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

U.S. AIR FORCE
1947 - 1997

28 JUL 1997

MEMORANDUM FOR NEW MEXICO ENVIRONMENT DEPARTMENT
Attn: Mr. Benito Garcia
Chief, Hazardous & Radioactive Materials Bureau
P.O. Box 26110
Santa Fe, NM 87502

JUL 1997 RECEIVED

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

SUBJECT: Response to Notice of Deficiency (NOD), Closure Report for Petroleum, Oil and Lubricant (POL) Contaminated Sites

1. In response to your 25 Jun 97 NOD, Holloman AFB (HAFB) submits the revised Final Closure Report for Phase II Remediation of POL-Contaminated Sites and Oil/Water Separators and Waste Oil Tank Removals (Atch 1) and the following informational comments. First, in response to Global Comment 1, all previous reports that identified chemicals of concern (COCs) detailed that information in regards to contaminant level and affected media. All future reports will also list any identified COCs. However, the attached report listed no COCs due to the fact that none were identified. Each of the Solid Waste Management Units (SWMUs) described in this report was subjected to either a qualitative or quantitative risk assessment. Appendix C of the previously-submitted Phase I Table 2 RCRA Facility Investigation Report (RFI) and Appendix D of the previously-submitted Table 3 RFI Report detail the methodology used to identify COCs. Therefore, no COCs are listed in the updated report submitted under this cover. ← Yes, verified. CA. OK

2. Regarding HAFB's facility-wide and SWMU-specific groundwater monitoring plan, HAFB implemented a long-term groundwater monitoring (LTM) program at 21 SWMUs. Monitoring is conducted biennially for a period of 10 years. Sampling began in 1995 and a second round will be conducted this fall. The groundwater beneath HAFB is non-potable (<10,000 ppm TDS) and, therefore, is not protected by New Mexico Water Quality Control Commission Regulations. Also, letters submitted to HAFB by the New Mexico Environment Department (NMED) in 1993 and 1995 (Atch 2) require only removal of free product and remediation of soil above the water table. The SWMUs in this report are significantly smaller in size than those SWMUs currently undergoing LTM. In addition, these sites have all had their "source" removed via excavation. Also, of those sites listed in this report that did have contamination beyond total petroleum hydrocarbons (TPH), the levels were primarily in the low parts per billion range. Therefore, the need to monitor these sites is not necessary since the potential for migration is non-existent. OK

3. If you have any questions regarding these comments, or require additional information, please contact Warren Neff at (505) 475-5395.

HOWARD E. MOFFITT
Deputy Base Civil Engineer

Attachments:
1. Final Closure Report for Phase II Remediation of POL-Contaminated Sites and Oil/Water Separators and Waste Oil Tank Removals
2. NMED Ltrs Establishing Cleanup Standards, 25 January 1993 and 15 May 1995

LIBRARY COPY

Headquarters, Air Combat Command
Langley Air Force Base,
Virginia

Final Closure Report for Phase II Remediation of POL-Contaminated Sites and Oil Water Separator and Waste Oil Tank Removals

Holloman AFB
Alamogordo, NM

July 1997

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49 CES/CEVR
Holloman Air Force Base
New Mexico

State of New Mexico
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January 25, 1993

Mr. Howard E. Moffitt
Deputy Base Civil Engineer
49 CES/CEV
550 Tabosa Ave.
Holloman Air Force Base, NM 88330-8458

Dear Mr. Moffitt:

I have taken this opportunity to respond to your letter of December 16 to David Morgan in regard to soil and ground water remediation standards acceptable to the Environment Department at Holloman Air Force Base.

A basewide soil cleanup standard of 1000 parts per million of total petroleum hydrocarbons (TPH), measured as agreed for UST sites in the letter of November 2, 1992 to you from James P. Bearzi, will be acceptable to NMED at all sites involving release of petroleum hydrocarbons - provided there are no RCRA hazardous constituents present for which risk-based cleanup levels would be more stringent. For instance, levels of benzene in soil under proposed Subpart S corrective action guidance may not exceed 25 parts per million. As a practical matter, it is very unlikely that any constituent associated with petroleum hydrocarbons would be present in unacceptable concentrations at a site where no soil contained more than 1000 ppm TPH. However, enough confirmatory analyses must be performed at each site to ensure that this is the case.

Remediation of existing ground water contamination will not be required by NMED at Holloman Air Force Base, unless a situation is present where a human or ecological receptor is exposed to unacceptable risk from contact with the contaminated water. We agree that direct ingestion of the water by humans is not a plausible exposure scenario. However, additional ground water contamination will not be acceptable. To implement this principle, existing contaminant plumes must be adequately characterized and monitor wells in those plumes must be sampled at least annually for the contaminants present. If contaminants at any point in a plume increase in concentration, or if additional contaminants are discovered, further investigation may be required to locate and remove the source.

