1.

## **G. PUBLIC PARTICIPATION**

Requirements for public notification by the New Mexico Hazardous Waste Regulations include public notice in a local newspaper and sending notices to all persons on the facility mailing list maintained by the NMED. The notice announces the 60-day comment period for the request for permit modification. The notice indicates the date, time and place for a public meeting. Also, the notice will provide a contact person and address for submitting written comments on the permit modification. Upon review of the request for permit modification, a list of SWMUs that NMED deems appropriate for NFA must be published in a local newspaper and public notices must be sent to all persons on the facility mailing list. As part of this process, the public may make comments to and/or request additional information from NMED.

## **H. FURTHER STEPS**

The public meeting will be scheduled and notices will be posted/published as indicated in section F. The NMED will notify all persons on the mailing list concerning the location, time and date of the public meeting and the contact person for public written comment. When the comment period has passed and the public meeting has been conducted, the NMED will notify Holloman AFB and each person on the public comment mailing list of the final decision. The final decision will become effective thirty (30) days after service of the decision, unless a later date is specified or review is requested in accordance with New Mexico Hazardous Waste Management Regulations, 20 NMAC 4.1, Section 901. E. *Hearings*.

## **I. CONTACT PERSON FOR ADDITIONAL INFORMATION**

Ms. Pam Allen  
New Mexico Environment Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, New Mexico 87505-6303

(505) 428-2500

## **J. DESCRIPTIONS OF SWMUs PROPOSED FOR NO FURTHER ACTION**

### **1.1 SWMU 4—Building 131 Oil/Water Separator (O/WS)**

#### **Location**

SWMU 4 is located immediately adjacent to Building 131 and the associated vehicle wash rack (Figure 3.)

#### **History**

SWMU 4 is an oil water separator (OWS) located adjacent to Building 131 and an abandoned vehicle wash rack. The OWS is cylindrical, approximately 2.5 feet in diameter and 7 feet deep. The OWS received rinse water containing oils, detergents and fuels from the wash rack. The OWS and surrounding petroleum contaminated soil (PCS) were removed in July 1995.

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

The SWMU was not investigated during the Table 3 RCRA Facility Investigation (RFI) because it was abandoned and scheduled for removal. The SWMU 4 OWS was removed in July 1995 along with 92 cubic yards of PCS. A total of five closure soil samples were collected from the sidewalls and bottom of the resulting excavation. The closure soil samples were analyzed for total recoverable petroleum hydrocarbons (TRPH) by method 418.1, volatile organic compounds (VOCs) by method 8240, semi-volatile organic compounds (SVOCs) by method 8270 and target analytical list (TAL) metals by methods 6000s/7000s. Laboratory analytical results from the five (5) closure soil samples did not report detectable quantities of VOCs or SVOCs. TRPH was identified in only one sample (SWMU-4-5-8) at 47 mg/Kg and TAL metals were detected in all samples. The maximum concentrations of arsenic (1.3 mg/Kg) barium (56 mg/Kg), chromium (8.7 mg/Kg) and lead (24 mg/Kg) do not exceed the NMED Residential Soil Site Screening Levels (SSLs). Further, no samples contained hazardous constituents cadmium, mercury, selenium or silver. Table 2 is a summary of the analytical results for constituents identified in soil samples collected during the investigation (1994) and OWS removal process (1995). Soil sampling locations are illustrated in Figures 3 and 4.

The 92 cubic yards of soil excavated from the area surrounding SWMU 4 was stockpiled and tested for disposal suitability by the toxicity characteristics leaching procedure (TCLP). TCLP sample results did not identify leachable concentrations of

VOCs, SVOCs or total petroleum hydrocarbon (TPH) constituents. The only TCLP metal detected in the stockpiled soil was lead at 0.0044 mg/Kg. The excavated soil was transported offsite to a licensed disposal facility.

### **Basis for Determination**

SWMU 4 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

### **References**

- July 1995- Radian Corporation Draft Final Table 3 RCRA Facility Investigation Report.
- November 1995- Groundwater Technology Government Services, Inc. and Foster Wheeler Environmental Corporation, Remediation of POL-Contaminated Sites and Oil/Water Separator Removals, Holloman AFB, New Mexico.

## 1.2 SWMU 82 Refuse Collection Truck Washrack (ERP Site SD-08)

### Location

SWMUs 82 is the washrack attached to SWMU 4. These SWMUs are co-located at Building 131. Both sites together were known as ERP Site SD-08. SWMU 82 is located southwest of the POL storage area and north of the Old Main Base Landfill (Figure 5).

### History

The Refuse Collection Truck Washrack located at Building 131 was used for the routine washing of trash trucks. At SWMU 82, trucks were washed with soap and water. However, trucks were routinely sprayed with pesticides for fly control. Pesticides were used in the 1970s and discontinued in 1981. The washrack is attached to an OWS (SWMU 4) which is also located at Building 131. According to employee interviews, the drain routinely clogged and backed up onto the washrack pad. The OWS was connected to the Base sewer system.

An investigation was conducted at the site (29 Waste Sites RI). Six soil borings were installed within the washrack area and OWS. Two groundwater monitoring wells were installed along the perimeter of the pad. To determine groundwater flow direction and for assessment purposes, a previously installed monitoring well (renamed MW-8-03) located at SWMUs 101 and 109 (the Old Main Base Landfill) was used as the third groundwater monitoring well. Both soil and groundwater samples were analyzed for VOCs, total metals, organophosphorus pesticides, organochlorine pesticides and PCBs. In addition, groundwater samples were analyzed for anions, and TDS.

