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CAFB 00-005

DEPARTMENT OF THE AIR FORCE
27th CIVIL ENGINEER SQUADRON (ACC)
CANNON AIR FORCE BASE NEW MEXICO

Lt Colonel Nicholas L. Desport
Commander
506 N DL Ingram Blvd
Cannon AFB NM 88103-5003

Mr. James Bearzi, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street
P O Box 26110
Santa Fe NM 87502

Glenn

Dear Mr. Bearzi

Enclosed for your information, review and records is the Closeout Report/Contamination Assessment Report for Solid Waste Management Unit 129-Facility 244 on Cannon Air Force Base. This facility was demolished in December 1999 and investigated under RCRA corrective action as required by the Cannon AFB RCRA permit.

If you have any questions, please contact Mr. Sanford Hutsell of my environmental flight at (505) 784-6378.

Sincerely

NICHOLAS L. DESPORT, Lt Col, USAF

Attachment:
Closeout Report/Contamination Assessment SWMU 129 Facility 244 Cannon AFB NM

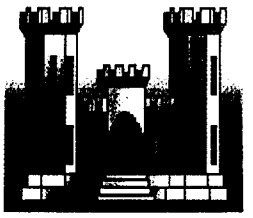
cc:
NMED w/o atch (G. VonGonten)
NMED GW Bureau (J. Jacobs)
EPA Region VI w/o atch (D. Neleigh)
EPA Region VI (B. Sturdivant)

FINAL

CLOSEOUT REPORT / CONTAMINATION ASSESSMENT
SWMU 129 - FACILITY 244
ABOVEGROUND TANK STORAGE AREA
CANNON AIR FORCE BASE
CLOVIS, NEW MEXICO

July 19, 2000

Submitted to:
U. S. Army Corps of Engineers
Omaha District



Submitted by:
Parallax, Inc.
20201 Century Blvd
Germantown, MD 20874

Contract No.
DACW45-99-D-Q015
Delivery Order No. 0001

Parallax
INC.

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ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
Base	Cannon Air Force Base
AOC	Area of Concern
CA	Corrective Action
COC	Contaminant of Concern
DMRO	Defense Reutilization and Marketing Office
Facility	Facility 244
ID	Identification
mg/Kg	Milligrams per Kilogram
MS/MSD	Matrix Spike/Matrix Spike Duplicate
N/A	Not Available
NMED	New Mexico Environment Department
OSHA	Office of Safety and Health Administration
O/W	Oil/Water
Parallax	Parallax, Inc.
PCB	Polychlorinated Biphenyl
PCS	Petroleum Contaminated Soil
PID	Photoionization Detector
PM	Project Manager
PSA	Preliminary Site Assessment
QAPjP	Quality Assurance Project Plan

QC	Quality Control
RBC	Risk-Based Concentration
RCRA	Resource Conservation and Recovery Act
RDL	Reported Detection Limit
SHSO	Site Health and Safety Officer
SOW	Statement of Work
TPH	Total Petroleum Hydrocarbon
TSD	Treatment, Storage, and Disposal
ug/Kg	Micrograms per Kilogram
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency

EXECUTIVE SUMMARY

Parallax, Inc. (Parallax) performed a voluntary corrective action (CA) at SWMU 129, Facility 244 (Facility), Cannon Air Force Base (AFB)(Base), Clovis, New Mexico, for the U.S. Army Corps of Engineers (USACE), Omaha District. Facility 244 contained five aboveground tanks dedicated to storage of used lubricating oils and other petroleum-based products (excluding fuels).

Implementation of the CA consisted of dismantling the storage tanks, disassembly and disposal of associated distribution piping, valves, an oil/water (O/W) separator, and demolition of concrete vaults, dump pits, and the concrete containment pad and retaining curb. The interior of the storage tanks were pressure-washed prior to being removed from their supports and set aside for disposal as surplus by the U.S. Air Force (USAF), Defense Reutilization and Marketing Office (DMRO). The piping, valves, O/W separator, and miscellaneous scrap metal were decontaminated and sold to a local (Clovis) recycled metal dealer. Any sludges remaining in the tanks and the O/W separator, pressure wash waters, and decontamination water were containerized in 55gallon drums. The drums were transported to the on-Base Resource Conservation and Recovery Act (RCRA) 90-day accumulation area. The USAF assumed responsibility for characterizing, manifesting, and shipping the wastes to an appropriate treatment, storage, and disposal (TSD) facility. The concrete rubble was stockpiled on a designated abandoned airstrip for subsequent crushing and use as backfill for other construction projects.

After the overlying containment pad and appurtenances were removed, Parallax performed a Preliminary Site Assessment (PSA) of the underlying soils to determine if petroleum hydrocarbon contamination was present. The site geologist visually inspected the soils for signs of petroleum staining or characteristic odors. No discoloration or odor was detected. The ambient atmospheres directly above the ground surfaces in areas most likely to exhibit contamination (e.g., soils under the O/W separator, dump pits, and areas surrounding the outside of the retaining curbs) were monitored with a photoionization detector (PID) and Draeger® contaminant-specific colormetric tubes. These instrumentation surveys did not indicate the presence of hydrocarbon contamination.

A total of ten soil samples, including eight representative grab and two quality control (QC) [i.e., field duplicate and matrix spike/matrix spike duplicate (MS/MSD)] samples, were collected and shipped to Accura Analytical Laboratory, Norcross, Georgia, for analyses. The analytical results of these samples indicated that there were no contaminants of concern (COCs) present in the soils underlying Facility 244. The laboratory results were validated by Parallax technical personnel to ensure QC reliability and proper instrumentation methodology. Based upon the field observations and laboratory analyses, the CA at Facility 244 resulted in a clean closure and therefore should require no further action.

The excavated areas were backfilled using crushed caliche, a local "hardpan" material formed in arid/semi-arid regions as a result of leaching calcium-rich salts from surface soils by percolating rainwater and other surface water and then precipitation of an impervious, coherent chalky layer at a shallow depth below grade. The caliche is used extensively in the region as a road sub-base material because of its reaction with water to form an extremely hard backfilled surface.

1.0 INTRODUCTION

Between December 10 and 15, 1999, Parallax performed a voluntary CA at SWMU 129, Facility 244, Cannon AFB, Clovis, New Mexico, for the USACE, Omaha District. The Facility was constructed in 1991, but due to design and operational problems (i.e., there were difficulties associated with the construction of the O/W separator and liquid transfer into the various tanks), it was infrequently used. The CA consisted of removal of the storage tanks from their support saddles; disassembly and disposal of associated distribution piping, valves, and an O/W separator; and demolition of concrete vaults, dump pits, and the surrounding concrete containment pad and retaining curb. The concrete rubble was stockpiled at a designated storage area on an abandoned aircraft runway, while the scrap metal was decontaminated and sold to a local scrap-metal dealer.

After demolition of the concrete containment pad, Parallax performed a PSA on the exposed soils to determine whether hydrocarbon contaminants had leaked through the pad or spilled onto the ground surface adjacent to the retaining curbs. The soils were visually inspected for discoloration and surveyed for the release of ambient volatile organic compounds using appropriate instrumentation (i.e., PID and Draeger® colormetric tubes). Representative grab soil samples were collected and submitted to Accura Analytical Laboratory, Norcross, Georgia, for analyses. The soils appeared to be contaminant-free. These observations were later substantiated by analytical results; therefore, the excavated areas were backfilled using caliche, a locally-available road base material.

1.1 Project Objective

The current CA/PSA project was designed to achieve closure of SWMU 129, Facility 244, in such a manner that any threat to human health and the environment was minimized and the site would require no further maintenance or monitoring.

1.2 Technical Scope of Work

The technical SOW provided to Parallax included two primary tasks: 1) removal of the aboveground oil storage tanks and other appurtenances, and demolition of all concrete structures; and 2) perform a PSA of the soils underlying the concrete containment pad to determine whether petroleum hydrocarbon contamination was present. In addition, after the exposed substrate was either determined to be contaminant-free or contaminated soils were removed, the SOW required the excavated area to be backfilled. The removal actions and PSA for Closure of Facility 244 were accomplished according to the following steps:

- Ensure that all utilities in close proximity to Facility 244 were properly identified, and that all electrical power servicing the Facility was disconnected at the nearest supply transformer and all fuses/circuit breakers were removed;

- Remove the perimeter chain-link fence and gates surrounding the Facility on three sides but leave the "back" or east segment which was common to the adjoining storage area;

- Pressure wash the five 5,000-gallon aboveground storage tanks, containerize sludges and rinse waters;

- Disassemble associated piping, hoist tanks from their support saddles, and set aside for subsequent disposal by the USAF DRMO;

- Demolish concrete saddles, containment pad, and retaining curb;

- Remove O/W separator from its vault, clean out sludge, and pressure wash;

- Demolish remaining concrete vaults and dump pits;

- Haul concrete construction rubble to the designated abandoned airstrip for stockpiling;

- Dispose of piping and scrap metal through a local scrap metal recycler;

- Perform a PSA on the exposed soil surfaces underlying the containment pad to determine the presence of petroleum hydrocarbon contamination, including: visual observations, instrumentation monitoring for volatile organic vapors, and soil sampling for laboratory analyses; and

- Backfill of excavated areas using locally-available caliche sub-base material.

1.3 Project Purpose

The removal action/PSA for Facility 244 was performed to achieve closure of the site as stipulated in the Base RCRA permit issued by the New Mexico Environment Department (NMED) on behalf of the U.S. Environmental Protection Agency (USEPA).

2.0 FACILITY DESCRIPTION

SWMU 129, Facility 244, was located at the Contractor Storage Facility/laydown yard, south of Perimeter Road, and northeast of Building 208, a maintenance hanger, at Cannon AFB, Clovis, New Mexico. Facility 244 was originally built in 1991 to store waste petroleum products generated during routine maintenance of aircraft and service vehicles. The Facility

was used infrequently due to design and operational problems. Historically, lubricating oils, hydraulic fluids, and solvents were reportedly stored in the tanks, at various times. Fuels were never present at Facility 244. Figure 2- 1 shows the location of Facility 244 relative to surrounding Base features.

2.1 Cannon AFB Location/History

Cannon AFB is located in Curry County, southeastern New Mexico, south of U.S. Highway 60/84, near the New Mexico/Texas border (Figure 2-2). The Base occupies approximately 4,000 acres, six miles west of Clovis, New Mexico. The adjacent land is used primarily for farming, feedlots, and ranching.

