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DRAFT REPORT OF ABOVE GROUND FUEL STORAGE TANK REMOVAL NAS FORT  
WORTH TX  
3/1/1994  
METCALF AND EDDY

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NAVAL AIR STATION  
FORT WORTH JRB  
CARSWELL FIELD  
TEXAS



ADMINISTRATIVE RECORD  
COVER SHEET

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**DRAFT**

**REPORT of  
ABOVE GROUND FUEL  
STORAGE TANK REMOVAL**

**at**

**CARSWELL AIR FORCE BASE,  
TEXAS**

**March 1994**

# TABLE OF CONTENTS

€0 2

	<u>Page</u>
1.0 Introduction . . . . .	1
1.1 Project Scope . . . . .	1
1.2 Site Description . . . . .	2
1.3 Current Removal Action/Investigation . . . . .	2
2.0 Environmental Setting . . . . .	2
3.0 Field Procedures and Equipment . . . . .	5
3.1 Field Monitoring . . . . .	5
3.2 Sample Collection Procedures . . . . .	5
3.2.1 Soil Samples . . . . .	5
3.2.2 Quality Control Samples . . . . .	7
3.3 Sampling Handling Procedures . . . . .	7
3.3.1 Sample Preservation . . . . .	7
3.3.2 Sample Labeling . . . . .	8
3.3.3 Sample Custody . . . . .	8
3.3.4 Sample Packaging and Shipping . . . . .	9
4.0 Analytical Procedures . . . . .	9
4.1 Analytical Methods . . . . .	10
4.2 Sample Collection Chronology . . . . .	11
4.3 Data Validation . . . . .	12
5.0 Removal Action and Data Evaluation . . . . .	12
5.1 Aboveground Tanks, Piping & Foundations Removal . . . . .	12
5.2 Analytical Results . . . . .	13
6.0 Summary of Results and Conclusions . . . . .	22

APPENDIX A - Photo Log

APPENDIX B - Analytical Data

## TABLES

4-1	Standard Analytical Methods . . . . .	10
4-2	Sample Type and Chronology . . . . .	11
5-1	Analytical Summary Table . . . . .	15

## FIGURES

1.1	Location of Carswell Air Force Base, TX . . . . .	3
1.2	Facility Layout Map . . . . .	4
5.1	Sample Location Map . . . . .	14

## ACRONYMS

AFB	Air Force Base
AFCEE	Air Force Center for Environmental Excellence
AST	Aboveground Storage Tanks
BTEX	Benzene, Toluene, Ethyl Benzene, Xylene
CFR	Code of Federal Regulations
DOT	Department of Transportation
ICP	Induction Coupled Plasma
ID	Identification
JPH	Jet Propulsion Fuel No. 4
M&E	Metcalf & Eddy, Inc.
MSL	Mean Sea Level
mg/kg	milligram/kilogram
OVA	Organic Vapor Analyzer
QC	Quality Control
TCLP	Toxicity Characteristic Leachate Procedure
TPH	Total Petroleum Hydrocarbons
USEPA	U.S. Environmental Protection Agency
VOA	Volatile Organic Analysis
VOC	Volatile Organic Compounds

# REPORT OF ABOVE GROUND FUEL STORAGE TANK REMOVAL CARSWELL AIR FORCE BASE, TEXAS

## 1.0 INTRODUCTION

### 1.1 Project Scope

Metcalf & Eddy (M&E) was tasked by the Air Force Center for Environmental Excellence (AFCEE) under Contract No. F41625-92-0-8002 Delivery Order 0010, to remove Above Ground Fuel Storage Tanks at Carswell Air Force Base (AFB), Texas.

The scope of this project was to completely clear the Base Gas Station station of six (6) above ground storage tanks (ASTs) and the associated piping and accoutrements. In detail, this includes:

- . one (1) 12,000-gallon diesel fuel tank
- . one (1) 12,000-gallon unleaded fuel tank
- . one (1) 6,000-gallon unleaded fuel tank
- . three (3) 12,000-gallon regular fuel tanks
- . foundations for the tanks
- . above and below ground piping
- . fuel dispensing island
- . miscellaneous structures such as pumphouse and filling area
- . fencing

The second portion of the scope was to evaluate the facility soils for potential contamination. If contamination was suspected, then a pre-determined excavation and sampling plan would be implemented. During the demolition of the facility, suspected contamination was found and was determined to be in excess of the pre-determined excavation volume of 25 yd<sup>3</sup>. A change in scope was approved by the AFCEE personnel which deleted the removal of contaminated soil and implemented a slightly expanded sampling program to document the site conditions.

## 1.2 Site Description

The Base gas station occupied approximately 45,000 square feet on the northeast corner of Knights Lake Road and Warehouse Street located on base at Carswell AFB, Fort Worth, Texas (Figure 1.1). The facility was fenced and contains two bermed areas which contain the six tanks and their support structures (Figure 1.2). Building 1255 was within the fenced area and contained one of the three pumping units which conveyed the fuel to the dispensing island located on the west boundary of the facility. The facility was originally constructed as a gas station in the 1950s with three underground storage tanks. Sometime in the 1960s or 1970s the facility was converted to above ground storage tanks and remained in operation until 1989. The facility has not been in use since 1989.

## 1.3 Current Removal/Investigation Action

This project addresses two concerns: (1) clearance of the site of abandoned tanks and structures and (2) determination of contamination which may be present.

Initially, the demolition and excavation proceeded on the basis of no contamination on the site. The tanks and piping were washed to remove any remaining sludges and hydrocarbon vapors. The used rinse water was disposed of offsite by the subcontractor. Demolition and removal of all aboveground facilities was completed. Demolition and excavation of underground piping and foundations proceeded while monitoring for hydrocarbon vapors with an organic vapor analyzer (OVA) and observing the physical condition of the soils. Contamination was found and test pits were excavated to sample soils and water for chemical analysis. Original plans called for the removal of up to 25 cu. yds. of contaminated soils. When substantially more volume was discovered, a decision was made to delete the removal from the project and include the site in a future action. After completion of excavation the site was backfilled and levelled, using excavated onsite soils. A chronological photo log of site activities is included in Appendix A.