Atch 2

The Environment Department will, however, insist on remediation of any ground water contamination resulting from current or future activities at Holloman Air Force Base.

Sincerely,

Kathleen M. Sisneros, Director
Water and Waste Management Division

c: Benito J. Garcia, Chief, HRMB
Steven J. Cary, Chief, GWPRB
Rich Mayer, EPA Region 6

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May 15, 1995

Mr. Howard E. Moffitt
Deputy Base Civil Engineer
49 CES/CEV
550 Tabosa Avenue
Holloman Air Force Base, New Mexico 88330-8458

Dear Mr. Moffitt:

This letter serves to update the policy of the New Mexico Environment Department (NMED) in regard to soil and groundwater concerns at Holloman Air Force Base (HAFB). These concerns were addressed initially in NMED's letter of January 25, 1993.

NMED has previously agreed in a November 2, 1992 letter from the Underground Storage Tank (UST) Bureau to HAFB that a basewide soil cleanup standard of 1000 parts per million (ppm) of Total Petroleum Hydrocarbons (TPH) is allowable at UST sites involving release of petroleum hydrocarbons. This 1000 ppm TPH standard is also a solid waste land disposal standard (New Mexico Solid Waste Management Regulations, EIB/SWMR-4, Section 708). This TPH standard is acceptable to NMED provided that there are no RCRA hazardous constituents present in soils for which calculated risk-based levels would be more stringent. Sufficient confirmatory analyses must be performed at each site to ensure that hazardous constituent concentrations are not exceeded in soils containing no more than 1000 parts per million TPH.

Remediation of existing contamination in unprotected groundwater will not be required by NMED at HAFB, unless a situation occurs in which a human or ecological receptor is or may be exposed to unacceptable risk from contact with the contaminated water. NMED agrees that, in cases where the Total Dissolved Solid (TDS) content renders the water non-potable, direct ingestion of the water by humans is not a plausible exposure scenario. However, additional or continued contamination of the groundwater is not and will not be acceptable to NMED. To implement this policy, existing soil and groundwater contaminant plumes must be adequately characterized. Monitoring wells defining contaminant plumes must be sampled at least annually for the contaminants present to determine if a

release has occurred and the source of any release. If contaminants at any point in a plume increase in concentration, or if additional contaminants are discovered, further investigation may be required to locate and remove the source. Additionally, NMED will insist on remediation of any groundwater contamination resulting from current or future activities at HAFB.

Sincerely,

Ed Kelley

Ed Kelley, Ph.D., Director
Water and Waste Management Division

EK:RK:rk

cc: Benito Garcia, Chief, HRMB
Marcy Leavitt, Chief, GWPRB
Ronald Kern, HRMB
Dennis McQuillan, GWPRB
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David Morgan, GWPRB
David Neleigh, EPA Region VI, 6H-PN

Received 7/29/97
Rec. 7/29/97

1.0 INTRODUCTION

This report documents remediation of soil contaminated with petroleum, oils, and lubricants (POL) and the removal of oil/water separators (O/WS) and waste oil tanks (WOT) at Holloman Air Force Base (AFB), New Mexico. These activities were conducted for the U.S. Army Corps of Engineers (USACE), Omaha District, by Foster Wheeler Environmental Corporation (FWENC) under the Total Environmental Restoration Contract (TERC) No. DACW45-94-D0003, Delivery Order 11, Work Authorization Directive 3.

Field work activities for the SWMUs included in this report began in January 1996 and continued through June 1997. The only SWMU still requiring remediation is SWMU 14, which will be completed in July 1997. SWMU 14 will be included as an addendum to this report, along with SWMUs 3, 8, 10, 18, 17/121, 23, and 28 which have been remediated but lacked all required data at the time this report was submitted. The addendum is scheduled to be submitted in September 1997. All activities have been conducted in accordance with the Phase I Project Plans for Remediation of POL-Contaminated Sites and O/WS Removals, including the Work Plan, Quality Assurance Project Plan (QAPP), Field Sampling and Analysis Plan (FSAP), and Contractor Quality Control (CQC) Plan, the Basewide Site Safety and Health Plan (SSHP), and the Phase II Work Plan (EBASCO 1995a, 1995b, 1995c).

Response to NOD Global Comment #4

1.1 Background

Holloman AFB (Base) is subject to the requirements of several federal environmental regulatory programs, all of which require restoration of sites suspected of contamination. On the basis of previous investigations conducted at the Base, some of the sites may require remedial action. Brief descriptions of the salient regulatory programs are presented below.

Under a Resource Conservation and Recovery Act (RCRA) Part B permit, the Base operates an on-site storage facility for currently generated hazardous wastes. As a holder of such a facility operating permit, the Base is subject to adhere to the RCRA corrective action program policies. The Hazardous and Solid Waste Amendments (HSWA) portions of the RCRA permit require the

Base to investigate certain solid waste management units (SWMUs) identified in the 1988 RCRA Facilities Assessment (RFA). The 113 SWMUs listed in Tables 1, 2, and 3 of the permit must comply with the approved schedules for implementing the Base's corrective action program.