The Base was established in 1942 as the Clovis Army Air Base. B-17, B-24, and B-29 air crews trained there during World War II. The facility was renamed Cannon AFB in 1957. It currently maintains a combat-ready force providing training to F-16 fighter combat aircrews for tactical organizations worldwide.

2.2 SWMU 129, Facility 244

Facility 244 consisted of five 5,000-gallon aboveground storage tanks supported on reinforced concrete saddles. The tanks were surrounded by a 30-foot x 50-foot (approximate) concrete containment pad. A 9-inch retaining curb, designed to contain liquids released in the event of an accidental release or ruptured tank, surrounded the containment area. Photograph 1 is a view of Facility 244 prior to start of the removal action (tanks, saddles, and chain-link fence are intact). Photograph 2 is a view of the Facility with the fence fabric removed and temporary orange security webbing in place.

The storage tanks were filled through a network of supply pipes entering the tops of the tanks (Photograph 3 shows the distribution piping and valves). These pipes, controlled by manual gate valves, were connected to a central O/W separator located in the north end of the containment pad. Bulk waste oil was brought to Facility 244 and dumped into adjacent collection pits equipped with strainers. From the pits the oil drained into the O/W separator and was then pumped into the appropriate storage tanks. The water fraction, segregated by the O/W separator, exited through a port in the west-side of the structure.

The water flowed into a leach field, located to the southeast of the Facility. The leach field consisted of perforated plastic piping surrounded by crushed stone that allowed the water to be discharged into the subsurface and percolate into underlying soils without impacting the groundwater. Figure 2-3 is a plan view of Facility 244 showing the original locations of the storage tanks and temporary staging area after removal.

Each storage tank had an exterior fill gauge equipped with an indicator arrow connected to a float inside the tank. As the volume of liquid inside the tank fluctuated, the position of the float changed resulting in a corresponding change in the position of the indicator arrow on the fill gauge. This device provided a continuous indication of the quantity of liquid stored in each tank.

the fill gauge. This device provided a continuous indication of the quantity of liquid stored in each tank.

3.0 FACILITY DEMOLITION AND REMOVAL ACTIONS

Prior to site access, Base representatives located the various utilities and disconnected electrical service to pumps, valves, and facility lighting. The Parallax site health and safety officer (SHSO) accompanied the Base electrician to physically inspect electrical power disconnects at the nearest supply transformer and ensured that fuses and circuit breakers were removed from all junction boxes prior to commencement of demolition activities. Electricity was the only utility of concern. There was no active water service to the Facility. A telephone trunk line was located west of the site, in the parking lot, but was sufficiently separated from the work area to not pose a problem.

Facility demolition and removal actions were managed by the Parallax Project Manager (PM). Actual field actions (e.g., dismantling of the tanks and piping, and demolition of the concrete structures) were subcontracted to Omegasys, Inc., Tucker, Georgia. The subcontractor site superintendent reported directly to the Parallax PM. Omegasys used a trackhoe and backhoe to complete all removal and demolition activities. Construction rubble and scrap metal were transported using a flatbed dump truck. The Parallax SHSO observed all field activities to ensure safe work practices and compliance with all relevant Office of Safety and Health Administration (OSHA) laws.

Excavated areas were backfilled using crushed caliche, a local "hardpan" material formed in arid/semi-arid regions as a result of leaching calcium-rich salts from surface soils by percolating rainwater and other surface water and then precipitation of an impervious, coherent chalky layer at a shallow depth below grade. The caliche is used extensively in the region as a road sub-base material because of its reaction with water to form an extremely hard backfilled surface.

3.1 Removal of Aboveground Storage Tanks and Associated Piping

Omegasys used a trackhoe to complete all tank removals. A steel chain connected to lifting lugs on each tank-facilitated removal from its respective concrete support saddles. The tanks were staged in an adjacent area south of Facility 244 for disposal, as surplus, by the USAF DRMO. Before tank removals, associated fill pipes coming from the O/W sump distribution system were disconnected for later decontamination and disposal. Also, the interior of each storage tank was pressure-washed to remove scale/corrosion accumulation. Photograph 4 shows Omegasys personnel using the manway on top of a tank for access to pressure wash the interior walls, and recovery of sludges and rinse water at the tank drain. Sludges and rinse waters were containerized in 55-gallon drums for transfer to the designated on-Base RCRA waste accumulation facility.

3.2 Demolition of Concrete Saddles and Containment Pad

After dismantling the tanks, demolition began with removal of the concrete support saddles. There were two saddles per tank. Each support contained approximately one cubic yard of concrete. Saddles were dislodged by placing the trackhoe bucket on one end and lifting upward and backward. Photograph 5 shows a saddle being lifted from its foundation. Removal of the structures was hampered by the containment pad that surrounded each support, and the fact that the saddles had spread footings. The adjacent concrete had to be crushed so that each footing could be removed.

The saddles were generally removed intact, loaded directly onto the dump truck, and transported to the construction rubble storage area. Photograph 6 shows saddles stockpiled at the designated storage area. After removal of the saddles, the remaining portions of the containment pad and retaining curb were broken into manageable pieces by dropping the trackhoe bucket onto the concrete surface or lifting the edge of the pad until cracks developed (Photograph 7). Number 3 reinforcing steel rods were embedded in the pad and curb structures, but were readily snapped by creating tension with the trackhoe. The resulting construction debris was also transported to the rubble staging area. After removal of the O/W separator, the concrete vaults and dump pits were removed and transported to the storage area. Photograph 8 is a view of the exposed soil surface at Facility 244 after removal of the concrete containment pad and curb.

3.3 Removal of O/W Separator

The O/W separator consisted of a rectangular quarter-inch thick sheet metal box (approximately 7 feet long, 2 feet wide, and 4 feet high). The interior of the separator contained a series channels and baffles. Oil entered the separator at the north end of the structure and flowed toward a collection sump on the south end. As the oil flowed through the separator, over the baffles, any water present was skimmed-off due to its immiscibility and channeled through an exit port in the south end of the structure. The recovered water flowed into the leach field, located to the southeast, for release into the underlying soils.

The separator was located in a liquid-tight concrete vault below ground surface. The vault was covered by a quarter-inch thick sheet metal cover plate (Photograph 9). Supply and distribution pipes were disconnected from the separator, and capped if leading away from the Facility. The top panel was removed to allow inspection. Photograph 10 shows Omegasys personnel removing the O/W cover panel and piping. There was a large deposit of sludge in the bottom, approximately 12 inches thick, and the baffles were heavily coated with oily residues. Photograph 11 is a view of the interior of the O/W separator showing the thick sludge deposit and the oil-coated baffles. The entire separator was lifted from the vault to allow easy access for cleaning and decontamination (Photograph 12). Shovels, scoops, and similar tools were used to remove the sludge. Photograph 13 shows removal of the sludges and oil residues. The entire interior was then pressure washed, and the rinse water containerized for disposal. The O/W separator was sold to a local metal recycler. The

concrete O/W vault and dump pits were removed (Photograph 14) and transported to the rubble storage area.

3.4 Disposal of Construction Debris and Waste Water

The technical SOW required Parallax to transport all construction rubble to a designated staging area. Waste concrete was stockpiled on an abandoned aircraft runway, as directed. Figure 3-1 shows the haul route from Facility 244 to the debris storage area. Photograph 14 is a view of stockpiled construction rubble. Base representatives then assumed responsibility for disposal of the material. When sufficient quantities of waste concrete were accumulated, the rubble was scheduled to be crushed and used in backfilling projects on-Base. No hydrocarbon contamination was detected during the PSA; therefore, no soils were removed.

A large quantity of metal scrap resulted from the Facility 244 removal action. All metal surfaces were pressure washed/decontaminated, as necessary, prior to release for disposal. A total of 6,070 pounds of scrap metal consisting of piping, valves, the O/W separator, miscellaneous frames and metal shapes, and the chain-link fencing fabric, gates, and poles were sold to Ed's Recycling, Inc., Clovis, New Mexico, for $75.87. Photograph 16 is a view of the scrap metal loaded on the flatbed truck. Arrival at Ed's Recycling, Inc., with the metal is depicted in Photograph 17. Figures 3-2 and 3-3 are copies of the front and back of the receipt, showing value of the metal and weight tally stamps, respectively, from the metal recycler documenting disposal of the scrap metal. Check number 3156 was issued for this amount, payable to Parallax (Figure 3-4).

All pressure wash rinse/decontamination water, sludge and tank residues, used personnel protective equipment, and associated project-related wastes were containerized in 55gallon steel drums. The drums were sealed and transported to the on-Base RCRA 90-day waste accumulation facility. Approximately 15 drums were delivered to the collection facility. Photograph 18 shows subcontractor personnel unloading waste drums for storage. Base representatives then assumed responsibility for drum labeling, characterization of contents through sampling and analysis, manifesting, and shipping to an appropriate disposal facility.

Photograph 19 shows the former site of Facility 244 after completion of removal and investigation activities. The backfilled portion is identified by the light tan area of compacted caliche, in the foreground. The storage tanks temporarily staged in an area southeast of the Facility are shown in Photograph 20.

4.0 PRELIMIINARY SITE ASSESSMENT

The current project consisted of two tasks: l) removal of the aboveground storage tanks and associated concrete structures; and 2) a PSA. This section addresses the site characterization that involved field observations, instrumentation surveys for volatile organic vapors, and collection of representative soil samples along with requisite QC duplicate samples for laboratory analyses.

4.1 Investigation Overview

Prior to demolition of the containment pad, the entire Facility was inspected for indications of spills on the concrete pad and ground surfaces outside of the retaining curb. No discoloration was observed. Due to the infrequent use of the storage facility, the non-availability of historical operational records, and the apparent integrity of the containment structure, no significant subsurface contamination was anticipated.

After removal of the containment pad, the exposed soil surfaces were examined visually and representative grab soil samples collected from each corner, the center, and in selected areas with highest potential to exhibit petroleum contaminated soils (PCSs) (e.g., adjacent to and underlying the O/W separator vault, oil dump pits, and surface areas adjacent to the retaining curbs at ground level). Through both field screening and laboratory analyses, the soils underlying Facility 244 were thoroughly characterized and therefore permitted a clean closure with a high degree of confidence.