## 2.0 ENVIRONMENTAL SETTING

Carswell AFB is located within the Grand Prairie section of the central lowlands physiographic province. Soils in the area generally consist of the Aledo-Bolar-Sanger Association which is defined as gently sloping to moderately steep, very shallow to deep, loamy and clayey soils on

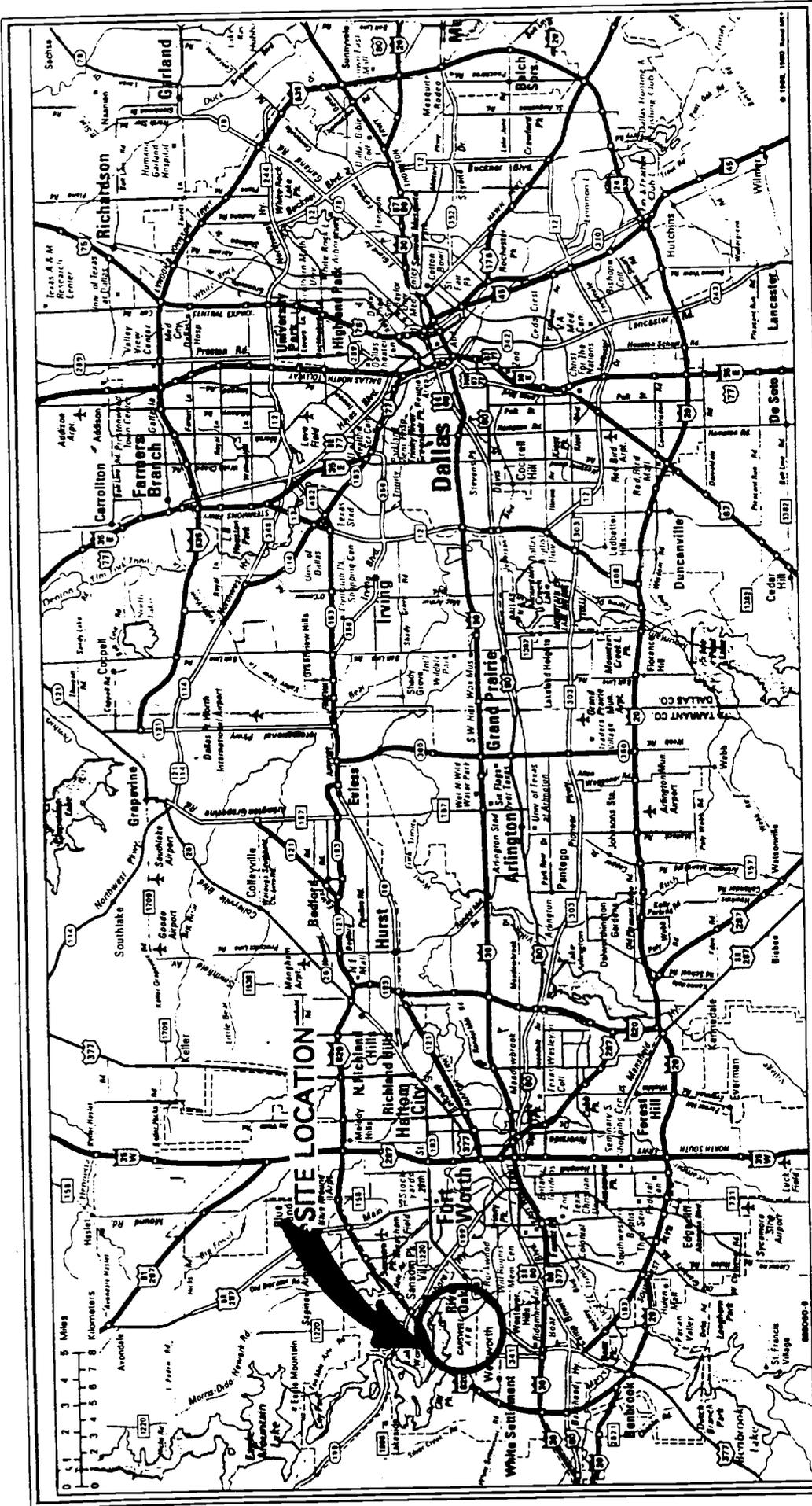


FIGURE 1.1

LOCATION OF CARSWELL AIR FORCE BASE, TX

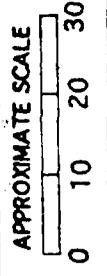
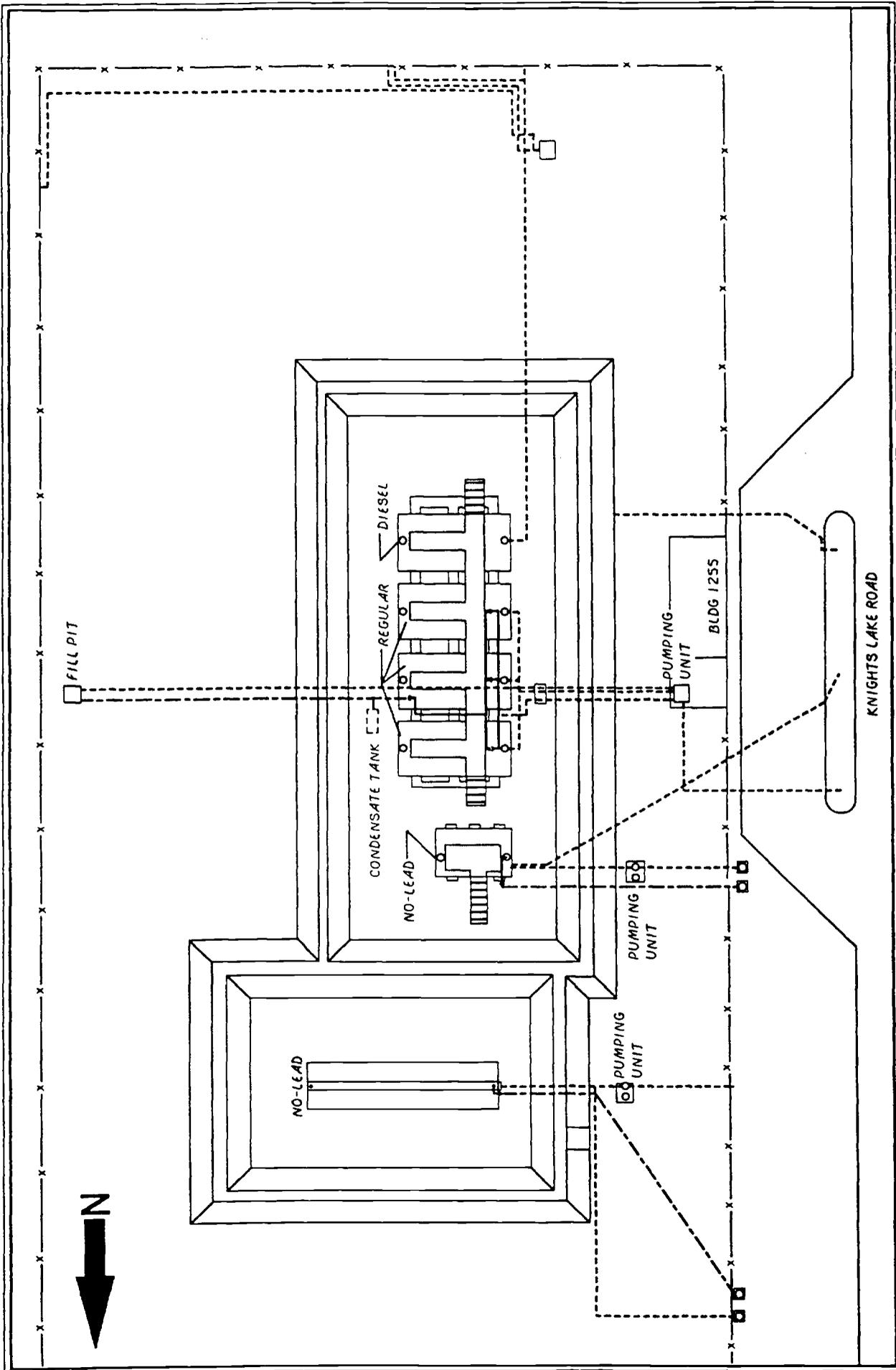