Table 3 is a summary of the maximum laboratory analytical results for soil samples collected during these investigations. Petroleum hydrocarbons were identified in soil samples from depths less than 2 feet and declined to 36 mg/Kg or less with depth. TRPH concentrations range from 12 mg/Kg to 9950 mg/Kg. No PCBs or organophosphorus pesticides were detected in any soil samples. Several VOCs were identified in the soil samples (1, 1-dichlorobenzene, benzene, chlorobenzene, toluene, and ethylbenzene). However, all were detected in concentrations below NMED SSLs for Residential Soil.

Organochlorine pesticides identified in the soil samples were 4, 4-DDD (maximum 4000 µg/Kg), 4, 4-DDE (maximum 5600 µg/Kg), 4, 4-DDT (maximum 9300 µg/Kg)

and chlordane (maximum 4000 µg/Kg). All maximum concentrations were from one sample collected from 0 to 2 feet below grade at boring SB-08-02. Several metals (beryllium, cadmium, chromium, copper and nickel, and zinc) were detected in the soil samples. None, however, exceed the NMED SSLs for Residential Soil.

Table 4 is a summary of the maximum laboratory analytical results for groundwater samples collected during both investigations and LTM. Several VOCs (benzene, 1, 2-dichloroethane, 1, 2-dichloropropane bromodichloroethene, chloroform, ethylbenzene, toluene and xylenes) were identified in the groundwater samples during the investigation phase at this site. Additionally, several pesticides were identified in investigation of groundwater along with arsenic, that exceeded either the NMWQCC or federal standards.

In 1995, the OWS (SWMU 4) adjacent to SWMU 82 was removed along with the TRPH contaminated soil. In 1997, an engineered asphalt cap was installed at the site to limit access to the subsurface and prevent migration of residual pesticides identified in soil and groundwater. As an additional condition of site closure (Decision Document between USEPA Region 6 and HAFB) post closure groundwater monitoring was implemented at SWMU 82 for a period of 10 years.

In 1995, the long-term groundwater monitoring (LTM) program (10 years) was initiated at SWMU 82. Four of the six monitoring wells on site were sampled for RCRA metals plus beryllium, organochlorine pesticides, chlorinated herbicides and fluoride. In subsequent LTM events, constituents not identified in previous two sampling rounds (such as pesticides, herbicides, PCBs) were dropped from the analytical regiment while VOCs were added.

In the 10 years of groundwater monitoring, three pesticides, heptachlor epoxide (0.04µg/L), 4, 4-DDD (0.02µg/L) and 4,4DDE (0.03µg/L) were identified in the 1995 sampling round, in one well (MW-08-05). No other pesticides were identified above the detection limits since 1995. The 2003 LTM sampling identified one VOC (1, 2-dichloroethane at 73 µg/L) and two metals (manganese at 2,980 µg/L and iron at 7805 µg/L) have been identified in concentrations greater than either federal or NMWQCC standards. All of these values were present in groundwater samples from well MW-8-01.

### **Basis for Determination**

The SWMU has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

The site has been capped with a protective liner with an engineered asphalt cover. Contaminants in groundwater at the site are continuing to decline and pesticides in the soil should continue to degrade.

### References

- 1990 Walk Haydel & Associates, Inc., Remedial Investigation Report, Installation Restoration Program, Holloman AFB, NM Volume 1
- 1989 Walk Haydel & Associates, Inc., Remedial Investigation Risk Assessment Report, Installation Restoration Program, Holloman AFB, NM
- 1995 Groundwater Technology Government Services, Inc. and Foster Wheeler Environmental Corporation, Long Term Groundwater Monitoring Program Volume I Field Sampling Program
- 1997 Foster Wheeler Environmental Corporation, Inc. Project Closeout Report for IRP Site SD-08 and OT-14 Remedial Action
- 2004 Tetra-Tech FW, Inc., Letter Report for the Evaluation of Groundwater Quality 2002 Long-Term Groundwater Monitoring Program, Holloman Air Force Base, New Mexico
- 2003 US Army Corps of Engineers, Omaha District, 2003 Long-Term Groundwater Monitoring Report Holloman Air Force Base, New Mexico



### **1.3 SWMU 136 Building 1119 Washrack Drainage Area**

#### **Location**

SWMU 136 is a washrack drainage area located immediately south of Building 1119 (Figure 6).

#### **History**

Soil analyses performed at SWMU 136 during the Table 2 RFI identified two of six soil samples with TRPH greater than 1000 mg/Kg. VOCs, SVOCs and metals were detected but at levels below the SSLs

A bioventing remediation system was installed in the pit and operated from 1997 to mid 1999. The bioventing system removed all but the most recalcitrant hydrocarbons to below the remediation action level. In December 1999, the drainage pit was excavated to remove any remaining PCS from the pit area. A closure report summarizing these results was prepared and submitted in September 2000.

In January 2003, NMED requested that additional soil samples be collected from the southern wall of the drainage pit excavation and analyzed for petroleum hydrocarbons. The request was made to determine if any PCS remained in excess of NMED SSLs for Residential soil (TPH @ 940 mg/Kg). Analytical results from these soil samples did not exceed action levels. On September 22, 2003 NMED directed Holloman AFB to move the SWMU to Table A.2 of the Base RCRA permit (SWMUs requiring no further action). Figure 7 is a copy of this letter from NMED.