The Installation Restoration Program (IRP) was established to investigate past hazardous waste disposal sites at Department of Defense installations and generally follows the provisions documented in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA). There are 60 IRP sites at the Base.

Soil contaminated with POL exceeding the 1,000 mg/kg total petroleum hydrocarbons (TPH) soil cleanup standard established with NMED in 1993 was identified during previous RCRA Facility Investigations (RFIs) and/or IRP investigations conducted at the Base at 10 Table 2 and 12 Table 3 sites (Radian 1994, 1995). No contaminates-of-concern (COCs) were identified for these sites. To fulfill the requirements of the Base's HSWA portion of the RCRA Part B permit, 16 O/WSs, 6 WOTs, identified as Table 2 and 3 SWMUs were earmarked for restoration. The Base elected to remove all inactive or abandoned O/WSs and WOTs to prevent future releases. Also, soil containing contaminant concentrations exceeding applicable closure standards was excavated and removed. Excavations, O/WS and WOT removals, and restorations were conducted at the following sites:

Response to Global NOD Comment #5

- Table 2 SWMUs: Removal of O/WSs, WOTs, and soil contaminated with POL

—SWMUs 2 and 119: Building 121 O/WS and WOT, respectively

—SWMUs 21 and 22: Abandoned O/WSs for Buildings 702 and 704, respectively

—SWMUs 39 and 127: Building 1092 O/WS and WOT, respectively

—SWMUs 40 and 128: Building 1166 O/WS and WOT, respectively

—SWMUs 36 and 126: Building 1001 O/WS and WOT, respectively

- Table 3 SWMUs: Removal of O/WSs, WOTs and soil contaminated with POL

1.3 Project Objectives

The purpose of this project is to achieve site closure objectives, either through removal of Petroleum Contaminated Soil (PCS) at the Table 2 and 3 SWMUs or by endorsing the No Further Action (NFA) conclusion following site closure sampling. The volume of overexcavated soil will be minimized using on-site analytical testing and field-screening techniques. By combining multiple sites into a single project, the entire remediation process, which includes plan preparation, construction mobilization, sampling and analysis, project reporting, disposal, and/or treatment of soil, sludge, liquids, and debris, will be streamlined and costs will be minimized.

1.4 Technical Approach

The RFIs/Remedial Investigations (RIs) previously conducted at the identified Table 2 and 3 SWMUs established that, no constituents exceeding site-screening levels or established background levels are present in soil with the exception of TPH (Radian 1994, 1995). Following O/WS and WOT removal and soil excavation, soil samples were collected from each site excavation to determine if all soil in excess of 1,000 mg/kg TPH was recovered.

This report recommends that the U.S. Environmental Protection Agency (EPA), Region VI, distinguish those sites in which soil contaminants do not exceed regulatory standards as sites requiring NFA. In addition, Class 3 Permit modifications will be submitted to the EPA for these sites in order to remove them from the Base's Part B Permit. During field operations, Tables 2 and 3 O/WSs and WOTs were removed with the exception of O/WSs at SWMUs 1, 11, and 41. SWMU 11 was previously removed as noted in the Table 3 RFI Report. SWMUs 1 and 41, which have been inspected at least quarterly since 1993, will remain in service as sediment traps. These SWMUs, which are in good working order and have good integrity, are pumped out and serviced as required. No WOTs were left in service.

Response to NOD Global Comment #6

Holloman AFB has an excellent O/WS management program and was recognized as the best in the Air Combat Command (ACC).

1.5 Regulatory Action Levels

Regulatory action levels applicable to soil and groundwater affected by POL at the Base as established by the New Mexico Environment Department (NMED) are as follows:

- For POL-contaminated soil TPH less than 1,000 mg/kg and benzene less than 25 mg/kg
- removal of light nonaqueous phase liquids (LNAPL) from groundwater

Due to the high total dissolved solids (TDS) concentrations in groundwater at the Base, there are no applicable dissolved groundwater standards. However, the EPA and the NMED require the Base to delineate the nature and extent of sorbed and dissolved-phase compounds present in the subsurface that exceed established background levels or risk-based levels.

All Table 2 and 3 soil samples were analyzed for total recoverable petroleum hydrocarbons (TRPH). Due to the lateral extent of SWMU 27, additional analyses were performed on soil samples. SWMU 27 soil was analyzed for lead, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). No lead was detected above background and neither VOCs or SVOCs analytical results indicated any COCs. The analyses performed at each site were determined by historical data and process knowledge (Radian 1994, 1995).