FIGURE 1.2



**FACILITY LAYOUT MAP**  
**BASE GAS STATION**  
**CARSWELL AIR FORCE BASE, TX**

- LEGEND**
- UNDERGROUND PRODUCT LINE
  - UNDERGROUND VAPOR LINE
  - OVERHEAD VAPOR LINE
  - x-x- FENCE

uplands. Soil permeabilities range from less than  $4.2 \times 10^{-5}$  to  $9 \times 10^{-4}$  cm/sec. The soils have been extensively disturbed by construction activities associated with the base.

The property encompassing Carswell AFB includes surface water associated with the West Fork of the Trinity River and the southern shores of Lake Worth. All surface water runoff from the site discharges to the Trinity River through overland flow and culverts. The river is approximately one-half mile to the east of the site. Elevations in the area range from 550 to 650 feet above mean sea level (msl). The Base is a suburban area inside the perimeter highway (I-820) which surrounds the Ft. Worth metropolitan area.

### **3.0 FIELD PROCEDURES AND EQUIPMENT**

#### **3.1 Field Monitoring**

An OVA was used in the field as a Health and Safety device to measure quantities of organic vapors in the breathing zone and as a screening device to select locations for soil samples. The OVA operates on the principle of flame ionization detection. This instrument is designed to measure organic vapors in the parts per million range (volume/volume) in the presence of atmospheric moisture, nitrogen oxides, carbon monoxide, and carbon dioxide. The OVA was used in combination with visual observation to determine the presence of contamination. Once contamination was found to be extensive, removal of the contaminated soils was abandoned, and a sampling program was outlined to characterize the contaminants. TCLP analyses were considered to be unnecessary since disposal of the soils was no longer planned for this project.

#### **3.2 Sample Collection Procedures**

##### **3.2.1 Soil Samples**

Soil sample locations were selected based upon field screening results, visual observations, and discussion with AFCEE field representatives. Soil samples were collected from both surface locations as well as at depth from the test pits. The surface locations were sampled using the following equipment, steps, and documentation requirements.

All sampling equipment was decontaminated prior to collection using the procedures outlined in Section 5.2 of the Sampling and Analysis Plan.

### Equipment

- . Stainless steel trowel, and spoon or spatula
- . Field logbook
- . OVA
- . Nitrile gloves
- . Pyrex bowl
- . Sample containers
- . Black waterproof marker

### Procedure

1. Chipped concrete and debris was removed using stainless steel trowel. Protective gloves were worn and changed between samples.
2. Samples for volatile organics were collected first. An effort was made to minimize any disturbance or mixing of the soil. The sample jars were inverted and inserted directly into the sample soil, containers were filled quickly and completely to eliminate air space.
3. After volatile organics were collected sufficient soil was collected in pyrex bowl and mixed to be homogeneous. The sample containers were filled using a stainless steel spoon or spatula.
4. Soil samples were collected from the test pits with the use of a backhoe. Care was taken to collect the sample from the center of the bucket in a manner to minimize cross contamination.
5. The samples were immediately labeled, preserved, and logged into the field log book. Chains-of-custody forms were completed.

Samples were placed in a cooler with ice and shipped to the subcontractor laboratory for analysis within 24 hours of collection.

### Documentation

The following information was documented in the field log book when sampling surface soils.

- . Description of sample
- . Depth of sample collection

- . Discrete or composited sample
- . Method of collection
- . Time and date of sample collection
- . Weather conditions

### 3.2.2 Quality Control Samples

During the initial sampling episode, two Quality Control (QC) samples were collected and submitted for laboratory analysis. The types of QC samples that were collected are described in the following paragraphs.

#### Trip Blanks

A trip blank was used in the chemical analysis of volatile organics. The analytical results served as a baseline measurement of volatile organics contamination that sample containers may be exposed to during transport and laboratory storage prior to analysis. One trip blank was collected to accompany the field samples analyzed for volatile organics only.

The trip blank originated in the laboratory. It was comprised of organic-free reagent water, which was placed in sample containers by the laboratory, transported to the site location, handled the same as field samples, and returned to the laboratory along with samples of water and soil collected for volatile organics analysis. The trip blank was stored in the laboratory with the samples, and analyzed by the laboratory for volatile organics.

#### Duplicates

A duplicate sample was collected from a single sampling location. The soil was mixed to be homogenous, and then split equally between the remaining sample bottles. Analysis of the duplicate sample provided statistical information relating to sample variability and served as a check on the precision of any sample collection method.

One surface soil duplicate sample was submitted for laboratory analysis. The duplicate was labeled in such a manner that persons performing laboratory analyses were not able to distinguish it from other field samples.

### 3.3 Sample Handling Procedures

#### 3.3.1 Sample Preservation

All samples were preserved immediately following collection. Procedures for preserving liquid and soil samples are discussed below.