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

A low flow air injection bioventing remediation system was installed in the pit and operated from 1997 to mid 1999. Despite, the operation of the bioventing system, some areas still contained TRPH above the action level.

In December 1999, the drainage pit was excavated to remove TRPH contaminated soil from the pit area. The completed excavation was approximately 12 feet wide, 30 feet long and approximately 20 feet deep. The excavated soil was field screened and segregated to minimize the volume for offsite disposal. The pit was excavated to groundwater which was encountered at approximately 20 feet below the ground surface (bgs).

Table 5 summarizes the analytical results from soil samples collected from the sidewalls of the drainage pit excavation. A closure soil sample was collected from each of the four corners of the excavation. The closure samples were analyzed for TRPH, benzene, toluene, ethylbenzene and xylenes (BTEX). The highest TRPH concentration was identified in soil sample SWMU 136-12-19 at 36 mg/Kg. BTEX constituents were either not detected or quantified below the remediation action levels. A closure report summarizing these results was prepared and submitted in September 2000.

In January 2003, NMED requested that additional soil samples be collected from the southern wall of the drainage pit excavation. On March 19, 2003, a test pit was dug and three soil samples were collected and analyzed from the midpoint of the southern wall. The samples were selected from the most visibly stained and/or odor emitting intervals. These soil samples were analyzed for VOCs, SVOCs and TPH. TPH as gasoline, diesel fuel and motor oil were identified in the three samples ranging from 3.9 mg/Kg to 398 mg/Kg. Naphthalene at 10 µg/Kg was reported in one sample (S Wall 01-17). No other VOCs or SVOCs were detected in this sample or other samples. These analytical results were submitted to NMED on August 13, 2003. On September 22, 2003, NMED directed Holloman AFB to move the SWMU to Table A.2 of the Base RCRA permit (SWMUs requiring no further action).

### **Basis for Determination**

SWMU 136 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

All contaminated soil at the site has been excavated and transported to a TSD facility. Analytical results from soil samples collected from the side walls of the excavation document the appropriate removal of PCS.

### **References**

- October 1994- Radian Corporation Draft Final Table 2 RCRA Facility Investigation Report.
- September 2000 Foster-Wheeler Environmental Corporation Draft Final Closure Report for SWMU 136- Building 119 Washrack Drainage Pit SWMUs 39, 127, 139 at IRP Site FT-31 Holloman AFB, NM

- October 2001 Final Amended Closure Report SWMU 136- Building 119 Washrack Drainage Pit Holloman AFB, NM
- August 13, 2003 Correspondence. From 49 CES/CEV Holloman AFB, NM to Mr. Cornelius Amindyas NMED. Transmittal of additional soil sampling results and comment response.
- September 22, 2003 Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Review of the Final Closure Report for SWMU 136- Building 119 Washrack Drainage Pit, October 2001 Holloman AFB, NM

## **1.4 SWMUs 139 & 140 Lake Stinky and Lake Holloman**

### **Location**

SWMU 139 Lake Stinky and SWMU 140 Lake Holloman and the ditch from sewage lagoon G are located southwest of the Base sewage lagoons (Figure 8).

### **History**

Lake Holloman (SWMU 140) was connected to seven aeration/evaporation lagoons (identified as lagoons A through G) which received approximately 1.3 million gallons of wastewater per day. Water that did not evaporate from the seven lagoons flowed from the lagoon G to Lake Holloman via an unlined ditch. In addition, Lake Holloman received runoff water from landscape irrigation, the golf course, and the runway approach area. During high water conditions, water from Lake Holloman discharges into Lake Stinky (SWUM 139). Both Lakes are unlined and water may either infiltrate to groundwater or evaporate depending upon seasonal conditions.

Several investigations were conducted between 1988 and 1995 to characterize soil, sludge and groundwater conditions within and immediately adjacent to the sewage lagoons (SWMUs 155, 156 & 184) including conditions at Lake Holloman and Lake Stinky. These investigations, the corrective measures study and risk assessments were used to develop a closure strategy for the lagoons along with Lakes Stinky and Holloman. These efforts concluded that while some pesticides and heavy metals were identified in sediments from some of the sewage lagoons, their concentrations did not pose a threat to human health and the environment. However, PCBs were detected in sludge from lagoons A and B. In 1992, an interim corrective action (IRA) was conducted to remove the PCB contaminated sludge from these lagoons.

In 1996 and 1997, the sewage lagoons were closed. The liquid was aerated and evaporated. The remaining sediment/sludge was capped and the area secured. A deed restriction has been placed on the site of the lagoons to limit future use. The biological risk assessment indicated that Lake Holloman, Lake Stinky and the ditch connecting them to the sewage lagoons did not require evacuation and capping. Further, the lakes could remain as wet areas for wildlife. Currently, the lakes have been designated as wildlife areas by the Base.

The NMED issued a NFA for the site on August 30, 2000. Figure 9 is a copy of the NFA letter from Mr. Cornelius Amindyas (NMED) to HAFB regarding the NFA status of the site.

## Evaluation of Relevant Information

Investigations of Lake Holloman and Lake Stinky and the associated sewage lagoons began in 1987. Between 1987 and 1993, approximately 11 groundwater monitoring wells were installed and sampled in the immediate area of Lakes Holloman and Stinky to characterize subsurface geology, hydrogeology and groundwater quality. These wells and associated soil borings were installed as part of the Phase 1 and Phase 2 RFI at the sewage lagoons and lakes.