4.2 Field Observations

After removal of the overlying containment pad and appurtenances, the field geologist inspected the underlying exposed soils to determine the indication of petroleum hydrocarbon contamination. The soils were visually examined for the presence of discoloration due to petroleum staining or characteristic odors. No staining or odors were detected. The ambient atmospheres directly above the ground surfaces in areas most likely to exhibit contamination (e.g., soils under the O/W separator, dump pits, and areas surrounding the outside of the retaining curbs) were monitored for volatile organic vapors by the SHSO using a PID and Draeger® contaminant-specific (benzene) colormetric tubes. None of these instrumentation surveys indicated concentrations of volatile hydrocarbon contaminants exceeding USEPA risk-based concentrations (RBCs).

4.3 Sampling and Analysis

A total of ten representative soil samples, including eight grab from various locations throughout the Facility and two requisite QC samples (i.e., field duplicate and MS/MSD), were collected and shipped to Accura Analytical Laboratory for analyses. Each sample

consisted of 250 milligrams of soil placed in a pre-cleaned glass jar furnished by the laboratory. This quantity was sufficient to perform all required analyses. Each sample container was assigned a unique identification (ID) number; labeled indicating location, date, and time; and placed on ice for preservation. The samples were entered on the chain-of-custody along with required analytical parameters. Figure 4-1 is a copy of the chain of custody. The samples and custodial documentation were shipped by overnight express carrier to the analytical laboratory.

Eight sampling locations were selected to represent the entire surface of the Facility 244 soils. Figure 4-2 is a plan view of the Facility showing sarnpling locations. When the samples were collected, an error was made in interpreting the geographic orientation of Facility 244. The front fence segment, containing the gates, was recorded as facing north. Instead, the proper orientation was west; therefore, all sample location notations will be rotated 90 degrees clock-wise (e.g., a sample point originally recorded as the southeast corner is actually the northeast corner. The former and corrected sample locations, and ID numbers are presented in the following table:

Sample ID	Former Sample Location	Corrected Sample Location
244SS001	Southeast corner of pad	Northeast corner of pad
244SS002	Southwest corner of pad	Southeast corner of pad
244SS003	Center of pad	Center of pad
244SS004	Northeast corner of pad	Northwest corner of pad
244SS004-FD	Northeast corner of pad	Northwest corner of pad
244SS004-MS	Northeast corner of pad	Northwest corner of pad
244SS005	Northwest corner of pad	Southwest corner of pad
244SS006	East of O/W separator	North of O/W separator
244SS007	West of O/W separator	South of O/W separator
244SS008	South of O/W separator	East of O/W separator

As stipulated in the *Facility 244 Scope of Services,* Site-Specific Requirements, line item 11, "Sampling and Analysis," the soil samples were analyzed for the following COCs: total petroleum hydrocarbons (TPHs), metals, pesticides, and polychlorinated biphenyls (PCBs). The samples were analyzed according to the following laboratory methods:

Method	Description
SW 7471A	Mercury in Solid or Semi-Solid Waste (Manual Cold-Vapor Technique)
SW 6010B	Inductively Coupled Plasma-Atomic Emission Spectrometry - RCRA Metals
SW 3050B	Acid Digestion of Sediments, Sludges, and Soils
SW8081A	Organochlorine Pesticides by Gas Chromatography
SW 8082	PCBs by Gas Chromatography
USEPA 418.1	Total Recoverable Petroleum Hydrocarbons

The analytical data received from Accura Laboratory for the various parameters are attached in Appendix A, Tables A- 1 through A-4. The analytical results of these samples indicated that there were no COCs present in the soils underlying Facility 244 that exceeded USEPA RBCs.

The analytical data received from Accura Laboratory for the various parameters are attached in Appendix A, Tables A- 1 through A-4. The analytical results of these samples indicated that there were no COCs present in the soils underlying Facility 244 that exceeded USEPA RBCs.

4.4 Data Quality Assessment

Data review and validation were performed by applying the QC limits defined in the quality assurance project plan (QAPjP). Data validation consisted of a review of holding times, method blanks, field duplicates, surrogates spikes, MS/MSDs, and a case narrative review including sample receipt forms and chain of custody. Validation guidelines from the National Functional Guidelines for Organic Data Review (USEPA 1994a) and the National Functional Guidelines for Inorganic Data Review (USEPA 1994b) were used as reference resources to define the validation criteria.

4.4.1 Quality Assessment Summary

Data accuracy and precision were within control guidelines and therefore were considered acceptable, with one exception. Samples were collected and analyzed according to specifications provided in the project-specific QAPjP. The relative recovery differences in analyses between a sample and the respective sample replicate were outside the method specified limit for arsenic, cadmium, chromium, and lead. Sample results associated with non-compliance QC data were qualified in accordance with the QAPjP. Sample results flagged as estimated (J or UJ) were useable for the intended purpose of this project. No sample results were flagged as unusable (R) thereby indicating that all sample data generated during this project are usable. A summary of qualified sample results is presented in Appendix B, Table B-1. Data flags used in the data validation process are listed at the end of Table B-1. Specific data validation considerations are presented in the following sections.

A. Holding Times

Due to limited information concerning retention times for non-aqueous samples, a period of 14 days was selected as a maximum allowable holding time for soil samples from collection to analysis during this project. The 14-day limitation was not exceeded for any sample.

B. Method SW 8082, PCBs

There were no problems associated with the sample analyses for PCBs; therefore, these data are fully useable for the purposes of this project.

C. Method SW 8081A, Organochlorine Pesticides

Sample 244SS006 required dilution due to matrix interference resulting in elevated detection limit for organochlorine pesticides. The target compounds analyzed for in this sample were not detected. The sample quantitation limits for the target compounds were estimated quantities; however, this was considered to be a minor problem. The results are fully useable for the purposes of this project.

D. Method EPA 418.1, Total Recoverable Petroleum Hydrocarbons

Samples 244SS006 and 244SS007 required dilution due to high analyte concentrations resulting in elevated detection limits for TPHs. The quantity of TPH measured in each of the two samples was significantly above the elevated detection limit; therefore, this is not considered to be a problem. The results are fully useable for the purposes of this project.

E. Method SW 7471A, Mercury in Solid or Semi-Solid Waste

There were no problems encountered during sample analyses for mercury. These data are fully useable for the purposes of this project.

F. Method SW 6010B, Metals RCRA/Method SW 3050B, Acid Digestion of Soil

A duplicate for sample 244SS004 was analyzed. The relative difference in percentage of recovery between the sample and duplicate sample analyses was outside of method specified limits for arsenic, cadmium, chromium, and lead. This relative difference in recovery was attributed to sample heterogeneity. These results were considered to be a minor problem, and were therefore flagged as estimated (J or UJ). The data are useable for the intended purpose of this project.

G. Field Duplicate Precision

Field sampling precision was determined from the results of the field duplicate QC sample 244SS004. With the exception of the metals discussed in the above section, overall instrumentation method replication was within precision limits.

5.0 SUMMARY AND CONCLUSIONS

Based upon field observations and laboratory analyses, the removal action at Facility 244 resulted in a clean closure, as indicated by the PSA; therefore, no further action is anticipated.