**Liquid Samples.** Samples to be analyzed for volatile organics were collected in a 40 ml volatile organic analysis (VOA) vial. Vials were pre-preserved with 4 drops concentrated hydrochloric acid. After filling the vial, it was turned upside-down and tapped lightly to ensure that there were no air bubbles. Other liquid samples were placed into pre-preserved sampling bottles obtained from the laboratory, such as a 1 liter amber glass bottle. The container was filled at least 3/4 full, labeled with the sample ID number, and placed in a sealable plastic bag. All samples were wrapped in bubble wrap and packed with ice in a cooler in a manner such that the containers were not damaged during shipping.

**Soil Samples.** Samples were collected in the appropriate size bottles provided by the subcontractor laboratory for the required analysis. Containers were filled at least 3/4 full. Each sample was labeled with the sample ID number. Each sample was placed in a sealable plastic bag. All samples were wrapped in bubble wrap, preserved with ice, and packed in a cooler in a manner such that the contents were not damaged during shipping.

#### 3.3.2 Sample Labeling

Each sample container had a clean label for identification preaffixed to it. The sample identification label was completely filled out in waterproof ink with the following information:

- . Sample identification number
- . Sample location
- . Date of collection
- . Time of collection
- . Initials of personnel collecting the sample
- . Analysis requested
- . Types of preservatives (if any)

#### 3.3.3 Sample Custody

Custody of samples was maintained and documented from the time of sample collection to completion of the analysis. Two chain-of-custody forms were completed for the entire sampling event. The form was maintained as a record of sample collection, transfer,

shipment, and receipt by the laboratory. The forms also contain pertinent information concerning sampling location, date, and times; signatures of the sampling team members; types of samples collected along with a unique sample identification number; the number of samples collected and shipped for analysis in each lot; the project name and number; and the name of the laboratory to which the samples were being sent.

Samples were accompanied by the completed chain-of-custody form during each step of custody, transfer, and shipment. When physical possession of samples was transferred, both the individual relinquishing the samples and the individual receiving them signed, dated, and recorded the time on the chain-of-custody form. The samples were shipped by an overnight courier, so properly prepared airbill for non-hazardous materials served as an extension of the chain-of-custody form while the samples were in transit. A copy of each record was retained by sampling personnel for the project file.

Once received at the laboratory, laboratory custody procedures applied. The laboratory was responsible for maintaining custody records throughout sample preparation and analysis.

#### **3.3.4 Sample Packaging and Shipping**

Following sample collection, all samples were brought to an on-site location for batching and paperwork checks. At this central location, like sample types were matched (i.e., solids, liquids, etc.) with similar sample types from all sample locations. Labels and log information were checked to be sure there was no error in sample identification. All the sample containers from individual sample locations were packed in plastic bags. The samples were then packaged in bubble wrap to prevent breakage and/or leakage. The samples were packed with double-bagged packages of ice. Sample coolers were sealed with chain-of-custody tape, and the shipping containers were labeled in accordance with the DOT regulations for transport.

As soon as field personnel were ready to transport samples from the field, the laboratory was notified by telephone of the shipment along with the estimated time of arrival. All samples were shipped directly to the laboratory within 24 hours of collection. For each sample shipment to the subcontractor laboratory, an overnight airbill was properly completed.

**4.0 ANALYTICAL PROCEDURES**

Samples were analyzed by methods designated by AFCEE in the Statement of Work and modified by field decisions. The analyses were performed by Terra Laboratories, Ltd., the subcontractor laboratory located in Houston, Texas. The laboratory is approved by AFCEE and was selected by competitive bid.

**4.1 Analytical Methods**

The standard analytical methods that were used to analyze samples from the site are summarized in Table 4-1. There were several field changes in the analytical methods specified in the Sampling and Analysis Plan.

<b>TABLE 4-1 STANDARD ANALYTICAL METHODS</b>	
<b>Parameters</b>	<b>Method</b>
Soil: Benzene, toluene, ethylbenzene and xylene (BTEX) Total Petroleum Hydrocarbons (TPH) Total Lead	SW 8020  ASTM-D 3328 SW 6010
Water: Volatiles Total Petroleum Hydrocarbons (TPH) Total Lead	SW 8260 E 418.1 SW 6010
SW - <u>Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA 3rd Ed., 1987, as amended.</u>	
ASTM - Book of ASTM Standards, Vol. 05.02, Petroleum Products and Lubricants (II): D1949-D3601	
E - <u>Methods for Chemical Analysis of Water and Wastes, USEPA 600/4-79-020.</u>	

Toxicity Characteristic Leachate Procedure (TCLP) lead was specified for stockpiled material to characterize it prior to disposal. The volume of apparently contaminated soil exceeded the approved volume. Since the disposal action was canceled, the TCLP lead analysis was switched to total lead. The method chosen, SW 6010, Induction

Coupled Plasma (ICP), was preferable to SW 7421, Furnace Atomic Absorption, since higher concentrations were expected. Total Petroleum Hydrocarbons (TPH) for soils was changed from Method SW 418.1 (Infrared) to Method ASTM-D 3328 (Gas Chromatograph) to allow the selection of specific compounds (i.e., gasoline and diesel) for detection. Since jet fuel (JP-4) falls between gasoline and diesel, a determination of the presence of JP-4 could not be made.

The collection of a water sample from the test pit was a result of a field change. As such, all of the water analyses were previously unspecified. One of the main objectives of these analyses was to determine the presence of chlorinated compounds in the water.

Further information on the procedural techniques is included in Test Methods for Evaluating Solid Waste, Physical/Chemical Methods SW-846, U.S. EPA, Third Edition, November 1986.

#### 4.2 Sample Collection Chronology

TABLE 4-2 SAMPLE TYPE AND CHRONOLOGY			
Time	Sample	Type	Location
1105	SS-01	Soil	North of pump island
1115	SS-02	Soil	Just east of middle of pump island
1130	SS-03	Soil	South pump island
1150	SS-04	Soil	Near diesel pump, along pipe line
1220	GW-01	Water	Bottom of Test Pit I
1230	TB-01	Water	Trip Blank
1335	SS-12	Soil	Just East of Bldg. 1255
1335	SS-20	Soil	Duplicate of SS-12
1405	SS-05	Soil	Depth 8 to 10 feet, Test Pit I
1410	SS-06	Soil	Depth 6 to 8 feet, Test Pit I
1415	SS-07	Soil	Depth 4 to 6 feet, Test Pit I
1420	SS-08	Soil	Depth 2 to 4 feet, Test Pit I
1450	SS-10	Soil	Depth 4 to 6 feet, Test Pit 2
1455	SS-09	Soil	Depth 8 to 10 feet, Test Pit 2
1520	SS-11	Soil	Northwest Corner of Fill Pit

Note: All samples taken February 5, 1994

### 4.3 Data Validation

Twelve soil samples and one duplicate soil sample were analyzed for Benzene, Toluene, Ethyl Benzene, and Xylene (BTEX) by EPA Method 8020, TPH (gasoline and diesel) by ASTM Method D3328 and Total Lead by EPA Method 6010. The holding times, surrogate recoveries, matrix spike/matrix spike duplicate and blanks were all within the required QC limits; therefore no qualifications were required for the soil sample results.