Response to NOD Global Comment #7

For the Table 2 and 3 sites, detected levels of TRPH, metals, VOCs, and SVOCs in soil were screened as follows:

- TRPH concentrations in soil were compared to the Basewide TPH criteria of 1,000 mg/kg established by the NMED.
- VOC, SVOC, and lead results for soil samples were compared to EPA Region III risk-based levels for industrial land use.

In reference with New Mexico Environmental Improvement Board/Underground Storage Tank (UST) Regulations (NMEIB/USTR) Part I, Section 103 (C), Parts II through XIV of the

Response to NOD Comment #8

Table 1-1

Summary of Site Restoration

SWMU	Unit Removed	Soil Volume Excavated (cu yds)	Soil Volume Disposed (tons)	Closure Sample Collected	Stockpile Samples Collected	Comments
2	O/WS	24	None*	5	0	
119	WOT	20	25	5	2	WOT removed as part of basewide UST removal project.
21/22	O/WS	56	None*	5	0	Only one O/WS found.
39	O/WS	None	None*	0	0	To be remediated by FT-31 system.
127	WOT	20	25	5	2	WOT removed as part of basewide UST removal project.
36/126	O/WS removed previously. WOT not present.	100	100	5	1	O/WS removed during POL Phase I remediation.
40/128	WOT	None	None*	5	0	O/WS not found.
1	Active Unit.	373	None*	5	2	O/WS left in service.
7	O/WS	None	None*	5	0	
11	Active Unit.	373	None*	5	2	O/WS left in service.
12/13	O/WSs removed previously.	249	None*	5	2	O/WSs removed prior to RFI.
19	O/WS	None	None*	0	0	To be remediated by the T-38 (SWMU 229) HVDPE system.
25	Not present	None	None*	0	0	WOT pulled prior to 1988.
27	O/WS	3,726	5,589	10	16	No LNAPL present.
29	O/WS	124	None*	0	0	To be remediated by the 828 (SWMU 230) HVDPE system.
31	O/WS	76	76	5	1	
35	WOT	None	None*	5	0	
41	Active Unit.	10	None*	5	0	O/WS left in service.

* - Soil < 1,000 mg/kg TPH.

5.0 SITE RESTORATION AT SWMUs 39 AND 127, BUILDING 1092 O/WS AND WOT

Activities planned for these sites included the removal of the SWMU 39 O/WS and SWMU 127 WOT, which were located on the northern edge of the abandoned fire department training area and contained within a drainage pit, which is enclosed by a fence, and the excavation of soil containing TPH greater than 1,000 mg/kg (Figure 5-1). The estimated area of soil contamination was determined during the RFI (Radian 1994).

The horizontal and vertical extent of contamination was determined via DPT sampling points. Sampling events were staggered in order to better place sampling points. Using this data, plan view and cross-section views were created depicting the horizontal and vertical extent of contamination. These were in turn used to estimate volumes prior to excavation. An area approximately 24 ft by 42 ft was excavated at SWMUs 39 and 127 resulting in a soil volume of 20 cu yds.

5.1 Field Activities

The O/WS was removed, all soil was returned to the excavation, and all lines were capped. The O/WS was decontaminated and broken into manageable pieces for disposal. The WOT was removed previously under a military construction project.

5.2 Sampling and Analysis

No closure or stockpile sampling was performed for SWMU 39 because all soil, including soil returned to the excavation, will be remediated by the Former Fire Training area (FT-31) site bioventing system. The FT-31 bioventing system was constructed in June 1996 and is anticipated to operate through 1998. Quarterly respirometry tests have indicated that the bioventing system has created a favorable environment for microbial degradation of petroleum hydrocarbons. Approximately 30,000 pounds of petroleum hydrocarbons are estimated to have been degraded to date. Confirmation soil boring samples will be collected from the location of the former SWMU 39 upon the restoration of the FT-31 site. Both closure and stockpile samples

Response to NOD Comment # C.2

6.0 SITE RESTORATION AT SWMUs 40 AND 128, BLDG. 1166 O/WS AND WOT

Activities planned for these sites included the removal of SWMUs 40 and 128, which were located approximately 200 ft south and slightly east of Building 1604 adjacent to the vehicle washrack, and the excavation of soil containing TPH greater than 1,000 mg/kg (Figure 6-1). The estimated area of soil contamination was determined during the RFI (Radian 1994).

The remediation of SWMU 138, Building 1166 Drainage Pit, was performed as part of the Phase I Remediation of POL-Contaminated Sites conducted in 1995. No TPH in excess of 1,000 mg/kg was detected at this site. Confirmatory analyses and field activities are discussed in the Closure Report for Remediation of POL-Contaminated Sites and O/WS Removals July-November 1995 (EBASCO 1996). Response to NOD Global Comment #9

The horizontal and vertical extent of contamination was determined via DPT sampling points. Sampling events were staggered in order to better place sampling points. Using this data, plan view and cross-section views were created depicting the horizontal and vertical extent of contamination. These were in turn used to estimate volumes prior to excavation. An area approximately 5 ft by 12 ft was excavated at SWMUs 40 and 128 resulting in no soil volume.