In August 1992, a site characterization report was issued for the lagoons and lakes. The report summarized investigation activities in which soil, sediment, and groundwater samples were collected from the lakes and ditch. Analyses of these samples identified the presence of organochlorine pesticides and metal constituents at low concentrations

A phase 2 RFI report for Lakes Holloman and Stinky was produced in 1993. This investigation focused on the potential for migration of pesticides and metals detected in sediment and soil to groundwater. The investigation concluded that organochlorine pesticides were present at very low levels (less than 0.02 µg/L) and that metal constituents had not impacted the groundwater.

In 1993, the Base issued a risk assessment for both the sewage lagoons and the lakes. Separate risk assessments were conducted at the lagoons and lakes and the results suggested several constituents that may pose a threat to human health and the environment. In 1994, however, a revised risk assessment determined that the hazardous constituents that were identified in the 1993 risk assessment were not present in the lakes. Further, the 1994 revision concluded that metal species of concern were present at concentrations below background levels.

A survey of biota, pore water and sediment at the lakes was conducted in 1994. The investigation included the analysis of tissues from biota. A draft report was issued that indicated low concentrations of pesticide constituents and metals were present in tissue and sediments. However, the investigation did not indicate that constituents present in sediments were available for uptake by biota. A final document was not produced.

A technical memorandum was issued in 1994 to summarize the status of investigations and present the results of the investigation and risk assessment in a concise manner. The report identified the decrease in organochlorine pesticides at several sampling stations between the 1992 and 1994 sampling events. The report concluded that neither pesticides nor metals exceeded reporting limits at Lakes Stinky or Holloman.

An addendum risk assessment was presented in 1996. The purpose of the assessment was to re-evaluate the data from the 1994 phase 2 RFI. The report concluded that no threat to human health and the environment exists from either Lake Stinky or Lake Holloman. The only potential pathway for DDD, DDE and DDT was identified in one biological sample (mosquito fish) from the ditch connecting lagoon G to Lake Holloman.

In 1996, a biological resource survey was conducted at the sewage lagoons and lakes. The report identified existing flora and fauna that both benefit from the lakes and might be harmed from any residual pesticides. The report concluded that draining and closing the lakes would cause much more harm to the wildlife than retaining them without further actions.

In 1997, a SWMU close-out report was issued for Lakes Holloman and Stinky. The report summarized all the previous investigations and actions performed for the lakes. The report recommended that no further action (NFA) be performed at these SWMUs. In August 2000, NMED issued an approval for NFA for SWMUs 139 and 140 to Holloman AFB (Figure 9). The NFA approval was based on:

1. Ecological quotients modeled were less than 1 indicating low potential ecological risk.
2. Sources of pesticides and metals had been isolated from the lakes by the closure of the sewage lagoons and that future wildlife will be exposed to less body burden.
3. Any remaining DDT will degrade in the environment in approximately 2 years.

### **Basis for Determination**

SWMUs 139 and 140 have been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

### **References**

- 1993 Risk Assessment for the Sewage Lagoon System, Radian Corporation.
- 1992 Site Characterization Report – Sewage Lagoon Investigation, Radian Corporation.
- 1993 Draft Final Phase 2 RFI for Lakes Holloman and Stinky, Radian Corporation
- 1993 Risk Assessment for the Sewage Lagoon System, Radian Corporation.
- 1994 Preliminary Survey of Contaminants Present in Biota, Pore-water and Sediments at HOLLOWAN AFB WWTF, Wildlife Service and US Fish.

- 1995 Technical Memorandum 1994 Site Investigation Lake Holloman, Lake Stinky and the Ditch, Ebasco Corporation and Radian Corporation.
- 1996 Biological Resources Report, Sewage Lagoons Closure Project, Holloman AFB, NM. Foster-Wheeler Environmental Corporation and Radian Corporation.
- 1996 Risk Assessment Addendum, Sewage Lagoons Closure Project, Holloman AFB, NM, Radian Corporation and Foster-Wheeler Environmental Corporation.
- 1997 Site Close-out Report SWMU 139 and 140 Holloman AFB, NM, Foster-Wheeler Environmental Corporation.
- August 30, 2000- Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Approval of No Further Action at SWMUs 139 and 140 Holloman AFB, NM

## **SWMU 166 MOBSS Drainage Lagoon (ERP Site SD-25)**

### **Location**

SWMU 166 (ERP Site SD-25) is a drainage lagoon located at the staging area of the Mobile Support Squadron (MOBSS) and is located in the extreme southwestern portion of the Base (Figure 10).

### **History**

SWMU 166 is a drainage lagoon located at the MOBSS facility [currently known as the Bare Base Mobility Squadron (BBMS)]. The lagoon is a converted stock pond, approximately 50 feet square and 5 feet deep. Dikes that extend up to 6 feet above the local grade achieve the depth. During heavy precipitation, the lagoon receives runoff from the staging area via two unlined drainage ditches. During times of drought, water in the lagoon is completely evaporated.

Initial restoration program record searches for the site concluded that the site posed minimal environmental harm because there was no evidence of contamination. However, the potential could exist for impact to the site by chemicals such as pesticides, disinfectants, and solvents from activities conducted in the BBMS staging area.

A site investigation was conducted in 1983. The inspection did not reveal any visual signs of contamination, however, three 55-gallon drums of unknown content were found next to the lagoon. Based upon the potential for contamination in runoff from the staging area, and the drums, a RI was conducted at SWMU 166.

The RI was conducted between January 1988 and June 1989. The RI investigation involved the collection and laboratory analysis of soil, sediment and surface water samples. Analytical results from soil, sediment and surface water did contain contaminants in excess of regulatory standards.