One groundwater sample was analyzed for volatiles by EPA Method 8260, TPH by EPA Method 418.1 and Total Lead by EPA Method 6010. A trip blank was also analyzed for volatiles by EPA Method 8260. All of the above QC limits were checked and all were within the required limits; therefore, no qualifications were required for the water sample results.

## 5.0 Removal Action and Data Evaluation

### 5.1 Above Ground Tanks, Piping and Foundations Removal

Removal action was initiated on January 31, 1994 by Eagle Construction & Environmental Services. M&E supervisor was J. E. Bentkowski. AFCEE representatives onsite were Chris Hobbins and David Bragg.

The aboveground gasoline tanks were dry and registered zero when measuring the Lower Explosive Limit (LEL) with an explosimeter. The diesel tank was cleaned and purged of the wash waters. All six tanks were hoisted from their saddles and disposed off-site. The tank saddles and foundations were demolished and transported off-site. The foundations were massive (later determined to be due to being built over a previous UST site) and required heavier than planned equipment for removal. The fencing, light fixtures, and miscellaneous equipment were dismantled and removed. The buried piping was evacuated with a vacuum truck, excavated, and transported offsite.

Hydrocarbon odors and elevated OVA readings were noted in several smaller excavations. Two test pits were dug; one near the tank foundations and the other away from the "problem" areas (to the north end of the site along the former fence line). The test pit No. 1 was dug to 12-13 feet. Water appeared 10.5 feet from the surface with a strong odor and had a product layer on the surface. Test pit No. 2 was dug to a depth of 12-13 feet. As soon as digging was completed, the excavation began to fill with water. Very small bubbles of product appeared and produced a rainbow sheen. The water level

was 11.5 feet from the surface. The difference in water depths could be justified by the uneven surface at the site.

Thirteen soil samples and one groundwater sample were collected at the site. The locations are shown on Fig. 5-1. The samples were sent to Terra Labs, Ltd. The soils were analyzed for purgeable volatile organics, purgeable and extractable hydrocarbons and total lead. The water samples were analyzed for purgeable and halogenated volatiles, purgeable and extractable hydrocarbons and total lead. The analysis for halogenated compounds was added to determine the possible presence of chlorinated solvents from another potential source on base.

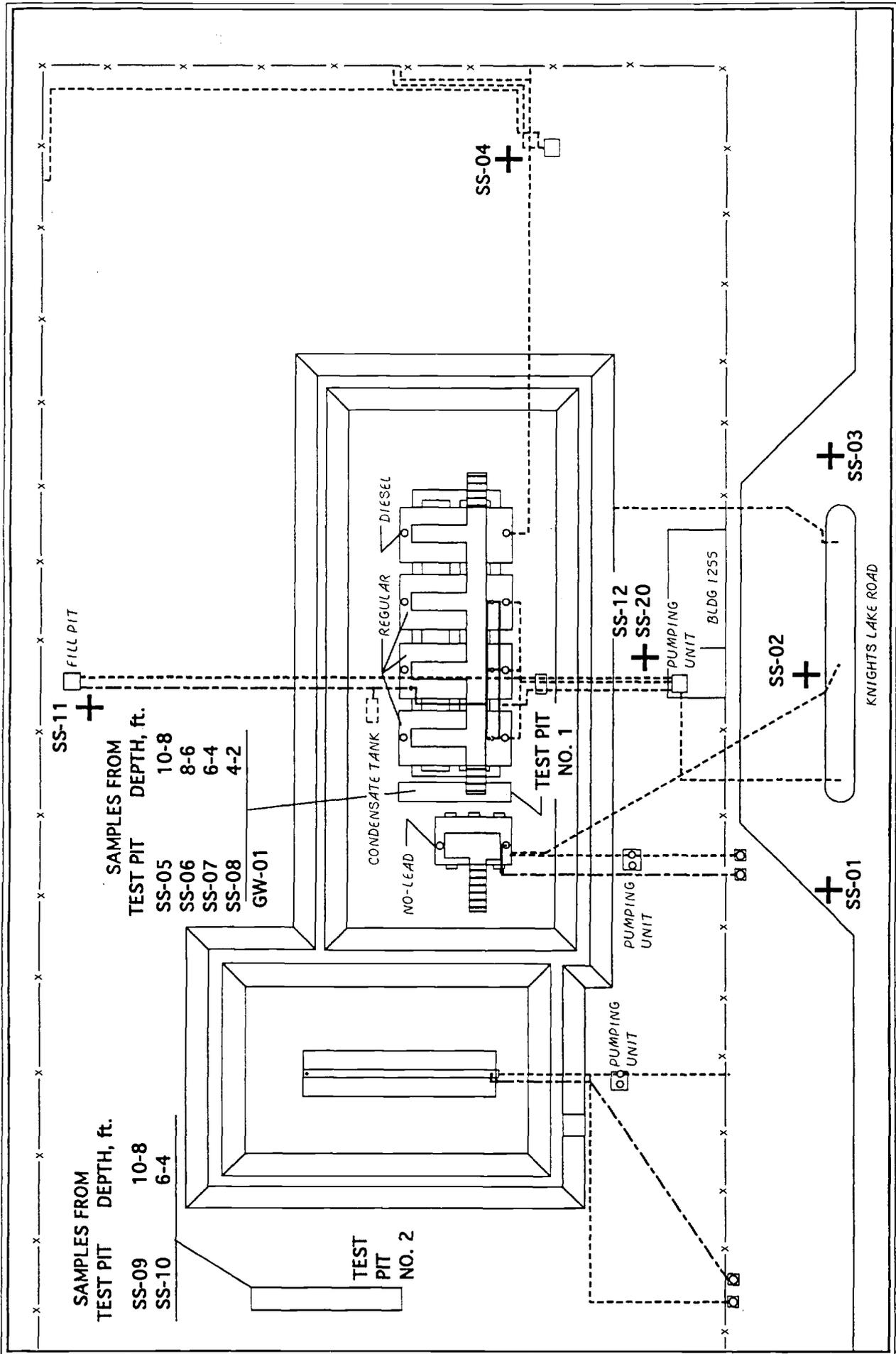
The final removal of piping and foundations was completed February 10, 1994. The site was levelled and all excavations were filled. No additional backfill was used. Compaction was accomplished with the bulldozer used for levelling. The only remaining material on the site is a deep concrete foundation which supported the former USTs.