6.1 Field Activities

The SWMU 128 WOT was excavated and removed; however, the SWMU 40 O/WS was not present. The WOT was decontaminated and transported off site for destruction and recycling by Basin Pipe and Metal.

6.2 Sampling and Analysis

Representative samples of in-place soil were collected during restoration activities. The soil samples were collected and analyzed in accordance with the FSAP as described in Section 2.4. Laboratory analytical reports from GTEL are provided in Appendix C. Table 6-1 summarizes the analytical results for the site closure samples.

10.2.1 Site Closure Samples

Five samples were collected from this excavation for site closure. Only one of the five samples exceeded 1,000 mg/kg for TRPH. This sample was collected from the base of the excavation at the groundwater table.

10.2.2 Soil Stockpile Samples

Two samples were collected from the soil stockpile for characterization purposes. Both sample results were less than 1,000 mg/kg for TRPH; thus the soil suspected of having contamination in excess of Base cleanup criteria was spread.

10.3 Site Restoration

Site restoration activities included backfilling, compaction, grading, landscaping, and concrete, electrical line, and piping repairs. After restoration was complete, an USACE representative performed a final site inspection. A copy of the site inspection closure report is included in Appendix D.

10.4 Waste Handling and Disposal

No soil required disposal from this site. Concrete, asphalt, and piping debris were disposed as a solid waste at the Lincoln/Otero County Landfill.

10.5 Conclusions and Recommendations

No closure samples taken in the vadose zone indicated TRPH above 1,000 mg/kg. Only sample number 5 taken at the water table at the base of the excavation indicated TRPH above 1,000 mg/kg. Per the agreement established between NMED and Holloman AFB, only remediation of vadose zone contamination is required. Therefore, excavation was terminated at the water table. All four sidewall samples indicated TRPH well below 1,000 mg/kg and therefore SWMU 11 is recommended for NFA. Analytical data gathered during the Table 3 RFI determined that no VOCs were present above the ppb range. Therefore, the need to monitor this site is not necessary since the potential for migration is non-existent.

Response to NOD Comment #C.1

12.4 Waste Handling and Disposal

No soil was transported off site for disposal because they will be remediated in situ by the T-38 Test Cell HVDPE system.

12.5 Conclusions and Recommendations

The SWMU 19 O/WS was removed and the soil is currently being remediated in situ with the T-38 Test Cell HVDPE system. The T-38 Test Cell HVDPE system is anticipated to operate through 2001. Confirmation borings will be taken across the site, including the area where SWMU 19 was located, to insure that the system has remediated the site to less than 1,000 mg/kg.

Response to NOD Comment # C-3

15.0 SITE RESTORATION AT SWMU 29, BUILDING 827 O/WS

Activities planned for this site included the removal of SWMU 29, which was located adjacent to the washrack for Building 827 and east of the new O/WS near the cleanout in the Building 828 compound (Figure 15-1). The estimated area of soil contamination was determined during the RFI (Radian 1995).

Prior to its removal, SWMU 29 was located in the contaminated plume associated with the Building 828 Fuel Spill Site (SWMU 230). SWMU 230 has a HVDPE system, which has been in place since 1996. This system will remediate the entire area, including the area where SWMU 29 was previously located, to less than 1,000 ppm TPH. Construction workplans and design drawings were submitted to NMED and EPA prior to installation of the HVDPE system. SWMU 93, the AGE Washrack, is located in proximity to SWMU 29. SWMU 93 was recommended for NFA during the RFA and as such is not listed on Holloman AFB's HSWA permit and is shown for reference purposes only.

Response to NOD Global Comment #10

Global Comment #10

The horizontal and vertical extent of contamination was determined via DPT sampling points. Sampling events were staggered in order to better place sampling points. Using this data, plan view and cross-section views were created depicting the horizontal and vertical extent of contamination. These were in turn used to estimate volumes prior to excavation. An area approximately 12 ft by 20 ft was excavated at SWMU 29 resulting in a soil volume of 124 cu yds.

15.1 Field Activities

Asphalt was sawcut and removed, 124 cu yds of soil was excavated, and the O/WS removed, decontaminated, and broken into manageable pieces. A 4-inch-diameter pipe was plumbed into the new O/WS and the liquids were transferred from the removed O/WS to the new O/WS. Cleanout was replaced, and excavation backfilled and compacted for asphalt repair.

15.2 Sampling and Analysis

No soil samples were collected at this site.

15.2.1 Site Closure Samples

No closure samples are required for this site because contaminated soil will be remediated by the Building 828 HVDPE system. Confirmation soil boring samples will be collected from the location of the former SWMU 29 upon the restoration of the Building 828 site.

15.2.2 Soil Stockpile Samples

All soil was returned to the excavation and used as backfill.