In 1990, a baseline risk assessment was conducted at the site. The risk assessment concluded the site posed no threat to public health or the environment.

### **Evaluation of Relevant Information**

Tables 6 and 7 summarize the soil, sediment and surface water sample analytical results from investigations conducted at this site. The RI conducted at the site included the collection, field screening and the selection of samples for laboratory analysis. Three soil samples were selected for analysis. Benzene, toluene and xylene were detected in one soil sample with maximum concentrations of 7 µg/Kg, 7



µg/Kg and 40 µg/Kg respectively. No other VOCs, SVOCs, PCBs or pesticides were detected in the soil samples. TRPH was identified in all three samples at concentrations ranging between 21 mg/Kg and 54 mg/Kg. The maximum concentrations of RCRA metals included arsenic (2 mg/Kg), barium (121 mg/Kg), cadmium (1.3 mg/Kg), chromium (21 mg/Kg), mercury (ND), lead (70 mg/Kg), selenium (ND) and silver (ND).

Two sediment samples were collected from the bottom of the lagoon. Analytical results from these samples did not identify the presence of VOCs, SVOCs, pesticides or PCBs. TRPH was identified in concentrations ranging between 31 mg/Kg and 90 mg/Kg. The maximum concentrations of RCRA metals detected were arsenic (2.3 mg/Kg), barium (108 mg/Kg), cadmium (1.3 mg/Kg), chromium (18 mg/Kg), mercury (ND), lead (70 mg/Kg), selenium (ND) and silver (ND).

Two surface water samples were collected from the lagoon at different locations. Analytical results from these samples identified no VOCs, SVOCs, PCBs, pesticides, or TRPH. The maximum concentrations of RCRA metals included barium at 50 µg/L. No other metals were detected in the surface water samples.

The concentration of TRPH and petroleum related VOCs (benzene, toluene and xylenes) are at least two orders of magnitude lower than the NMED SSLs for residential soils. Water samples analyzed from this site only contained detectable concentrations of barium which were significantly less than the NMWQCC or federal standards. Only iron with concentrations ranging between 5,573 mg/Kg and 18,692 mg/Kg exceed the NMED Residential Soil SSL (2,300 mg/Kg).

### **Basis for Determination**

SWMU 166 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

### **References**

- 1990 Remedial Investigation Report, Installation Restoration Program, Holloman AFB, NM Volume 1, Walk Haydel & Associates, Inc.
- 1989 Remedial Investigation Risk Assessment Report, Installation Restoration Program, Holloman AFB, NM, Walk Haydel & Associates, Inc.

## **1.5 AOC FST-837 German Air Force Building 837 OWS**

### **Location**

AOC FST-837 is located between buildings 837 and 839 at the site of the Petroleum Materials Evaluation Laboratory (PMEL). Currently, these buildings are operated by the First German Air Force (Figure 11).

### **History**

Site AOC FST-837 was a buried and unknown field septic tank (FST) that had not been included in the Base RCRA permit. The septic tank and leach field were discovered during excavation for the construction of Building 839. NMED was notified about the presence of the FST and it was added to the facilities SWMU list as site AOC FST-837. A portion of building 837 had operated as a fuel testing laboratory. Rinseate from fuel sample testing may have entered the drains connected to AOC FST-837.

AOC FST-837 was remediated under the NMED voluntary corrective action (VCA) program. The septic tank, surrounding soil and leach line were excavated and disposed offsite. Soil samples were collected from the completed excavation to document remediation to below the action level for the Base. The demolition, excavation, disposal and closure sampling activities were documented in a VCA completion report and submitted to NMED on June 9, 2000. On June 2, 2003 the base received an approval for the completed VCA of AOC FST-837. Figure 12 is a copy of the approval letter.

### **Evaluation of Relevant Information**

Remediation activities for this site were conducted in accordance with NMED VCA guidelines and documented in the VCA completion report. The four (4) closure soil samples collected from the 48 feet wide by 98 feet long and 5-foot deep excavation indicated that no petroleum hydrocarbons or petroleum hydrocarbon constituents were present along the walls of the excavation above the NMED Residential SSLs. All samples report TPH GRO < 5 mg/Kg, TPH DRO < 10 mg/Kg and no detectable VOCs. Additionally, analysis of soil samples collected from the excavated and stockpiled soil did not identify any RCRA hazardous constituents. Further, no phase separated hydrocarbons were observed in groundwater at the bottom of the excavation.

## **Basis for Determination**

AOC FST-837 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

## **References**

- June 2000, Voluntary Corrective Action Completion Report for the German Air Force Base Project (AOC FST-837) Holloman AFB, Foster Wheeler Environmental Corporation
- April 30, 2003 Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Request for Supplemental Information Completion Report for the German Air Force II Project (AOC FST-837)
- June 2, 2003 Correspondence. From Mr. Cornelius Amindyas NMED to 49 CES/CEV Holloman AFB. Approval of VCA at AOC FST-837 Holloman AFB, NM

## 1.6 SWMU 106 Main Base Landfill (ERP Site LF-01)

### Location

The Main Base Landfill (ERP Site LF-01) occupies approximately 210 acres and is located north of the main Base area along the north Base boundary (Figure 13).

### History

The Main Base Landfill accepted solid waste from the all facilities at the Base from 1958 to 1994. The landfill used the trench and fill method. When operating, the active areas were generally limited to a trench approximately 150 feet wide, 300 feet long and 30 feet deep.