## 5.2 Analytical Results

The analytical results for the 13 soil and 2 water samples are included in Table 5-1. The compounds are listed on the left followed by the analytical result and units. The right side of the table is the second column confirmation for compounds analyzed using a gas chromatograph. The original analytical reports including QC sample results are included in Appendix B.

When the analytical results for the soil samples are reviewed, there are four sample locations which have significant results; SS-02, SS-12 (and its duplicate SS-20), SS-06, and SS-04. Of the four major components of gasoline, benzene and toluene were not detected significantly above detection limits at any of the 12 sample locations. The other two components, ethylbenzene and total xylenes, were present in significant amounts at the four locations listed above. The results for gasoline and diesel fractions of TPH follow the same pattern of being present at significant concentrations at the same four sample locations. Sample location SS-04 was taken near a diesel transfer pump. TPH results for the gasoline fraction was 28 milligrams/kilogram (mg/kg). At the other three sampled locations TPH concentrations (gasoline) are in excess of 2300 mg/kg. Conversely, the concentrations of TPH (diesel) were elevated but at least an order of magnitude smaller than the 23,000 mg/k detected at SS-04.

The analytical results for total lead exhibit a different pattern. The values at all sample locations range from 4 to 25 mg/kg with the



SAMPLES FROM TEST PIT	DEPTH, ft.
SS-09	10-8
SS-10	6-4

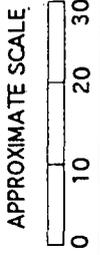
SAMPLES FROM TEST PIT	DEPTH, ft.
SS-05	10-8
SS-06	8-6
SS-07	6-4
SS-08	4-2

GW-01

**LEGEND**

- UNDERGROUND PRODUCT LINE
- UNDERGROUND VAPOR LINE
- OVERHEAD VAPOR LINE
- x-x- FENCE

**SAMPLE LOCATION MAP**  
**BASE GAS STATION**  
**CARSWELL AIR FORCE BASE, TX**



**FIGURE 5.1**

TABLE 5-1  
ANALYTICAL SUMMARY TABLE

Sample No.	Parameter	Results	Units	Sample No.	Parameter	Results	Units	Date Analyzed
94-566	Benzene	< 0.010	mg/Kg	94-566	Benzene	N/A	mg/Kg	N/A
SS-01	Toluene	< 0.010	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	< 0.010	mg/Kg		Ethylbenzene	N/A	mg/Kg	N/A
	Total Xylene	< 0.030	mg/Kg		Total Xylene	N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	18	mg/Kg					
	TPH/Diesel	3.8	mg/Kg					
	Total Lead	5.5	mg/Kg					
95-567	Benzene	< 4.6	mg/Kg	95-567	Benzene	N/A	mg/Kg	N/A
SS-02	Toluene	< 4.6	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	33	mg/Kg		Ethylbenzene	35	mg/Kg	2/17/94
	Total Xylene	120	mg/Kg		Total Xylene	110	mg/Kg	2/17/94
	Chlorobenzene	< 4.6	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	3900	mg/Kg					
	TPH/Diesel	840	mg/Kg					
	Total Lead	13	mg/Kg					
95-568	Benzene	< 0.010	mg/Kg	95-568	Benzene	N/A	mg/Kg	N/A
SS-03	Toluene	< 0.010	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	0.04	mg/Kg		Ethylbenzene	0.014	mg/Kg	2/16/94
	Total Xylene	< 0.030	mg/Kg		Total Xylene	N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	6.2	mg/Kg					
	TPH/Diesel	11	mg/Kg					
	Total Lead	5	mg/Kg					

Note: right hand portion of the table contains the second column confirmation analytical results

TABLE 5-1 (Continued)  
ANALYTICAL SUMMARY TABLE

Sample No.	Parameter	Results	Units	Sample No.	Parameter	Results	Units	Date Analyzed
95-569	Benzene	< 0.010	mg/Kg	95-569	Benzene	N/A	mg/Kg	N/A
SS-04	Toluene	0.04	mg/Kg		Toluene	0.006	mg/Kg	2/16/94
	Ethylbenzene	< 0.010	mg/Kg		Ethylbenzene	N/A	mg/Kg	N/A
	Total Xylene	0.46	mg/Kg		Total Xylene	0.24	mg/Kg	2/16/94
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	28	mg/Kg					
	TPH/Diesel	23000	mg/Kg					
	Total Lead	24	mg/Kg					
94-570	Benzene	< 0.010	mg/Kg	94-570	Benzene	N/A	mg/Kg	N/A
SS-05	Toluene	< 0.010	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	< 0.010	mg/Kg		Ethylbenzene	N/A	mg/Kg	N/A
	Total Xylene	< 0.030	mg/Kg		Total Xylene	N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	3.7	mg/Kg					
	TPH/Diesel	5.3	mg/Kg					
	Total Lead	8.9	mg/Kg					
94-571	Benzene	< 13.0	mg/Kg	94-571	Benzene	N/A	mg/Kg	N/A
SS-06	Toluene	< 13.0	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	14	mg/Kg		Ethylbenzene	4.9	mg/Kg	2/17/94
	Total Xylene	64	mg/Kg		Total Xylene	29	mg/Kg	2/17/94
	Chlorobenzene	< 13.0	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	2300	mg/Kg					
	TPH/Diesel	28	mg/Kg					
	Total Lead	8.5	mg/Kg					

Note: right hand portion of the table contains the second column confirmation analytical results