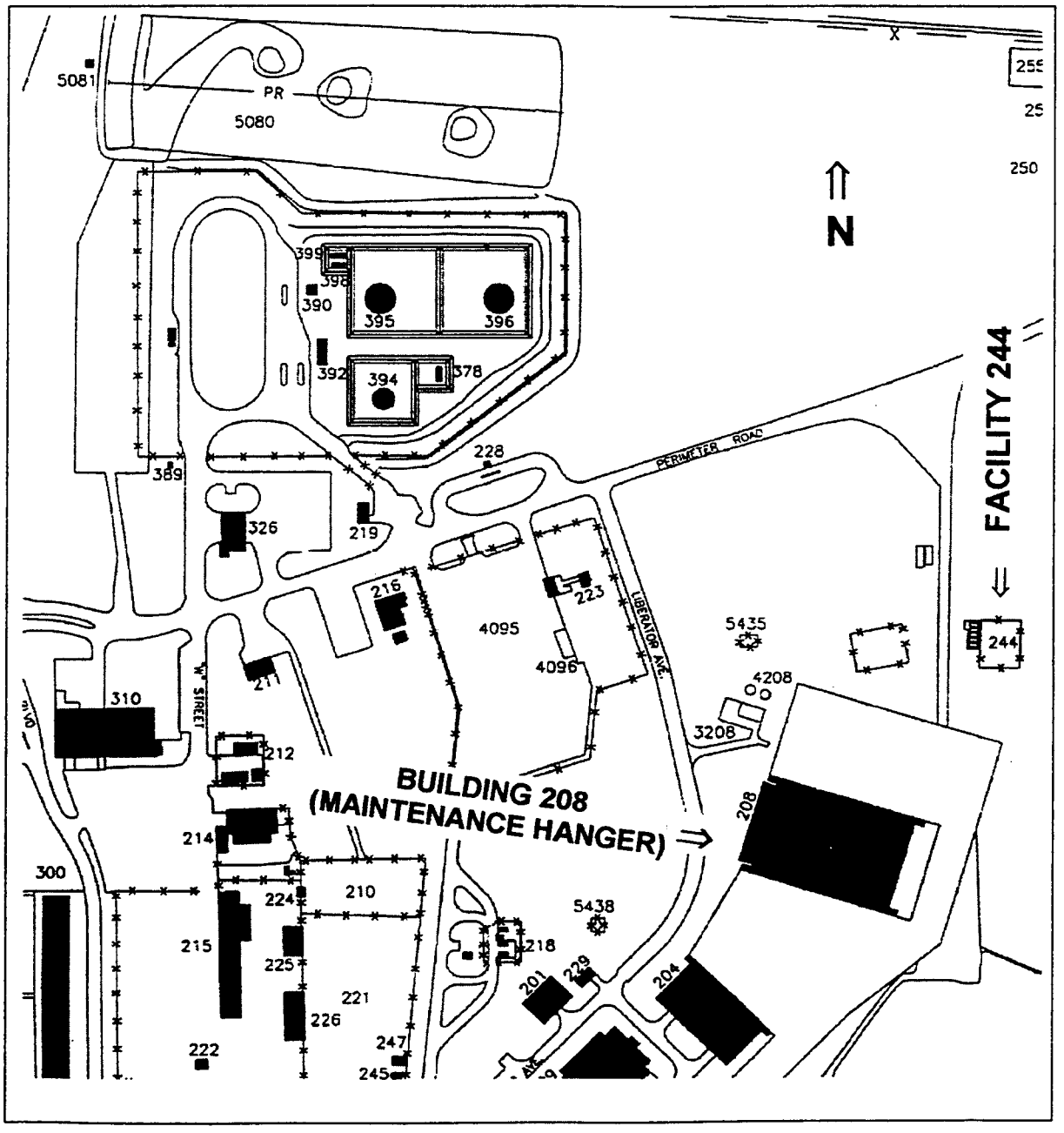
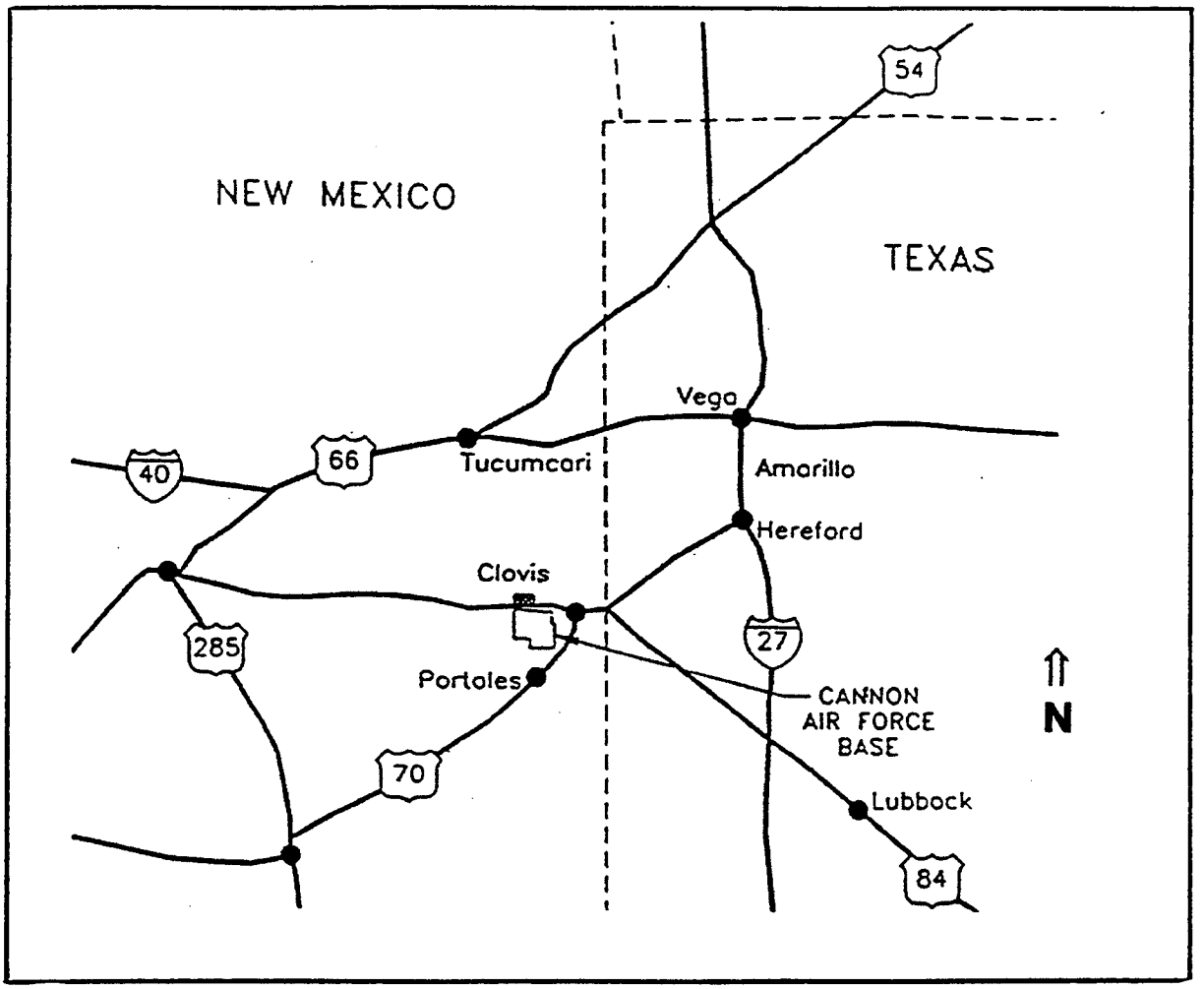


Figure 2-1: Location Map of Facility 244 and Adjacent Structures.



- NOT TO SCALE -

Figure 2-2: Map of Cannon AFB and Surrounding Area.

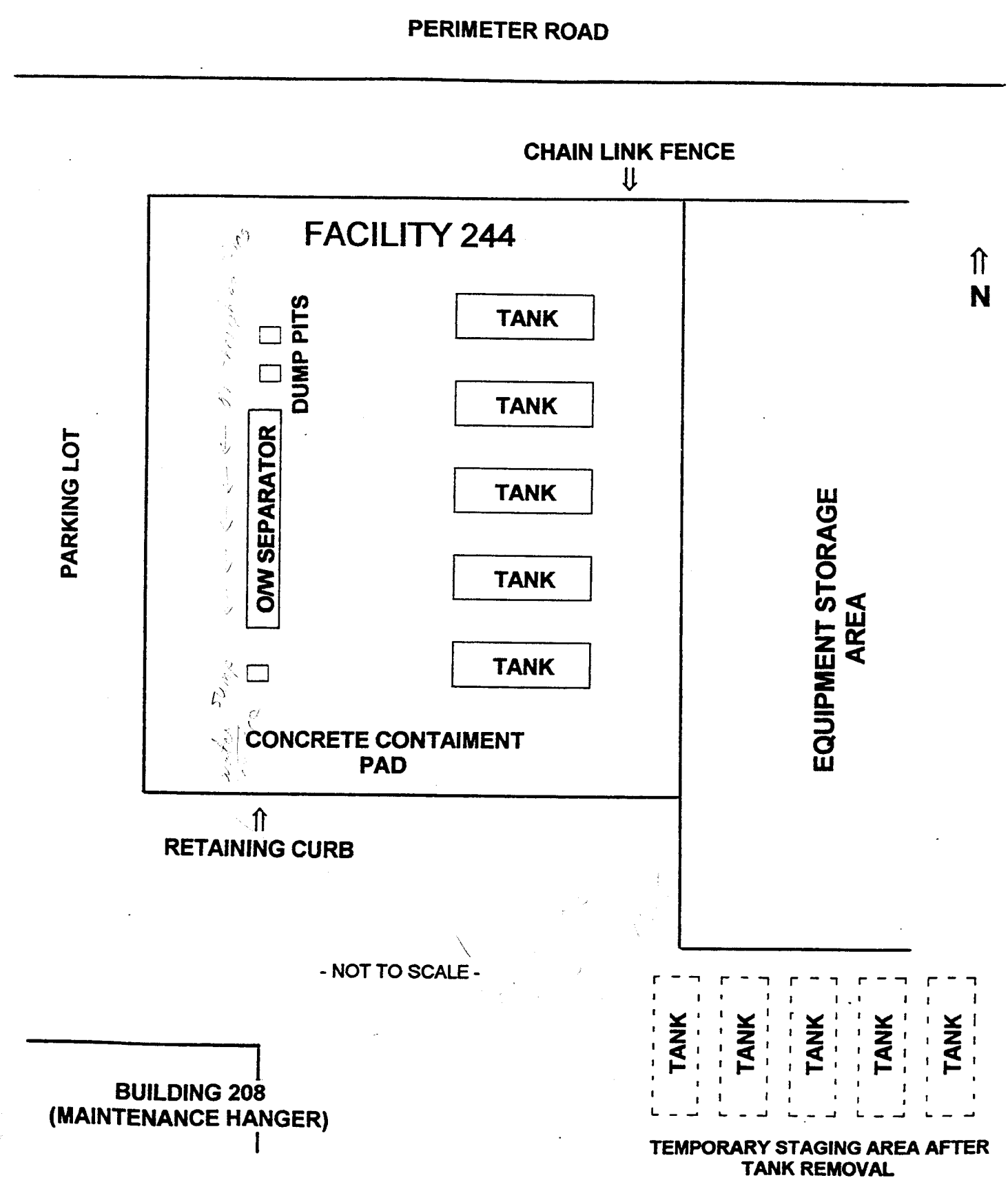


Figure 2-3: Diagram of Tank Locations and Associated Features.

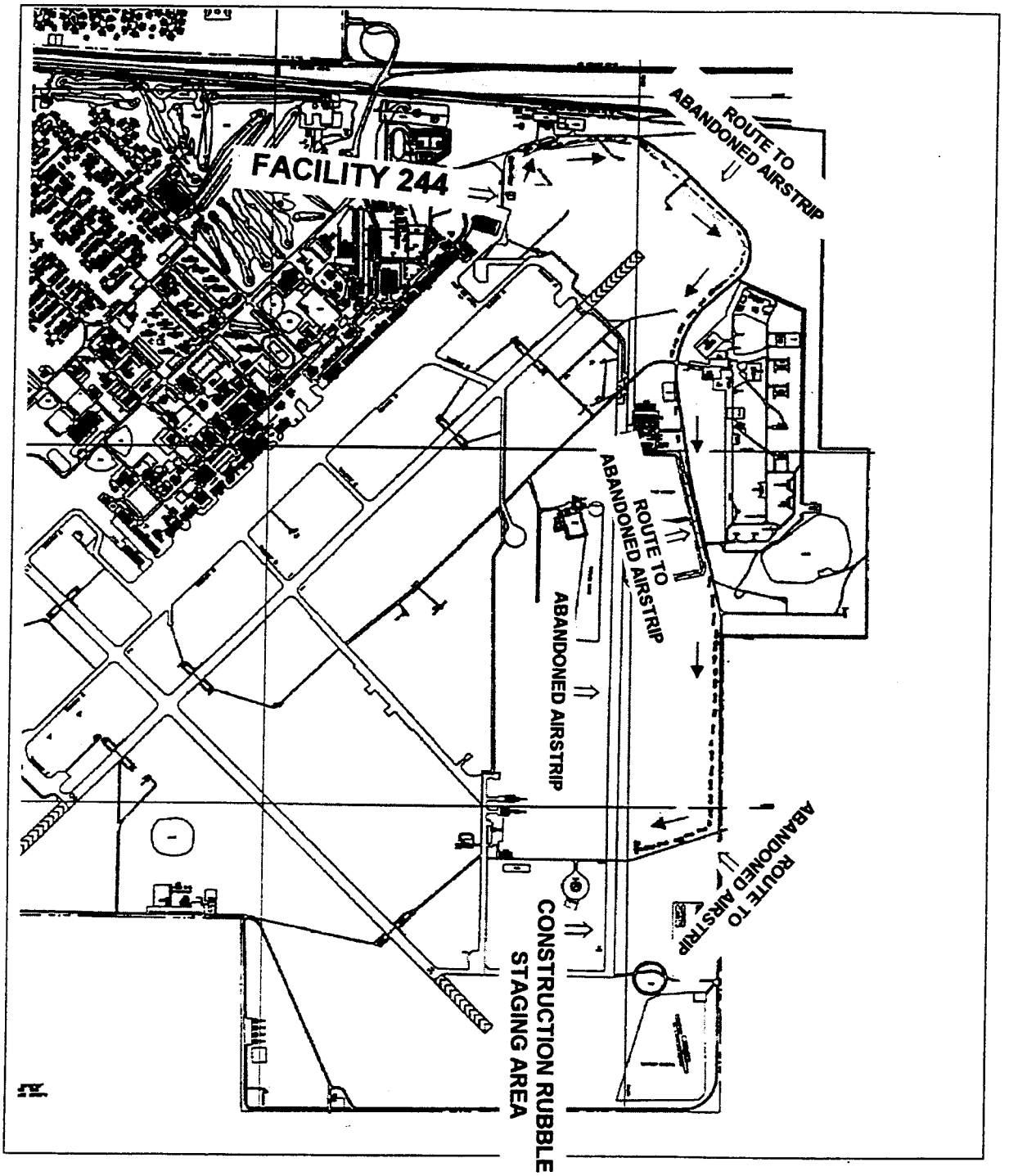
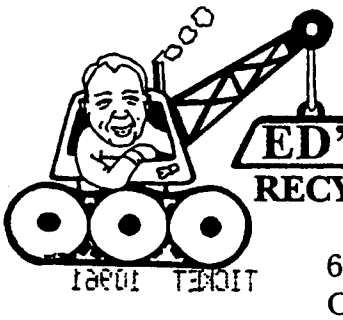