According to information from a records search and interviews conducted during the 1988 to 1990 Phase I IRP Investigation, the landfill may have accepted small quantities of hazardous wastes such as oils, solvents and pesticides.

Soil borings and groundwater monitoring wells (MW-1 through MW-5, IW-1, IW-2 and IW-3) were drilled and installed along the perimeter of the landfill during the Phase II IRP Investigation. Soil samples collected from the borings were used for stratigraphic characterization only. No laboratory analysis for hazardous constituents was performed. Six undisturbed soil samples of the landfill cap material were analyzed for permeability.

Groundwater samples collected from the monitoring wells were analyzed for metals, TRPH, VOCs, SVOCs, anions and TDS. A summary of the maximum concentrations of each detected analyte during the investigation phase and during 10 years of LTM are presented in Table 8. The groundwater analytical results identified VOCs benzene, toluene, xylenes, 1, 2-dichloroethane and SVOCs bis-2-ethylhexylphthalate and di-n-octylphthalate in at least one well. No TRPH, pesticides and PCBs were detected in samples from the eight monitoring wells. TDS in the samples from the eight monitoring wells ranged from 18,318 mg/L to 67,621 mg/L.

In 1995, the long-term groundwater monitoring (LTM) program (10 years) was initiated at SWMU 106. Five of the eight wells on site were sampled for RCRA metals, VOCs and organochlorine pesticides. In subsequent LTM events, constituents not identified in the previous two sampling rounds (such as organochlorine pesticides) were dropped from the analytical regiment. The LTM program at SWUM 106 was completed with the 2003 LTM sampling event.

During the 10 years of LTM only two constituents, arsenic (maximum concentration of 27 µg/L) and Lead (maximum concentration of 44 µg/L) exceed state and federal standards. Further, the groundwater at this exceeds the NMWQQ for TDS with a maximum concentration of 44,400 mg/L observed at well S1-MW2.

An engineered cap was installed over SWMU 106 in 1998. The cap prevents the potential infiltration of moisture to the deposited waste. Routine maintenance of the cap and a methane monitoring program has been implemented under the direction of the NMED Solid Waste Bureau. The New Mexico Solid Waste Bureau issued closure certification for the landfill in December 1999.

### **Evaluation of Relevant Information**

Soil borings were installed during the monitoring well installation portion of the investigation at SWMU 106. In 1990, undisturbed soil samples were collected of the non-engineered soil cap. Soil analysis indicated that permeability of the cap material ranges from  $1 \times 10^{-3}$  cm/sec to  $1 \times 10^{-6}$  cm/sec which is an order of magnitude greater than typical cap material. Soil samples from the borings drilled for groundwater monitoring wells indicated that subsurface sediments surrounding the landfill are comprised of clayey silt (ML), clayey sand (SC), and silty sand (SM).

The initial groundwater analytical results (RI Report) identified the maximum concentrations of VOCs benzene (82 µg/L at MW-3), toluene (49 µg/L at MW-1), xylenes (85 µg/L at MW-3), 1,2-dichloroethane (9 µg/L at MW-3) and SVOCs bis-2-ethylhexylphthalate (73 µg/L at IW-3) and di-n-octylphthalate (27 µg/L at IW-1). The majority of these constituents were identified in one well, MW-3. No TRPH, pesticides and PCBs were detected in samples from the eight monitoring wells. TDS in the samples from the eight monitoring wells ranged from 18,318 mg/L (IW-1) to 67,621 mg/L (MW-1). The maximum concentrations of RCRA metals included arsenic (3.6 µg/L), barium (285 µg/L), cadmium (ND), chromium (84 µg/L), mercury (ND), selenium (3.7 µg/L) and silver (27 µg/L). The samples were not analyzed for lead.

Five rounds of LTM were conducted at the site from 1995 to 2003. During these sampling events conducted in 1995, 1997, 1999, 2001 and 2003, no VOCs or organochlorine pesticides were identified in groundwater. Only two metal species, arsenic and selenium have been detected in groundwater samples. No RCRA metals species exceed the New Mexico Water Quality Control Commission (NMWQCC) or federal standards. Further, TDS at the site exceeds 10,000 mg/L which defines regulated water under the NMWQCC regulations.

An engineered cap was installed over SWMU 106 in 1998. The cap prevents the potential infiltration of moisture to the deposited waste. Routine maintenance of the cap and a methane monitoring program has been implemented under the direction of the NMED Solid Waste Bureau. The NMED Solid Waste Bureau issued closure certification for the landfill in December 1999. Figure 15 is a copy of the approval letter for the closure design at LF01. Figure 16 is a copy of the letter from NMED determining that closure of the landfill was complete.

### **Basis for Determination**

SWMU 106 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

### **References**

- 1990 Walk Haydel & Associates, Inc., Remedial Investigation Report, Installation Restoration Program, Holloman AFB, NM Volume 1
- 1989 Walk Haydel & Associates, Inc., Remedial Investigation Risk Assessment Report, Installation Restoration Program, Holloman AFB, NM
- 1995 Groundwater Technology Government Services, Inc. and Foster Wheeler Environmental Corporation, Long Term Groundwater Monitoring Program Volume I Field Sampling Program
- 1999 Foster Wheeler Environmental Corporation, Closure Report for Main Base Landfill Holloman AFB
- 2003 US Army Corps of Engineers, Omaha District, 2003 Long-Term Groundwater Monitoring Report Holloman Air Force Base, New Mexico
- Correspondence. From Mr. Butch Tongate NMED Solid Waste Bureau to 49 CES/CEV Holloman AFB, Approval of Landfill Capping and Closure.