15.3 Site Restoration

Asphalt was repaired over the area indicated on Figure 15-1. Additional restoration activities included the replacement of the cleanout and repair of O/WS inlet piping. After restoration was complete, an USACE representative performed a final site inspection. A copy of the site inspection closure report is included in Appendix D.

15.4 Waste Handling and Disposal

No contaminated soil required disposal from this site due to the installation of the Building 828 HVDPE system; therefore, the soil was used as backfill. The decontaminated piping and O/WS debris were disposed as solid waste at the Lincoln/Otero County Landfill.

15.5 Conclusions and Recommendations

No closure samples were taken for this site because the contaminated soil will be remediated by the Building 828 (SWMU 230) HVDPE system. The Building 828 system is anticipated to operate through 1998. Confirmation borings will be taken across the site, including the area where SWMU 29 was located to insure that the system has remediated the site to less than 1,000 mg/kg.

Response to NOD Comment # C.4

Received 7/29/97

FINAL CLOSURE REPORT
FOR PHASE II
REMEDIATION OF POL-CONTAMINATED SITES AND
OIL/WATER SEPARATOR AND WASTE OIL TANK REMOVALS
HOLLOMAN AIR FORCE BASE, NEW MEXICO

Prepared for:
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Holloman Air Force Base, NM
and
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Under Contract No. DACW45-94-D0003

Delivery Order 11, Work Authorization Directive 3

U.S. Army Corps of Engineers
Omaha District
Omaha, Nebraska

July 1997

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LIST OF ACRONYMS

ACC	Air Combat Command
AFB	Air Force Base
AGE	Aerospace Ground Equipment
ASTM	American Society for Testing and Materials
BASE	Holloman AFB
BTEX	Benzene, Toluene, Ethylbenzene, and Total Xylenes
°C	Degrees Centigrade
CE	Civil Engineering
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CES	Civil Engineering Squadron
CEVR	Civil Engineering Environmental Flight
COCs	Contaminates-of-Concern
CQC	Contractor Quality Control
cu yds	cubic yards
DPT	Direct Push Technology
DQCR	Daily Quality Control Report
FSAP	Field Sampling and Analysis Plan
ft	Feet
FWENC	Foster Wheeler Environmental Corporation
GTEL	NEI/GTEL Environmental Laboratories
HSWA	Hazardous and Solid Waste Amendments
HVDPE	High-Vacuum Dual-Phase Extraction
IRP	Installation Restoration Program
LCS	Laboratory Control Sample
LEL	Lower Explosive Limit
LNAPL	Light Nonaqueous Phase Liquid
mg/kg	Milligram Per Kilogram
MR	Missouri River
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NMED	New Mexico Environmental Department
NFA	No Further Action
NMED	New Mexico Environment Department
NMEIB/	New Mexico Environmental Improvement Board/Underground
USTR	Storage Tank Regulations
O_2	Oxygen
O/WS	Oil/Water Separator
PARCC	Precision, Accuracy, Representativeness, Comparability, and Completeness
PCS	Petroleum Contaminated Soil
PID	Photoionization Detector
POL	Petroleum, Oils, and Lubricants
PPE	Personal Protective Equipment

LIST OF ACRONYMS (continued)

ppm	Part Per Million
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance/Quality Control
RBC	Risk Based Concentration
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facilities Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RPD	Relative Percent Difference
SARA	Superfund Amendments and Reauthorization Act
sq yds	Square Yards
SSHP	Site Safety and Health Plan
SVOCs	Semivolatile Organic Compounds
SWMU	Solid Waste Management Unit
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TERC	Total Environmental Restoration Contract
TRPH	Total Recoverable Petroleum Hydrocarbons
TPH	Total Petroleum Hydrocarbons
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
Tg/kg	Microgram Per Kilogram
WOT	Waste Oil Tank

1.0 INTRODUCTION

This report documents remediation of soil contaminated with petroleum, oils, and lubricants (POL) and the removal of oil/water separators (O/WS) and waste oil tanks (WOT) at Holloman Air Force Base (AFB), New Mexico. These activities were conducted for the U.S. Army Corps of Engineers (USACE), Omaha District, by Foster Wheeler Environmental Corporation (FWENC) under the Total Environmental Restoration Contract (TERC) No. DACW45-94-D0003, Delivery Order 11, Work Authorization Directive 3.

Field work activities for the SWMUs included in this report began in January 1996 and continued through June 1997. The only SWMU still requiring remediation is SWMU 14, which will be completed in July 1997. SWMU 14 will be included as an addendum to this report, along with SWMUs 3, 8, 10, 18, 17/121, 23, and 28 which have been remediated but lacked all required data at the time this report was submitted. The addendum is scheduled to be submitted in September 1997. All activities have been conducted in accordance with the Phase I Project Plans for Remediation of POL-Contaminated Sites and O/WS Removals, including the Work Plan, Quality Assurance Project Plan (QAPP), Field Sampling and Analysis Plan (FSAP), and Contractor Quality Control (CQC) Plan, the Basewide Site Safety and Health Plan (SSHP), and the Phase II Work Plan (EBASCO 1995a, 1995b, 1995c).