Figure 3-1: Map of Haul Route to Abandoned Airstrip/Rubble Storage Area.



605 South Prince
Clovis, NM 88101
Phone (505) 762-7699 • Fax (505) 762-7607

Date 12-15 19 99

Name

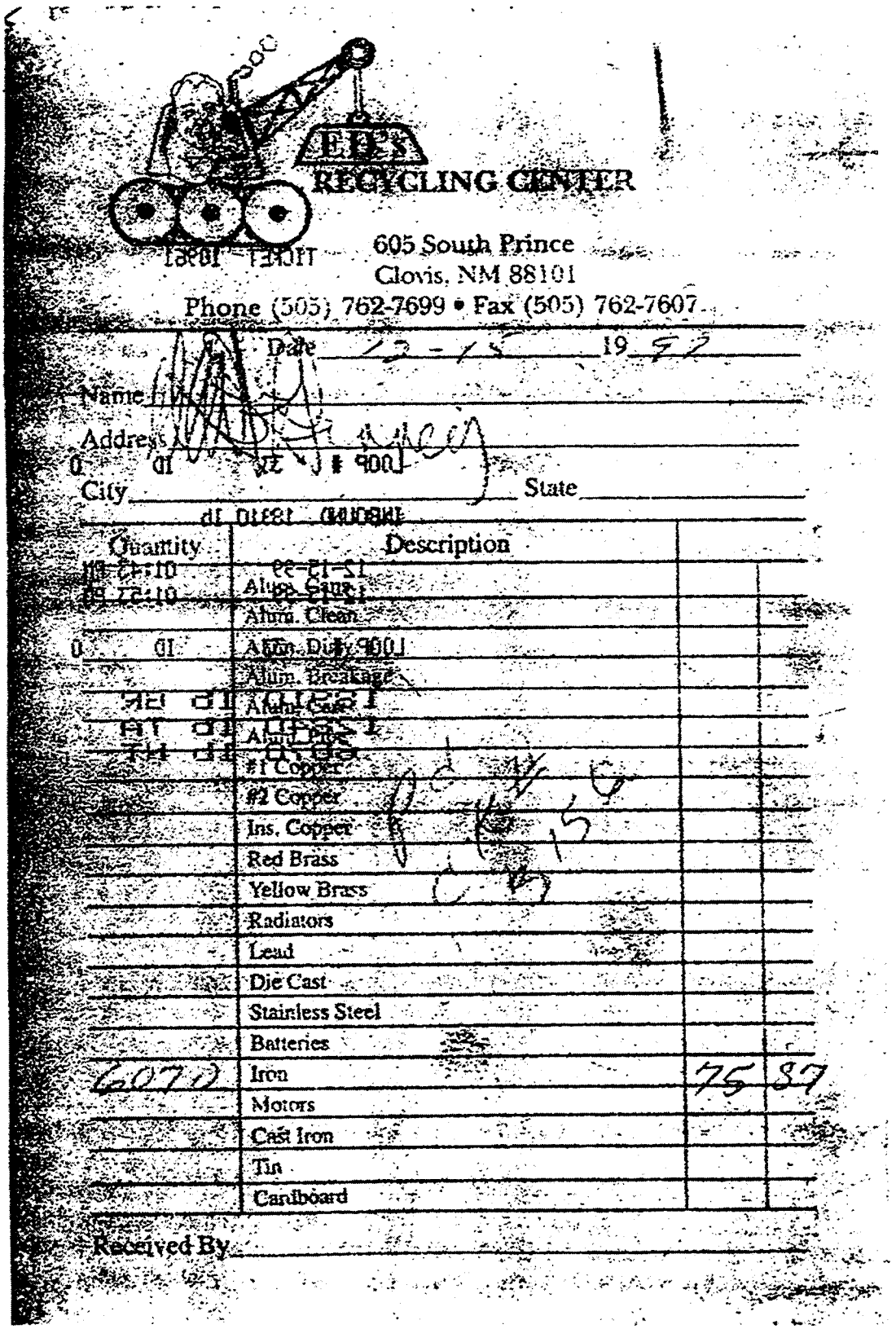
Address

City State

Quantity	Description		
	Alum. Cans		
	Alum. Clean		
	Alum. Dirty		
	Alum. Breakage		
	Alum. Cast		
	Alum. Pipe		
	#1 Copper		
	#2 Copper		
	Ins. Copper		
	Red Brass		
	Yellow Brass		
	Radiators		
	Lead		
	Die Cast		
	Stainless Steel		
	Batteries		
6070	Iron	75	87
	Motors		
	Cast Iron		
	Tin		
	Cardboard		

Received By

Figure 3-2: Copy of Receipt from Ed's Recycling Center for Scrap Metal.



ED'S
RECYCLING CENTER

605 South Prince
Clovis, NM 88101
Phone (505) 762-7699 • Fax (505) 762-7607

Date 12-15 19 92

Name

Address

City State

Quantity	Description		
	Alum. Cans		
	Alum. Clean		
	Alum. Dirty		
	Alum. Breakage		
	Alum. Cast		
	Alum. Pipe		
	#1 Copper		
	#2 Copper		
	Ins. Copper		
	Red Brass		
	Yellow Brass		
	Radiators		
	Lead		
	Die Cast		
	Stainless Steel		
	Batteries		
6070	Iron	75	87
	Motors		
	Cast Iron		
	Tin		
	Cardboard		

Received By

Figure 3-3: Weight Tally Sheet, Ed's Recycling Center, Showing 6070 Pounds.

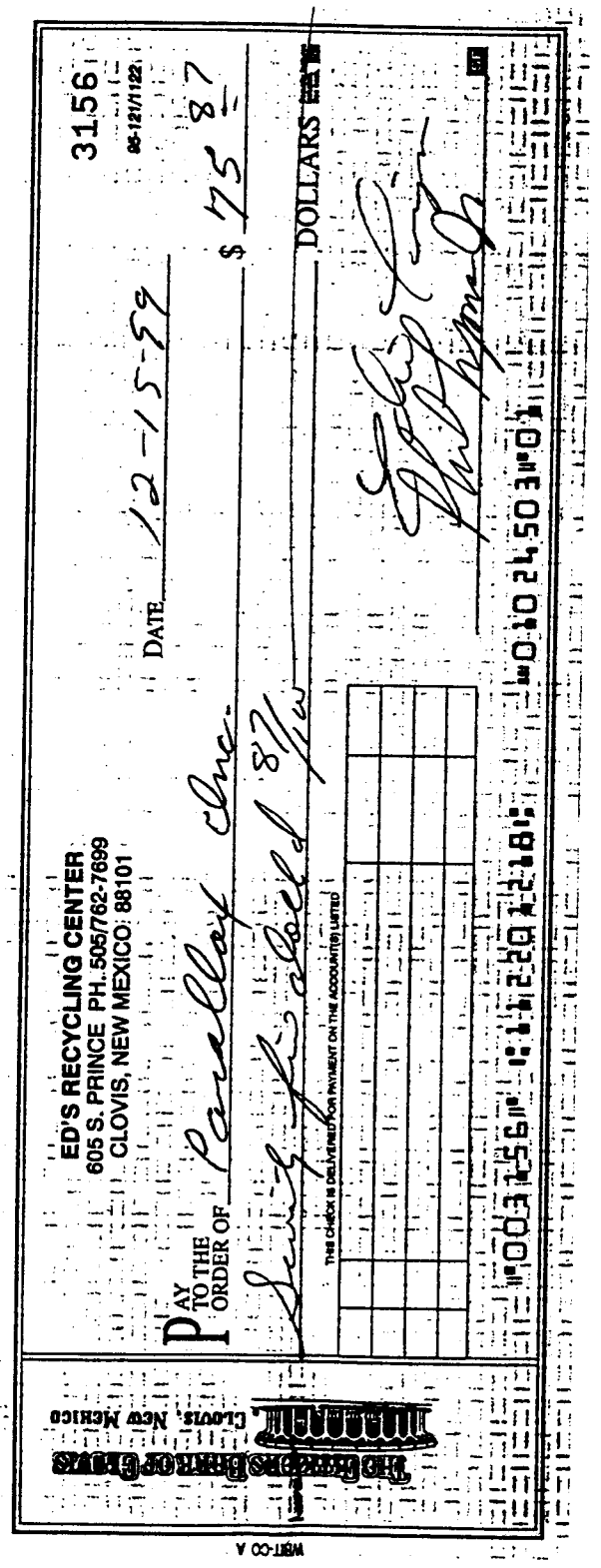


Figure 3-4: Reproduction of Check # 3156 Received for Scrap Metal.

23808

ACCURA ANALYTICAL LABORATORY, INC.