TABLE 5-1 (Continued)  
ANALYTICAL SUMMARY TABLE

Sample No.	Parameter	Results	Units	Sample No.	Parameter	Results	Units	Date Analyzed
94-572	Benzene	< 0.010	mg/Kg	94-572	Benzene	N/A	mg/Kg	N/A
SS-07	Toluene	< 0.010	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	0.03	mg/Kg		Ethylbenzene	0.12	mg/Kg	2/16/94
	Total Xylene	0.16	mg/Kg		Total Xylene	0.72	mg/Kg	2/16/94
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	9.9	mg/Kg					
	TPH/Diesel	25	mg/Kg					
	Total Lead	8.7	mg/Kg					
94-573	Benzene	< 0.010	mg/Kg		94-573	Benzene	N/A	mg/Kg
SS-08	Toluene	< 0.010	mg/Kg	Toluene		N/A	mg/Kg	N/A
	Ethylbenzene	< 0.010	mg/Kg	Ethylbenzene		N/A	mg/Kg	N/A
	Total Xylene	< 0.030	mg/Kg	Total Xylene		N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg	Chlorobenzene		N/A	mg/Kg	N/A
	TPH/Gasoline	< 1.0	mg/Kg					
	TPH/Diesel	< 1	mg/Kg					
	Total Lead	15	mg/Kg					
94-574	Benzene	< 0.010	mg/Kg	94-574	Benzene	N/A	mg/Kg	N/A
SS-09	Toluene	< 0.010	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	< 0.010	mg/Kg		Ethylbenzene	N/A	mg/Kg	N/A
	Total Xylene	< 0.030	mg/Kg		Total Xylene	N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	< 1.0	mg/Kg					
	TPH/Diesel	< 1	mg/Kg					
	Total Lead	6.7	mg/Kg					

Note: right hand portion of the table contains the second column confirmation analytical results

TABLE 5-1 (Continued)  
ANALYTICAL SUMMARY TABLE

Sample No.	Parameter	Results	Units	Sample No.	Parameter	Results	Units	Date Analyzed
94-575	Benzene	< 0.010	mg/Kg	94-575	Benzene	N/A	mg/Kg	N/A
SS-10	Toluene	< 0.010	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	< 0.010	mg/Kg		Ethylbenzene	N/A	mg/Kg	N/A
	Total Xylene	< 0.030	mg/Kg		Total Xylene	N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	< 1.0	mg/Kg					
	TPH/Diesel	< 1	mg/Kg					
	Total Lead	4	mg/Kg					
94-576	Benzene		mg/Kg		94-576	Benzene	N/A	mg/Kg
SS-11	Toluene	< 0.010	mg/Kg	Toluene		N/A	mg/Kg	N/A
	Ethylbenzene	< 0.010	mg/Kg	Ethylbenzene		N/A	mg/Kg	N/A
	Total Xylene	< 0.030	mg/Kg	Total Xylene		N/A	mg/Kg	N/A
	Chlorobenzene	< 0.010	mg/Kg	Chlorobenzene		N/A	mg/Kg	N/A
	TPH/Gasoline	< 1.0	mg/Kg					
	TPH/Diesel	< 1	mg/Kg					
	Total Lead	7.5	mg/Kg					
94-577	Benzene	< 12.0	mg/Kg	94-577	Benzene	N/A	mg/Kg	N/A
SS-12	Toluene	< 12.0	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	20	mg/Kg		Ethylbenzene	17	mg/Kg	2/17/94
	Total Xylene	160	mg/Kg		Total Xylene	160	mg/Kg	2/17/94
	Chlorobenzene	< 12.0	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	3800	mg/Kg					
	TPH/Diesel	4900	mg/Kg					
	Total Lead	120	mg/Kg					

Note: right hand portion of the table contains the second column confirmation analytical results

**TABLE 5-1 (Continued)  
ANALYTICAL SUMMARY TABLE**

Sample No.	Parameter	Results	Units	Sample No.	Parameter	Results	Units	Date Analyzed
94-578	Benzene	< 5.0	mg/Kg	94-578	Benzene	N/A	mg/Kg	N/A
SS-20	Toluene	< 5.0	mg/Kg		Toluene	N/A	mg/Kg	N/A
	Ethylbenzene	31	mg/Kg		Ethylbenzene	52	mg/Kg	2/17/94
	Total Xylene	250	mg/Kg		Total Xylene	370	mg/Kg	2/17/94
	Chlorobenzene	< 5.0	mg/Kg		Chlorobenzene	N/A	mg/Kg	N/A
	TPH/Gasoline	4100	mg/Kg					
	TPH/Diesel	9200	mg/Kg					
	Total Lead	180	mg/Kg					

Note: right hand portion of the table contains the second column confirmation analytical results

TABLE 5-1 (Continued)  
ANALYTICAL SUMMARY TABLE

Sample No.	Parameter	Results	Units
94-579	TPH	7	mg/L
GW-01	Lead	0.057	mg/L
	Benzene	52	µg/L
	Chlorobenzene	< 5	µg/L
	1,2-Dichlorobenzene	< 5	µg/L
	1,3-Dichlorobenzene	< 7	µg/L
	1,4-Dichlorobenzene	< 5	µg/L
	Ethylbenzene	160	µg/L
	Toluene	74	µg/L
	Total Xylenes	390	µg/L
	Bromobenzene	< 12	µg/L
	Bromodichloromethane	< 2	µg/L
	Bromoform	< 5	µg/L
	Bromomethane	< 25	µg/L
	Carbon tetrachloride	< 2	µg/L
	Chloroethane	< 12	µg/L
	Chloroform	< 1	µg/L
	1-Chlorohexane	< 5	µg/L
	2-Chloroethyl vinyl ether	< 25	µg/L
	Chloromethane	< 7	µg/L
	Dibromochloromethane	< 2	µg/L
	Dibromomethane	< 12	µg/L
	1,1-Dichloroethane	< 2	µg/L
	1,2-Dichloroethane	< 2	µg/L
	1,1-Dichloroethene	< 2	µg/L
	cis-1,2-Dichloroethene	< 2	µg/L
	trans-1,2-Dichloroethene	< 2	µg/L
	cis-1,3-Dichloropropene	< 12	µg/L
	1,2-Dichloropropane	< 2	µg/L
	trans-1,3-Dichloropropene	< 7	µg/L
	Methylene chloride	29	µg/L
	1,1,1,2-Tetrachloroethane	< 12	µg/L
	1,1,2,2-Tetrachloroethane	< 2	µg/L
	Tetrachloroethene	< 2	µg/L
	1,1,1-Trichloroethane	< 2	µg/L
	1,1,2-Trichloroethane	< 2	µg/L
	Trichloroethene	< 2	µg/L
	Trichlorofluoromethane	< 2	µg/L
	1,2,3-Trichloropropane	< 25	µg/L
	Vinyl chloride	< 5	µg/L