1.1 Background

Holloman AFB (Base) is subject to the requirements of several federal environmental regulatory programs, all of which require restoration of sites suspected of contamination. On the basis of previous investigations conducted at the Base, some of the sites may require remedial action. Brief descriptions of the salient regulatory programs are presented below.

Under a Resource Conservation and Recovery Act (RCRA) Part B permit, the Base operates an on-site storage facility for currently generated hazardous wastes. As a holder of such a facility operating permit, the Base is subject to adhere to the RCRA corrective action program policies. The Hazardous and Solid Waste Amendments (HSWA) portions of the RCRA permit require the

Base to investigate certain solid waste management units (SWMUs) identified in the 1988 RCRA Facilities Assessment (RFA). The 113 SWMUs listed in Tables 1, 2, and 3 of the permit must comply with the approved schedules for implementing the Base's corrective action program.

The Installation Restoration Program (IRP) was established to investigate past hazardous waste disposal sites at Department of Defense installations and generally follows the provisions documented in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act (SARA). There are 60 IRP sites at the Base.

Soil contaminated with POL exceeding the 1,000 mg/kg total petroleum hydrocarbons (TPH) soil cleanup standard established with NMED in 1993 was identified during previous RCRA Facility Investigations (RFIs) and/or IRP investigations conducted at the Base at 10 Table 2 and 12 Table 3 sites (Radian 1994, 1995). No contaminates-of-concern (COCs) were identified for these sites. To fulfill the requirements of the Base's HSWA portion of the RCRA Part B permit, 16 O/WSs, 6 WOTs, identified as Table 2 and 3 SWMUs were earmarked for restoration. The Base elected to remove all inactive or abandoned O/WSs and WOTs to prevent future releases. Also, soil containing contaminant concentrations exceeding applicable closure standards was excavated and removed. Excavations, O/WS and WOT removals, and restorations were conducted at the following sites:

- Table 2 SWMUs: Removal of O/WSs, WOTs, and soil contaminated with POL

—SWMUs 2 and 119: Building 121 O/WS and WOT, respectively

—SWMUs 21 and 22: Abandoned O/WSs for Buildings 702 and 704, respectively

—SWMUs 39 and 127: Building 1092 O/WS and WOT, respectively

—SWMUs 40 and 128: Building 1166 O/WS and WOT, respectively

—SWMUs 36 and 126: Building 1001 O/WS and WOT, respectively

- Table 3 SWMUs: Removal of O/WSs, WOTs and soil contaminated with POL

—SWMU 1: Building 55 O/WS

—SWMU 7: Building 198 O/WS

—SWMU 11: Building 300 O/WS

—SWMUs 12 and 13: Buildings 304 and 304A O/WS, respectively

—SWMU 19: Building 638 O/WS

—Near SWMU 25: Building 805 WOT

—SWMU 27: Building 810 O/WS

—SWMU 29: Building 827 O/WS

—SWMU 31: Building 855 O/WS

—SWMU 35: Building 903 WOT

—SWMU 41: Building 1266 O/WS

The locations of Tables 2 and 3 SWMUs discussed in this report are indicated on the facility location map (Figure 1-1). Individual site maps are presented at the end of their respective sections. A summary of activities for each site are presented in Table 1-1 at the end of this section.

1.2 Document Organization

The remainder of this document is organized in the following manner:

- Procedures common to all activities such as sampling and analysis, health and safety monitoring, site restoration, and waste disposal are described in Section 2.0.

- Sections 3 through 18 describe the site-specific investigation, removal, and/or reclamation activities closure sample locations and results for each site. Waste manifests/disposal receipts, daily quality control reports, laboratory analytical reports, and USACE site inspection closure reports are referenced in each section and presented in the Appendices.

1.3 Project Objectives

The purpose of this project is to achieve site closure objectives, either through removal of Petroleum Contaminated Soil (PCS) at the Table 2 and 3 SWMUs or by endorsing the No Further Action (NFA) conclusion following site closure sampling. The volume of overexcavated soil will be minimized using on-site analytical testing and field-screening techniques. By combining multiple sites into a single project, the entire remediation process, which includes plan preparation, construction mobilization, sampling and analysis, project reporting, disposal, and/or treatment of soil, sludge, liquids, and debris, will be streamlined and costs will be minimized.

1.4 Technical Approach

The RFIs/Remedial Investigations (RIs) previously conducted at the identified Table 2 and 3 SWMUs established that, no constituents exceeding site-screening levels or established background levels are present in soil with the exception of TPH (Radian 1994, 1995). Following O/WS and WOT removal and soil excavation, soil samples were collected from each site excavation to determine if all soil in excess of 1,000 mg/kg TPH was recovered.