## 1.7 SWMU AOC-2 Sewage Disposal Area

### Location

AOC-2 is located on the western part of the main base, across Taxiway G. AOC-2 is a circular area in the middle of the taxiway apron structures approximately 110 feet in diameter with primarily salt cedars comprising the vegetation (Figure 17).

### History

On-site signage indicates the area to be a former sewage disposal area. There is a wire fence surrounding the area with signs prohibiting vehicular traffic. The site is approximately 900 feet northeast of the air traffic control tower, Building 864. Installation Restoration Program (IRP) site SS-26 lies about 1,000 feet to the southwest and site SD-27 is about 950 feet to the southeast. The best determination for the use of this area was for surface water drainage along the taxiways and a domestic waste leach for the nearby buildings.

### Evaluation of Relevant Information

Six soil borings were advanced around AOC-2. The soil borings were sampled continuously to a depth of approximately 20 feet or refusal, whichever was the lesser depth. The soil samples collected from the borings were analyzed for, VOCs, SVOCs, RCRA Metals, TPH (GRO, DRO, ORO), PCBs, and Herbicides. Monitoring wells were installed in each of the six soil borings for the purpose of collecting groundwater samples. Groundwater samples were analyzed for VOCs, SVOC, RCRA Metals, PCBs, and Herbicides.

Soil and groundwater analytical results are summarized in Tables 9 and 10. Analytical results for samples collected from AOC-2 indicate that no VOCs, TPH, PCBs, and herbicides were detected above the method detection limits in both soil and groundwater samples.

However, several RCRA metals were detected. Each metal concentration has been compared to the NMED residential SSLs and the Basewide upper tolerance limits (UTLs). Soil samples contained detectable concentrations of Arsenic, barium, cadmium, chromium, lead, and silver. Selenium and mercury were not detected in the soil samples. Arsenic was detected in all soil samples with a maximum concentration of 4.12 mg/kg which is above the Residential SSL of 3.9 mg/kg, but less than the Basewide UTL of 6.88 mg/kg. Barium, chromium, lead and silver were detected but all concentrations are below the Residential SSLs. Silver was detected in three soil samples at concentrations well below the Residential SSL for silver.

Analytical results for groundwater samples collected from the monitoring wells at AOC-2 did not identify VOCs, SVOCs, PCB, and Herbicides. However, several RCRA metals were detected in the water samples. Arsenic was detected above the method detection limit in groundwater collected from all six monitoring wells. Concentrations ranged from 0.022 to 0.027 mg/L. Each concentration was above the 0.01 mg/L MCL for arsenic; however, they did not exceed the Base-wide UTL of 35.4 µg/L. Barium, chromium, and selenium were detected in groundwater samples but at concentrations less than Federal or NMWQCC standards. Cadmium, lead, mercury and silver were not detected in the groundwater at the site.

### **Basis for Determination**

SWMU AOC-2 has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

Based on the findings of the PA/SI, the following conclusions and recommendations have been developed. Soil analytical results indicate that elevated levels of RCRA metals are present in soil; however, as indicated by screening the data against Residential SSLs and the Basewide UTLs, the presence of arsenic, barium, cadmium, chromium, lead, and silver do not pose any unacceptable risks.

Groundwater analytical results indicate that elevated levels of arsenic are present in groundwater; however, as in the soil, its presence in groundwater does not pose an unacceptable risk.

### **References**

- 2004 RFI Report AOC-2 Holloman Air Force Base New Mexico, Bhate Environmental Associates, Inc.
- 2004 PA/SI Work Plan AOC-2 Holloman Air Force Base New Mexico, Bhate Environmental Associates, Inc.



## 1.8 SWMU DP-62 Ritas Draw

### Location

DP-62 (formerly identified as Area of Concern (AOC) - Ritas Draw) is located in a remote portion of the North Base Area, approximately 300 feet northwest of ERP Site OT-04 (Acid Trailer Burial Site – Solid Waste Management Unit (SWMU) 102). DP-62 is one of many smaller arroyos that terminate into Ritas Draw (Figure 16).

### History

DP-62 is northward sloping with a terminus at Ritas Draw. A change in elevation of approximately 30 feet exists from south to north across DP-62. In 1998, during the initial field reconnaissance in the area of AOC-Ritas Draw, two partially buried drums were discovered. These drums were believed to be related to early missile testing that occurred on HAFB during the 1950s. The drums were empty, and the original contents of the drums are unknown.

DP-62 is located approximately 300 feet from the Acid Trailer Burial Site (OT-04, SWMU 102), where waste materials were dumped and buried on a one-half acre tract of land along the banks Ritas Draw. The majority of the waste at OT-04 may have originated from the former Unconventional Fuels Storage Area, which is located approximately ½-mile to the south. The Unconventional Fuels Storage Area housed propellants, oxidizers, and other fuel components that were used by the 6585<sup>th</sup> Test Group for rocket and sled tests conducted at HAFB. Investigations of DP-62 assumed that similar wastes may have been disposed of at this site.

### Evaluation of Relevant Information

In 1998, a PA/SI was performed at DP-62. The PA portion of the investigation did not conclusively identify a source for the operational material debris present at the site. However, given the proximity to OT-04 (Acid Trailer Burial Site), it was speculated that similar materials were most likely present at DP-62. The SI field investigation activities at DP-62 consisted of a geophysical survey followed by the installation of direct push technology (DPT) soil borings and DPT groundwater monitoring points.