Environmental Analytical Services

6017 Financial Drive, Norcross, GA 30071
Phone # (770) 449-8800 Fax # (770) 449-5477

CHAIN OF CUSTODY

Company Name: Parallax, Inc.
Address: 795 W. Main St., Oak Ridge, TN 37830
Report Sent to: (Client Contact): David R. Finney
Contact Phone # (423) 481-8285 Fax # (423) 481-
Project Name: Cannon AFB - AOC J, Facility 244
Project Number: 2829-001

Billing address:
Client P.O. #

For Laboratory Use Only
Custody Seal: Y N Page 1 OF 1
QC Level: N 1 2 3 4 Init/Temp: 4°C
Sample Condition: AAL Lab Project: 23176

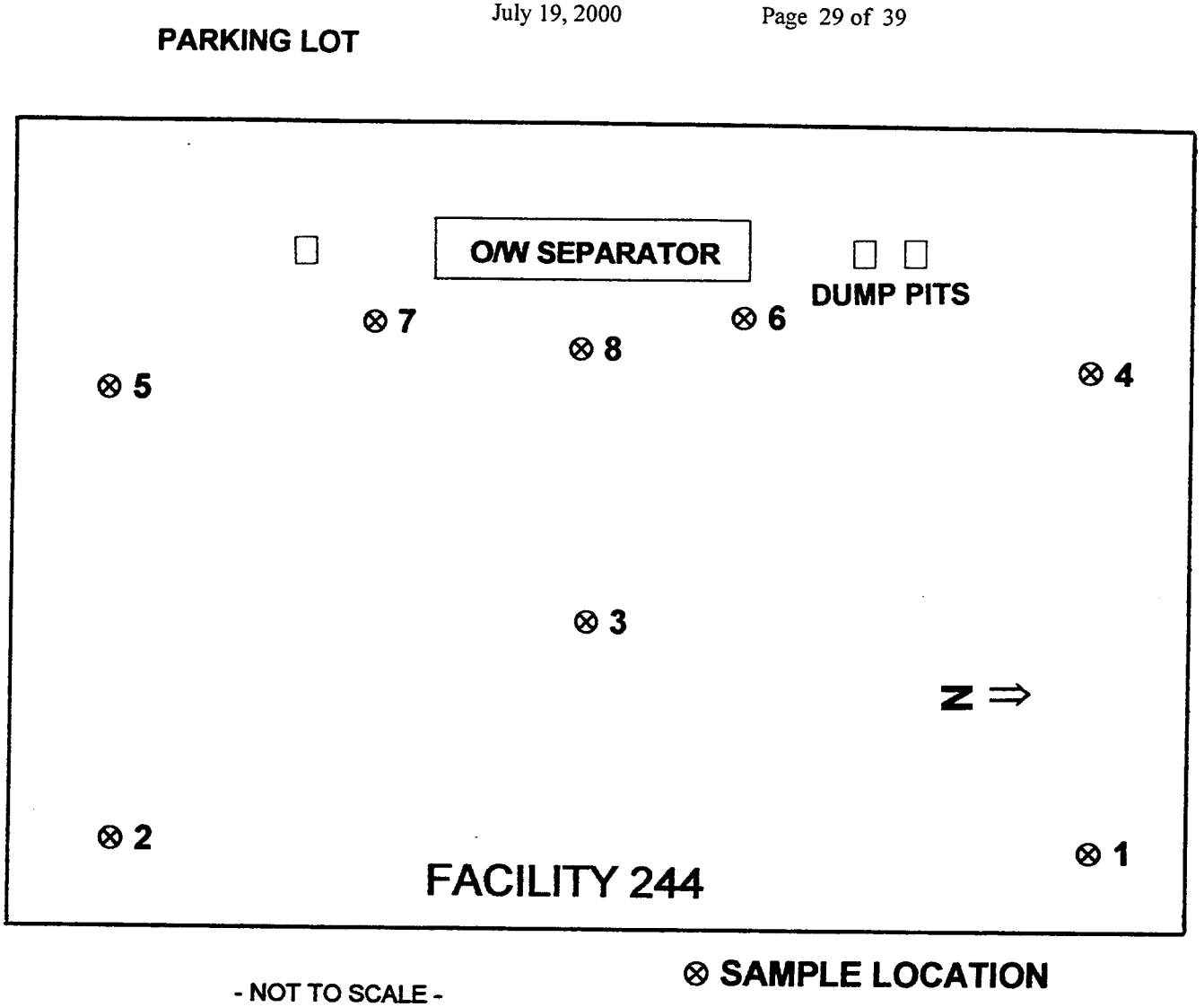
Samplers: (signature) D. R. Finney
Samplers: (printed) David R. Finney
All Soil

Sample ID #	Sample Date / Time	Comp	Grab	Matrix	Preserved	Sample Location:	No. of Containers	Metals RCRA	Pesticides	PCBs	TPHs	Remarks	Accura Sample ID No. AB
244SS001	12-14-99 1320 MST		✓			SE Corner	1	✓	✓	✓	✓		83221
244SS002	12-14-99 1328 MST		✓			SW Corner	1	✓	✓	✓	✓		83222
244SS003	12-14-99 1313 MST		✓			Center	1	✓	✓	✓	✓		83223
244SS004	12-14-99 1335 MST		✓			NE Corner	1	✓	✓	✓	✓		83224
244SS004*	12-14-99 1335 MST		✓			NE Corner	1	✓	✓	✓	✓	*Field Duplicate	83225
244SS004**	12-14-99 1335 MST		✓			NE Corner	1	✓	✓	✓	✓	**MS/MSD	83226
244SS005	12-14-99 1355 MST		✓			NW Corner	1	✓	✓	✓	✓		83227
244SS006	12-14-99 1420 MST		✓			E of OWSep	1	✓	✓	✓	✓		83228
244SS007	12-14-99 1430 MST		✓			W of O/WSep	1	✓	✓	✓	✓		83229
244SS008	12-14-99 1445 MST		✓			S of O/WSep	1	✓	✓	✓	✓		83230

Relinquished By:	Date / Time	Received By:	Date / Time	Special Requirements Or Remarks:
D. R. Finney	12-14-99 1630 MST	Fedex	12/15/99 09:30	
Relinquished By:	Date / Time	Received By:	Date / Time	Turnaround Time Requested:

Matrix Guide: (S = Soil) (W = Water) (L = Liquid) (C = Cartridge) (SL = Sludge) (A = Air Sample) (F = Foods) (M = Miscellaneous)

Figure 4-1: Copy of Chain of Custody for Soil Samples Collected 12-14-99.



SAMPLE LOCATIONS:

Sample 1: Northeast corner of pad - 5 feet south of north fence; 6 feet, 9 inches west of east fence. Depth - surface of excavation. Time: 1320 MST.

Sample 2: Southeast corner of pad - 3 feet north of south fence; 4 feet, 3 inches west of east fence. Depth - surface of excavation. Time: 1328 MST.

Sample 3: Center of pad - 25 feet south of north fence; 17 feet west of east fence. Depth - surface of excavation. Time: 1313 MST.

Sample 4: Northwest corner of pad - 6 feet, 4 inches south of north fence; 29 feet west of east fence. Depth - surface of excavation. Time: 1335 MST. (Field Duplicate and MS/MSD.)

Sample 5: Southwest corner of pad - 6 feet, 6 inches north of south fence; 22 feet, 6 inches west of east fence. Depth - surface of excavation. Time: 1358 MST.

Sample 6: Adjacent to northeast corner of O/W separator vault - 18 feet south of north retaining curb; 7 feet, 9 inches east of asphalt parking lot. Depth - surface of excavation (in 4-foot deep pit). Time: 1420 MST.

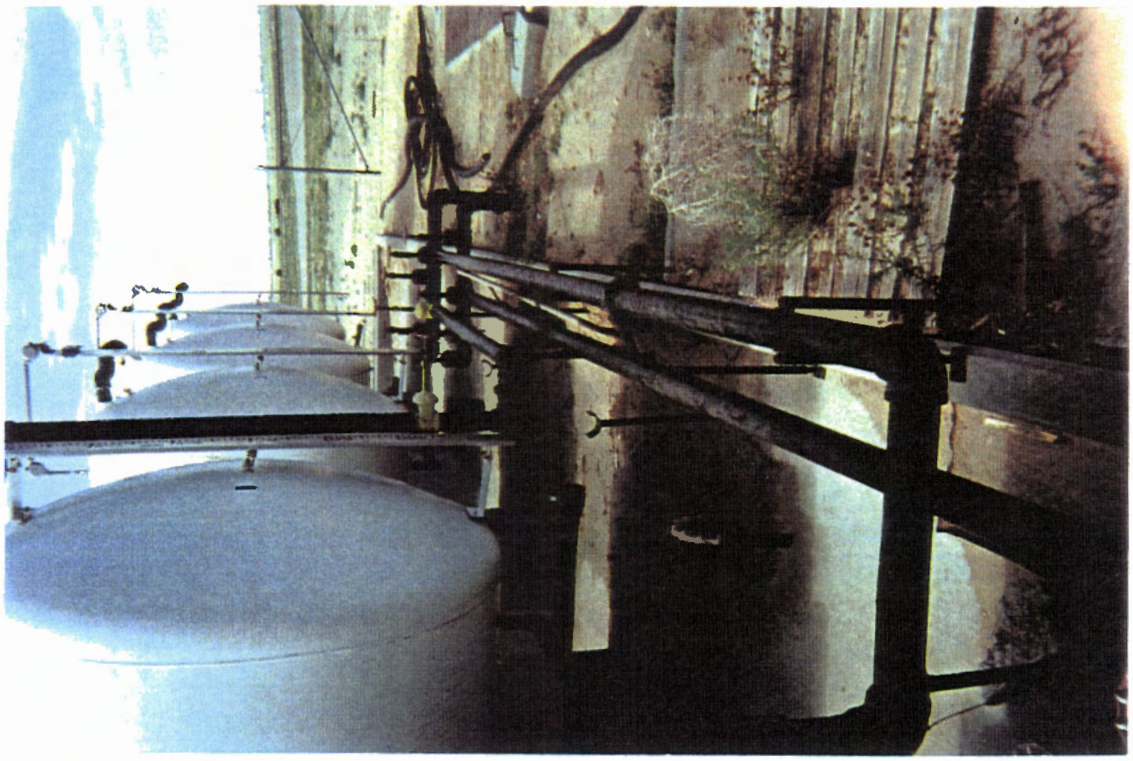
Sample 7: Adjacent to southeast corner of O/W separator vault - 6 feet south of south wall of O/W separator vault; 8 feet, 6 inches east of asphalt parking lot. Depth - surface of excavation (in 2-foot, 6-inch deep pit). Time: 1430 MST.