This report recommends that the U.S. Environmental Protection Agency (EPA), Region VI, distinguish those sites in which soil contaminants do not exceed regulatory standards as sites requiring NFA. In addition, Class 3 Permit modifications will be submitted to the EPA for these sites in order to remove them from the Base's Part B Permit. During field operations, Tables 2 and 3 O/WSs and WOTs were removed with the exception of O/WSs at SWMUs 1, 11, and 41. SWMU 11 was previously removed as noted in the Table 3 RFI Report. SWMUs 1 and 41, which have been inspected at least quarterly since 1993, will remain in service as sediment traps. These SWMUs, which are in good working order and have good integrity, are pumped out and serviced as required. No WOTs were left in service.

Holloman AFB has an excellent O/WS management program and was recognized as the best in the Air Combat Command (ACC).

1.5 Regulatory Action Levels

Regulatory action levels applicable to soil and groundwater affected by POL at the Base as established by the New Mexico Environment Department (NMED) are as follows:

- For POL-contaminated soil TPH less than 1,000 mg/kg and benzene less than 25 mg/kg
- removal of light nonaqueous phase liquids (LNAPL) from groundwater

Due to the high total dissolved solids (TDS) concentrations in groundwater at the Base, there are no applicable dissolved groundwater standards. However, the EPA and the NMED require the Base to delineate the nature and extent of sorbed and dissolved-phase compounds present in the subsurface that exceed established background levels or risk-based levels.

All Table 2 and 3 soil samples were analyzed for total recoverable petroleum hydrocarbons (TRPH). Due to the lateral extent of SWMU 27, additional analyses were performed on soil samples. SWMU 27 soil was analyzed for lead, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). No lead was detected above background and neither VOCs or SVOCs analytical results indicated any COCs. The analyses performed at each site were determined by historical data and process knowledge (Radian 1994, 1995).

For the Table 2 and 3 sites, detected levels of TRPH, metals, VOCs, and SVOCs in soil were screened as follows:

- TRPH concentrations in soil were compared to the Basewide TPH criteria of 1,000 mg/kg established by the NMED.
- VOC, SVOC, and lead results for soil samples were compared to EPA Region III risk-based levels for industrial land use.

In reference with New Mexico Environmental Improvement Board/Underground Storage Tank (UST) Regulations (NMEIB/USTR) Part I, Section 103 (C), Parts II through XIV of the

NMEIB/USTR are not applicable to wastewater treatment tanks, sumps, hydraulic lift tanks, and any UST system with a capacity of 110 gallons or less. In addition, per NMEIB/USTR Part I, Section 102 (CCC), the term UST does not apply to septic tanks, surface impoundments, pits, ponds or lagoons, stormwater or wastewater collection systems, flow-through process tanks, or related piping. Therefore, NMEIB/USTR requirements were not applicable to any of the tanks or separators removed because of their use, size, or construction; however, UST procedures were followed for the removal of WOTs, excluding SWMU 35. WOT certificates of destruction for SWMU's 35, 119, 121, 127, and 128 and notifications for UST removal and tank closure worksheets for SWMU's 119, 121, 127, and 128 are included in Appendix E.

Table 1-1

Summary of Site Restoration

SWMU	Unit Removed	Soil Volume Excavated (cu yds)	Soil Volume Disposed (tons)	Closure Sample Collected	Stockpile Samples Collected	Comments
2	O/WS	24	None*	5	0	
119	WOT	20	25	5	2	WOT removed as part of basewide UST removal project.
21/22	O/WS	56	None*	5	0	Only one O/WS found.
39	O/WS	None	None*	0	0	To be remediated by FT-31 system.
127	WOT	20	25	5	2	WOT removed as part of basewide UST removal project.
36/126	O/WS removed previously. WOT not present.	100	100	5	1	O/WS removed during POL Phase I remediation.
40/128	WOT	None	None*	5	0	O/WS not found.
1	Active Unit.	373	None*	5	2	O/WS left in service.
7	O/WS	None	None*	5	0	
11	Active Unit.	373	None*	5	2	O/WS left in service.
12/13	O/WSs removed previously.	249	None*	5	2	O/WSs removed prior to RFI.
19	O/WS	None	None*	0	0	To be remediated by the T-38 (SWMU 229) HVDPE system.
25	Not present	None	None*	0	0	WOT pulled prior to 1988.
27	O/WS	3,726	5,589	10	16	No LNAPL present.
29	O/WS	124	None*	0	0	To be remediated by the 828 (SWMU 230) HVDPE system.
31	O/WS	76	76	5	1	
35	WOT	None	None*	5	0	
41	Active Unit.	10	None*	5	0	O/WS left in service.

* - Soil < 1,000 mg/kg TPH.