The geophysical survey identified approximately five areas of high magnetic response which are assumed to be the result of buried metal objects such as drums or debris. Three DPT borings (RITA-1, RITA-2, and RITA-4) were advanced in the immediate proximity of areas of high magnetic response and visible surface disturbance. DPT boring RITA-3 was installed at the confluence of drainage to

determine if contamination was present down slope of the debris. DPT borings RITA-3 and RITA-4 were converted into groundwater monitoring points in order to collect groundwater samples.

Table 11 presents a summary of soil analytical results for DP-62. Select soil samples from the boreholes were analyzed for VOCs, SVOCs, explosives, and TAL metals. SVOCs and explosives were not detected in the soil samples. VOCs were not detected with the exception of acetone at 20 µg/kg and 25 µg/kg in samples from 12 and 18 feet below ground surface (bgs) at boring RITA-2. Acetone was also detected in the laboratory blanks and was presumed to be a laboratory artifact in the samples. Results from the analysis of metals in soil samples were compared to NMED SSLs for residential soil. Only arsenic exceeded the residential SSL with RITA-2-12) at 17.4 mg/kg, and the duplicate sample of RITA-2-12DUP at 9.1 mg/kg

Groundwater samples were analyzed for VOCs, SVOCs, explosives, and TAL Metals. Table 12 presents a summary of the groundwater analytical results at DP-62. No VOCs, SVOCs, or explosives were detected in groundwater samples. Eight metals were detected in one or more samples; however, only the detections of arsenic (maximum 0.032 mg/L), antimony (0.036 mg/L) and manganese (1.84 mg/L) exceeded the NMWQCC screening criteria for drinking water.

Additional investigation was requested by NMED to examine soil from directly beneath or as close as possible to the existing drum carcasses. On March 31, 2004, four hand augured soil borings were advanced at the site to an approximate depth of 5 feet. Based on screening results and other relevant observations, one soil sample from each soil boring was selected for laboratory analyses. The sample obtained from the bottom of the boring was selected if the screening failed to identify an appropriate interval. All four soil samples submitted for analysis were collected from the bottom of each boring. The soil samples were analyzed for VOCs, SVOCs, TPH, and RCRA. No VOCs or SVOC were detected above the method detection limits for the samples submitted for laboratory analysis.

Five of the eight RCRA metals were detected above the method detection limits. Arsenic was detected in soil borings SB-01, SB-02, and SB-03 but at concentrations below the Residential Soil Screening Level (SSL) of 3,900 µg/kg. Barium was detected above the method detection limit in all four soil borings but below the Residential SSL. Cadmium was detected in one sample collected from soil boring SB-01 well below the Residential SSL. Chromium was detected in all four soil samples at concentrations below the residential SSL. Selenium was also detected in all four samples but below the Residential SSL.

## **Basis for Determination**

SWMU DP-62 (formerly known as AOC Ritas Draw) has been characterized or remediated in accordance with current applicable state or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk under current and projected future land use.

Based on the findings of the PA/SI and the RFI, the presence of barium, cadmium, chromium, and selenium do not pose any unacceptable risks. The presence of arsenic is within the range for soil in the Western United States (USGS 1984...). Similarly, the concentration of arsenic and antimony in groundwater above their respective MCLs were determined to be within the background range at the Base and, thus, do not pose any risk. Manganese in groundwater was also determined to be within the range for natural elemental concentrations. Therefore, no further investigations or corrective actions are recommended for soil and groundwater at DP-62. Further, surface debris at the site including drums were removed and recycled as scrap metal.

## **References**

Bhate Environmental Associates, Inc. November 2003. Final Phase II RCRA Facility Investigation Work Plan, ERP Site No. DP-62, Ritas Draw, Holloman Air Force Base, New Mexico.

Dragun, J., 1998. The Soil Chemistry of Hazardous Materials. Hazardous Materials Control Institute, Silver Spring, MD.

Foster Wheeler Environmental Corporation and Groundwater Technology, Inc. 1998. Preliminary Assessment Site Investigation AOC-Ritas Draw.

Foster Wheeler Corporation. 2002. Long Term Groundwater Monitoring Report, Holloman Air Force Base.

Radian Corporation. 1993a. Preliminary Assessment and Site Investigation Report, Investigation of Four Waste Sites, Holloman Air Force Base, New Mexico.

Radian Corporation. 1993b. Base-Wide Background Study, Sewage Lagoons and Lakes Investigation,, Holloman Air Force Base, New Mexico.

## TABLES

**TABLE 1**

**LIST of SWMUs  
Proposed Basis for No Further Action (NFA)  
by Criteria  
Holloman AFB, New Mexico**

<b>SWMU No.</b>	<b>SWMU TITLE</b>	<b>ERP SITE No.</b>	<b>NFA CRITERIA No.</b>
4	Building 131 Oil/water Separator	None	5
82	Refuse Collection Truck Wash Rack	SD-08	5
136	Building 1119 Wash Rack Drainage Pit	None	5
139 & 140	Lake Holloman and Lake Stinky	WP-49	5
166	MOBSS Drainage Lagoon	SD-25	5
AOC FST-837	German Air Force Building 837 & 839 Field Septic Tank	None	4
106	Main Base Landfill	LF-01	4
DP-62	Ritas Draw Debris Disposal Site	DP-62	3
AOC-2	Former Sewage Disposal Area (Drain Field)	AOC-2	3