Sample 8: East of mid-line of O/W separator vault - 5 feet south of north end of O/W separator vault; 5 feet, 6 inches east of east wall of vault. Depth - surface of excavation (3-foot, 6-inch deep pit). Time: 1445 MST.

Figure 4-2: Plan View of Facility 244 Showing Soil Sampling Locations.

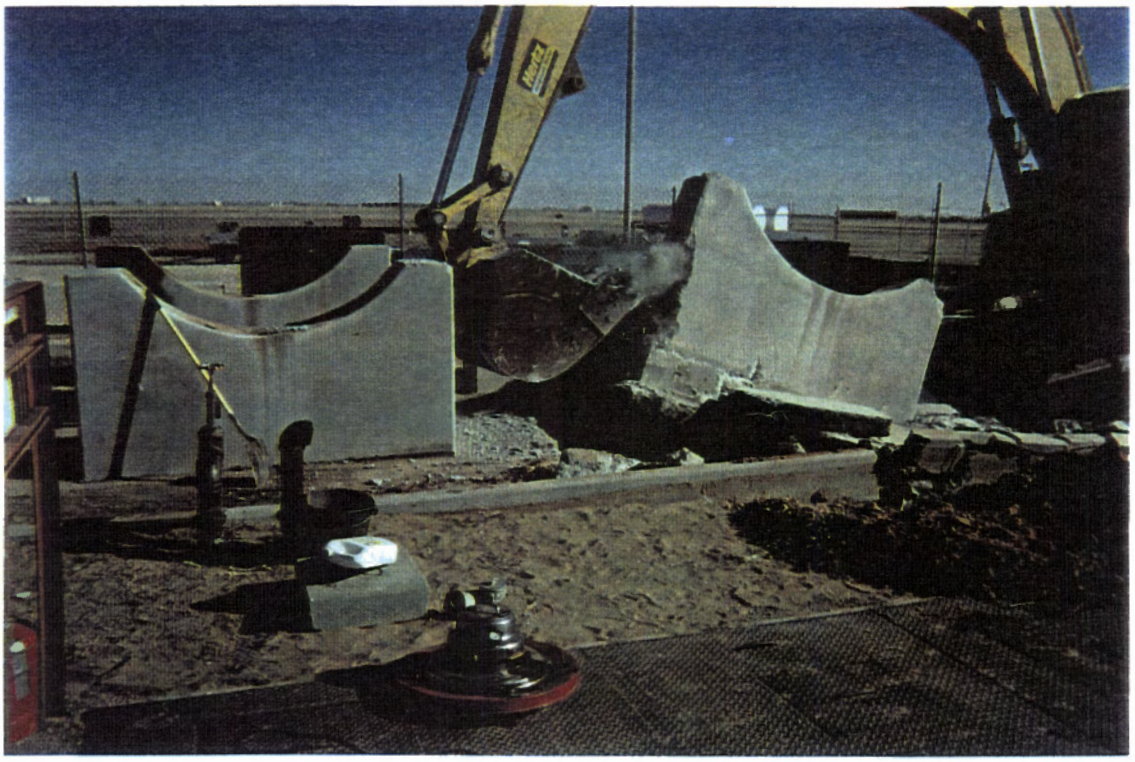
Photograph 1: View of Facility 244 Prior to Start of Dismantling Operations Showing Tank Locations and Fencing.

Photograph 2: Alternate View of the Facility with Fence Fabric Removed and Orange Safety Webbing Stretched.



Photograph 3: Associated Distribution Piping and Manual Valves.

Photograph 4: Omegasys Personnel Pressure Washing Interior Surfaces of Tank and Using Drain Valve to Remove Sludges and Rinse Water.

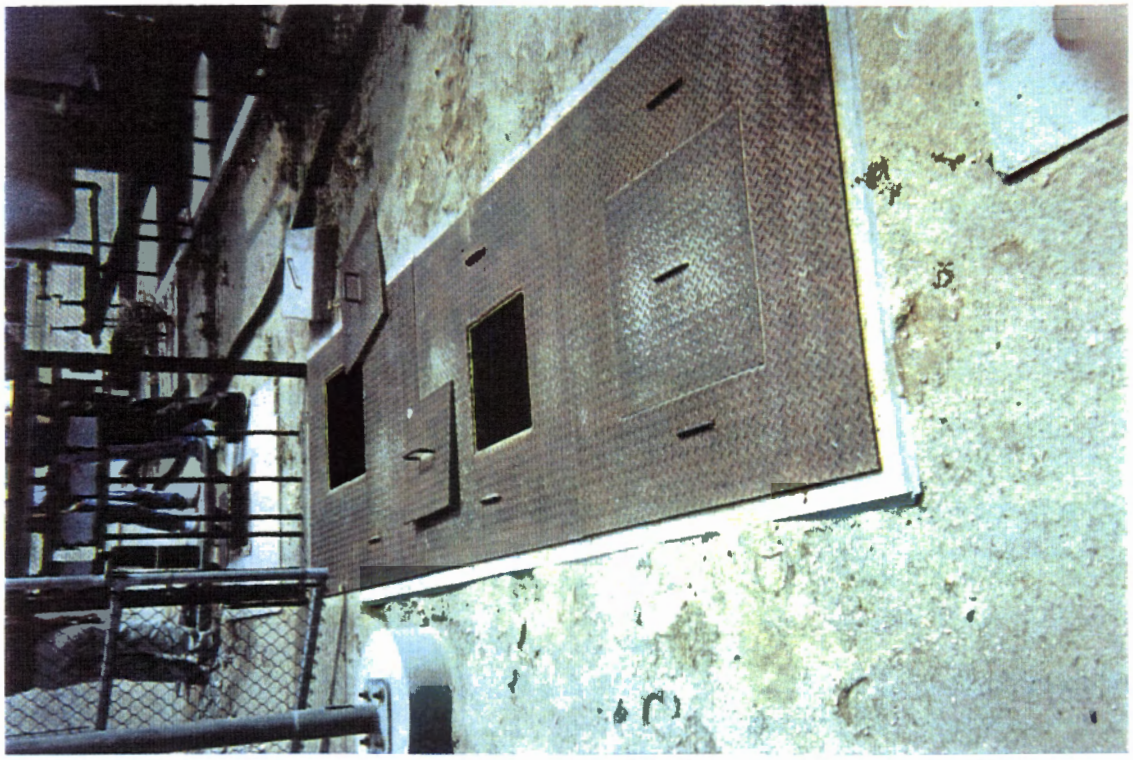


Photograph 5: Removal of Tank Support Saddle with Trackhoe Bucket.

Photograph 6: Stockpiling Concrete Support Saddles at the Designated Staging Area.

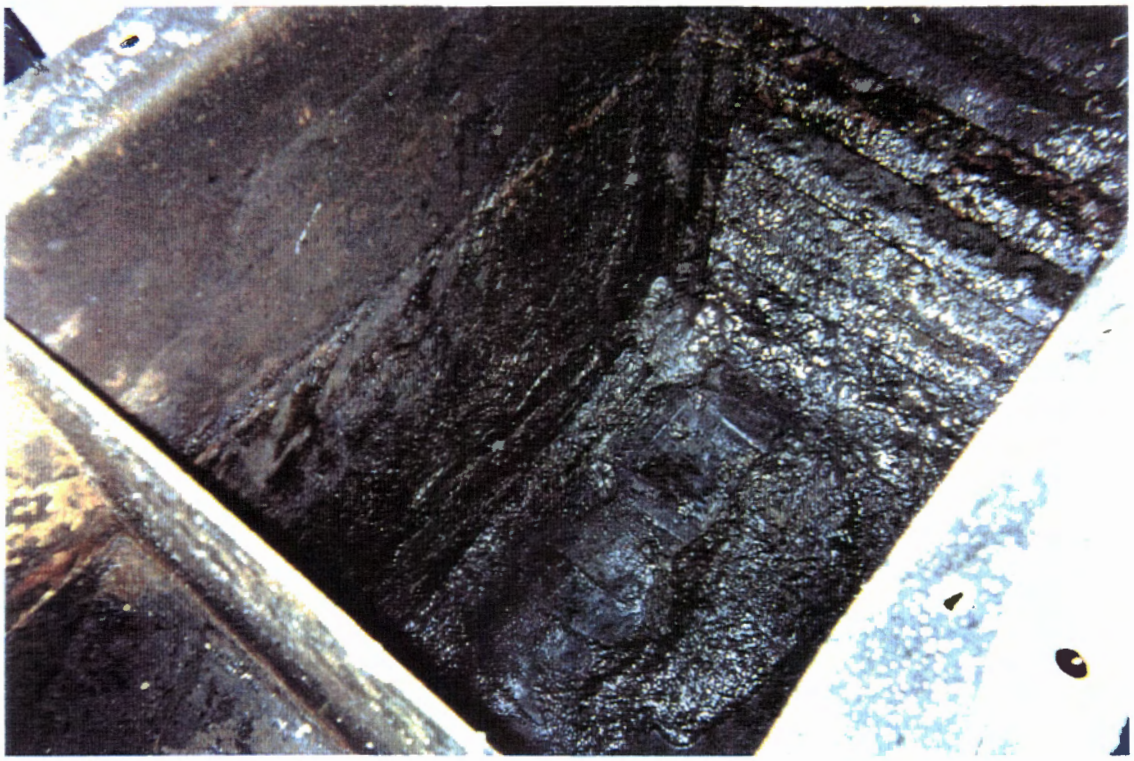
Photograph 7: Removal of Remaining Portions of the Concrete Containment Pad and Retaining Curb.

Photograph 8: View of Soil Surface after Removal of the Containment Pad.



Photograph 9: Sheet Metal Cover, with Accessways, for the O/W Separator and Concrete Vault.

Photograph 10: Omegasys Personnel Removing Top Plate of O/W Separator and Disconnecting Supply/Distribution Pipes.



Photograph 11: View of O/W Separator Interior Structure Showing Thick Deposits of Sludge and Oil-Coated Baffles.

Photograph 12: The Trackhoe Bucket Is Used to Lift the O/W Separator from the Concrete Vault.

Photograph 13: Field Personnel Use Shovels and Scoops to Remove Sludge Prior to Pressure Washing Interior Surfaces.

Photograph 14: The Concrete O/W Separator Vault and Associated Dump Pits Are Demolished after Removal of Piping.

Photograph 15: View of Construction Rubble Stockpiled at the Designated Abandoned Airstrip.

Photograph 16: Scrap Metal Loaded on Flatbed Truck Ready for Transport to the Scrap Metal Recycler.

Photograph 17: Delivery of Scrap Metal to Ed's Recycle Center, Clovis, New Mexico.

Photograph 18: Omegasys Personnel Unloading Drums of Decontamination and Rinse Waters, and Residual Sludges at the On-BaseRCRA 90-Day Storage Facility.

Photograph 19: View of Facility 244 Location upon Completion of Removal Activities; Light Tan Area in Foreground Is Backfilled Area.

Photograph 20: View of Tanks Removed from Facility 244, Temporarily Staged Prior to Sale as Surplus Material.

APPENDIX A

SOIL SAMPLE ANALYTICAL DATA

PRELIMINARY SITE ASSESSMENT
SWMU 129, FACILITY 244
CANNON AFB, CLOVIS, NEW MEXICO

Table A-1
Facility 244, Cannon AFB, Clovis, New Mexico
Soil Sample Results
RCRA Metals

Medium	Sample ID	Sample Date	Mercury (mg/Kg)	Arsenic (mg/Kg)	Barium (mg/Kg)	Cadmium (mg/Kg)	Chromium (mg/Kg)	Lead (mg/Kg)	Selenium (mg/Kg)	Silver (mg/Kg)
Soil	244SS001	12/14/99	<0.58	7.8	79	1.2	7.7	7.3	<5.8	<5.8
Soil	244SS002	12/14/99	<0.55	7.0	46	0.85	<5.5	5.9	<5.5	<5.5
Soil	244SS003	12/14/99	<0.59	12	130	1.6	9.6	10	<5.9	<5.9
Soil	244SS004	12/14/99	<0.56	5.8	48	0.9	<5.6	6.2	<5.6	<5.6
Soil	244SS004 FD	12/14/99	<0.56	8	61	0.99	6.7	6.4	<5.6	<5.6
Soil	244SS004 MS	12/14/99	<0.56	6.3	52	1.1	6.2	7.4	<5.6	<5.6
Soil	244SS005	12/14/99	<0.56	8.4	55	1.1	6.9	9.4	<5.6	<5.6
Soil	244SS006	12/14/99	<0.55	7.6	380	1.1	5.6	13	<5.5	<5.5
Soil	244SS007	12/14/99	<0.57	11	170	1.8	8.5	13	20	<5.7
Soil	244SS008	12/14/99	<0.56	6.6	120	1.6	7.3	9.4	17	<5.6
	Total Detects	----	0	10	10	10	8	10	2	0
	Total Analyses	----	10	10	10	10	10	10	10	10
	Average Result	----	<RDL	8.05	114.1	1.224	7.3125	8.8	18.5	<RDL
	Maximum Detect	----	<RDL	12	380	1.8	9.6	13	20	<RDL
	Minimum Detect	----	<RDL	5.8	46	0.85	5.6	5.9	17	<RDL
	Industrial RBC	----	61	3.8	140000	1000	610	1,200	10,000	10000
	Residential RBC	----	2.3	0.43	5500	39	23	400	390	390

Table A-2
Facility 244, Cannon AFB, Clovis, New Mexico
Soil Sample Results
PCBs

Medium	Sample ID	Sample Date	Aroclor-1016 (ug/Kg)	Aroclor-1221 (ug/Kg)	Aroclor-1232 (ug/Kg)	Aroclor-1242 (ug/Kg)	Aroclor-1248 (ug/Kg)	Aroclor-1254 (ug/Kg)	Aroclor-1260 (ug/Kg)
Soil	244SS001	12/14/99	<19	<38	<38	<19	<19	<19	<19
Soil	244SS002	12/14/99	<19	<36	<36	<19	<19	<19	<19
Soil	244SS003	12/14/99	<20	<39	<39	<20	<20	<20	<20
Soil	244SS004	12/14/99	<19	<37	<37	<19	<19	<19	<19
Soil	244SS004-FD	12/14/99	<19	<37	<37	<19	<19	<19	<19
Soil	244SS004-MS/MSD	12/14/99	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Soil	244SS005	12/14/99	<19	<37	<37	<19	<19	<19	<19
Soil	244SS006	12/14/99	<19	<36	<36	<19	<19	<19	<19
Soil	244SS007	12/14/99	<19	<38	<38	<19	<19	<19	<19
Soil	244SS008	12/14/99	<19	<37	<37	<19	<19	<19	<19
	Total Detects	----	0	0	0	0	0	0	0
	Total Analyses	----	10	10	10	10	10	10	10
	Average Result	----	<RDL	<RDL	<RDL	<RDL	<RDL	<RDL	<RDL
	Maximum Detect	----	<RDL	<RDL	<RDL	<RDL	<RDL	<RDL	<RDL
	Minimum Detect	----	<RDL	<RDL	<RDL	<RDL	<RDL	<RDL	<RDL
	Industrial RBC	----	82000	2900	2900	2900	2900	2900	2900
	Residential RBC	----	5500	320	320	320	320	320	320

RDL – Reported Detection Limit

Figure A-3
Facility 244, Cannon AFB, Clovis, New Mexico
Soil Sample Results
Pesticides

MEDIUM	Sample ID	Sample Date	4,4'-DDD (ug/Kg)	4,4'-DDE (ug/Kg)	4,4'-DDT (ug/Kg)	Aldrin (ug/Kg)	alpha-BHC (ug/Kg)	alpha-Endosulfan (ug/Kg)	beta-BHC (ug/Kg)	beta Endosulfan (ug/Kg)	delta-BHC (ug/Kg)	Dieldrin (ug/Kg)	Endosulfan sulfate(ug/Kg)	Endrin (ug/Kg)	Endrin aldehyde (ug/Kg)	GammaBHC(Lindane)(ug/Kg)	Heptachlor (ug/Kg)	Heptachlor epoxide (ug/Kg)	Methoxychlor (ug/Kg)	Total Chloradane (Technical) (ug/Kg)	Toxaphene (ug/Kg)
Soil	244SS001	12/14/99	<1.9	<1.9	<3.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.4	<19	<94
Soil	244SS002	12/14/99	<1.9	<1.9	<3.6	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.1	<19	<91
Soil	244SS003	12/14/99	<2.0	<2.0	<3.9	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<9.8	<20	<98
Soil	244SS004	12/14/99	<1.9	<1.9	<3.7	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.2	<19	<92
Soil-FD	244SS004	12/14/99	<1.9	<1.9	<3.7	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.2	<19	<92
Soil-MS	244SS004	12/14/99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Soil	244SS005	12/14/99	<1.9	<1.9	<3.7	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.3	<19	<93
Soil	244SS006	12/14/99	<19	<19	<36	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<19	<91	<190	<910
Soil	244SS007	12/14/99	<1.9	<1.9	<3.8	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.5	<19	<95
Soil	244SS008	12/14/99	<1.9	<1.9	<3.7	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<9.2	<19	<92
	Industrial RBC		24000	17000	17000	340	N/A	N/A	N/A	N/A	N/A	360	N/A	610000	N/A	N/A	1300	630	1xE^5	N/A	52000
	Residential RBC		2700	1900	1900	38	N/A	N/A	N/A	N/A	N/A	40	N/A	23000	N/A	N/A	0.14	70	3.9XE^4	N/A	580

N/A – Not Available

Figure A-4
Facility 244, Cannon AFB, Clovis, New Mexico
Soil Sample Results
Total Petroleum Hydrocarbons

Medium	Sample ID	Sample Date	Total Petroleum Hydrocarbons (mg/Kg)
Soil	244SS001	12/14/99	<10
Soil	244SS002	12/14/99	<10
Soil	244SS003	12/14/99	<10
Soil	244SS004	12/14/99	<10
Soil	244SS004 FD	12/14/99	<10
Soil	244SS004 MS/MSD	12/14/99	<10
Soil	244SS005	12/14/99	<10
Soil	244SS006	12/14/99	300
Soil	244SS007	12/14/99	100
Soil	244SS008	12/14/99	40
	Soil Cleanup Standard TPH-gasoline *		600
	Soil Cleanup Standard TPH-diesel *		800

* *Journal of Soil Contamination*, 2 (2): (1993)

APPENDIX B
SOIL SAMPLE VALIDATION QUALIFIERS SUMMARY
PRELIMINARY SITE ASSESSMENT
SWMU 129, FACILITY 244
CANNON AFB, CLOVIS, NEW MEXICO

Table B-1
Facility 244, Cannon AFB, Clovis, New Mexico
Data Validation Qualifiers Summary
Soil Samples

Sample Identification	Metals RCRA 3050B/6010B	Mercury 7471A	PCBs 8082	Pesticides 8081A	TPH 418.1
244SS001	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS002	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS003	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS004	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS004 FD	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS004 MS/MSD	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS005	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS006	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	All - UJ	----
244SS007	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----
244SS008	Arsenic, Cadmium, Chromium, and Lead – J or UJ	----	----	----	----

Table B-1 (Continued)

Data Qualifiers:

U - The material was analyzed for, but was not, detected. The associated numerical value is the sample quantitation limit.

J - The associated numerical value is an estimated quantity.

R - The data are unusable (compound may or may not be present). Re-sampling and reanalysis is necessary for verification.

N - Presumptive evidence of presence of material.

NJ - Presumptive evidence of the presence of the material at an estimated quantity.

UJ - The material was analyzed for, but was not detected. The sample quantitation limit is an estimated quantity.

JN - Tentatively identified with estimated concentrations.

CC - Chain of custody irregularities that impact the legal defensibility of the analytical results.

ND - Non-detect

Comment / Response Form

Parallax INC.

Comments made by: Sanford Hutsell
Company: Cannon Air Force Base

No	Section	Comments	Response
1	All	The facility was Area of Concern I, not J. It has now been designated as SWMU 129 so change AOC J throughout to SWMU 129.	The change in facility identification to SWMU 129 has been made throughout the report.
2	1.1	Delete reference to removal of monitoring wells associated with Facility 244. There are no monitoring wells associated with Facility 244 and I don't want any reference in the literature to confuse the issue.	Reference to monitoring well removal has been deleted.
3	2.2	In tact should have space removed. Intact is one word.	Change made as indicated.
4	3.2	Intact is one word. Remove space between in and tact.	Change made as indicated.
5	Figure 3-3	Photocopy is reversed.	The copy has been corrected.