**TABLE 5-1 (Continued)  
ANALYTICAL SUMMARY TABLE**

Sample No.	Parameter	Results	Units
94-580	Benzene	< 2	µg/L
TB-01	Chlorobenzene	< 2	µg/L
	1,2-Dichlorobenzene	< 2	µg/L
	1,3-Dichlorobenzene	< 3	µg/L
	1,4-Dichlorobenzene	< 2	µg/L
	Ethylbenzene	< 2	µg/L
	Toluene	< 2	µg/L
	Total Xylenes	< 2	µg/L
	Bromobenzene	< 5	µg/L
	Bromodichloromethane	< 1	µg/L
	Bromoform	< 2	µg/L
	Bromomethane	< 10	µg/L
	Carbon tetrachloride	< 1	µg/L
	Chloroethane	< 5	µg/L
	Chloroform	< 0.5	µg/L
	1-Chlorohexane	< 5	µg/L
	2-Chloroethyl vinyl ether	< 10	µg/L
	Chloromethane	< 3	µg/L
	Dibromochloromethane	< 1	µg/L
	Dibromomethane	< 5	µg/L
	1,1-Dichloroethane	< 1	µg/L
	1,2-Dichloroethane	< 1	µg/L
	1,1-Dichloroethene	< 1	µg/L
	cis-1,2-Dichloroethene	< 1	µg/L
	trans-1,2-Dichloroethene	< 1	µg/L
	cis-1,3-Dichloropropene	< 5	µg/L
	1,2-Dichloropropane	< 1	µg/L
	trans-1,3-Dichloropropene	< 3	µg/L
	Methylene chloride	< 2	µg/L
	1,1,1,2-Tetrachloroethane	< 5	µg/L
	1,1,2,2-Tetrachloroethane	< 1	µg/L
	Tetrachloroethene	< 1	µg/L
	1,1,1-Trichloroethane	< 1	µg/L
	1,1,2-Trichloroethane	< 1	µg/L
Trichloroethene	< 1	µg/L	
Trichlorofluoromethane	< 1	µg/L	
1,2,3-Trichloropropane	< 10	µg/L	
Vinyl chloride	< 2	µg/L	

exception of SS-12 (and its duplicate SS-20) which had values of 120 and 180 mg/kg respectively. Chlorobenzene was not detected at any soil sample location.

Only one groundwater sample was collected and from the standing water in the bottom of Test Pit 1. One can draw no inferences regarding conditions upgradient or downgradient of the test pit. Furthermore, the sample was not collected from a properly drilled, developed, and sampled monitoring well. Given those caveats, it is significant to note the presence of benzene, toluene, ethylbenzene and total xylenes (BTEX) at 52, 74, 160, and 390 micrograms/Liter ( $\mu\text{g/L}$ ) respectively. Additionally, the TPH concentration was 7,000  $\mu\text{g/L}$ . Additionally significant in regard to the historical use of gasoline is the presence of lead in water at a concentration of 57  $\mu\text{g/L}$ . The only chlorinated organic compound detected of the 30 analyzed was methylene chloride at 29  $\mu\text{g/L}$ .

## 6.0 SUMMARY OF RESULTS AND CONCLUSIONS

Between January 31 and February 10, 1994, with technical oversight provided by Metcalf & Eddy, Eagle Construction and Environmental Services dismantled, demolished and removed, from the former Base gas station, six ASTs, associated piping, and accoutrements. While some of the tank foundations were more resilient than expected, this removal action was completed successfully. During the course of the removal action hydrocarbon contamination was discovered. Additionally, the contamination volume estimate exceeded the pre-determined 25  $\text{yd}^3$  disposal volume. Consequently, the removal/disposal action was canceled and a sampling program was initiated.

The results of the sampling efforts indicate a pattern of contamination consistent with gasoline and diesel leaks or spills. Ethyl benzene and total xylenes were detected in the vehicle fueling areas, in areas of underground piping and at a depth of 6-8 feet beneath the storage tank. The other major components of gasoline, benzene, and toluene, were generally not detected.

The highest concentration of TPH (diesel fraction) was found at sample location SS-04 near the diesel transfer pump. This facility was in operation during the time of the use of leaded gasoline. All sample locations had concentrations of total lead above the detection limits. At three sample locations high TPH concentrations corresponded with the highest total lead concentrations detected in soils at the pump station.

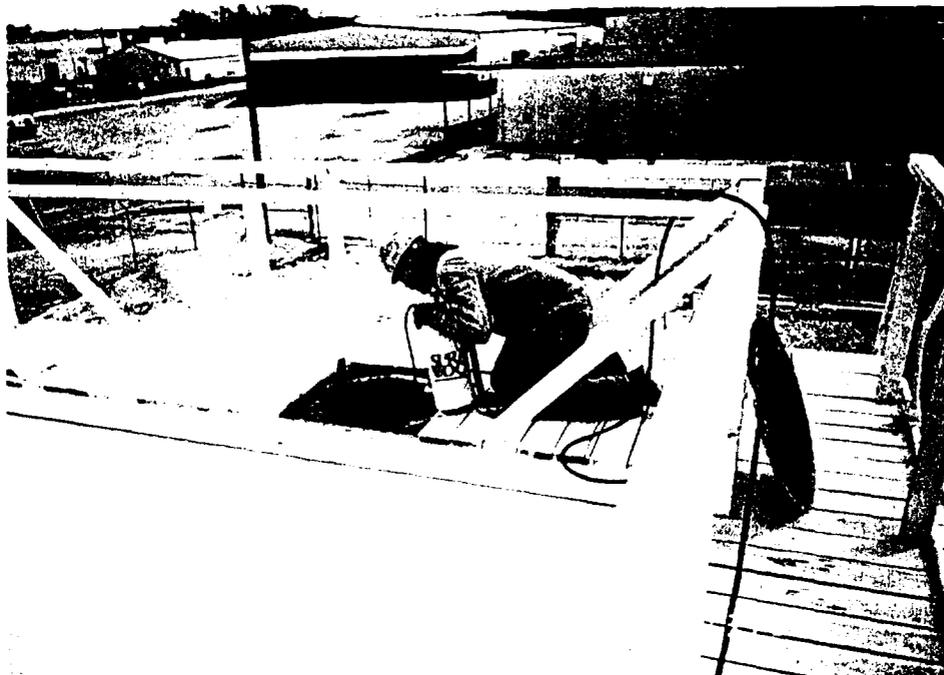
The presence of BTEX, lead, and TPH in the water is indicative of longer term contamination, probably from a leaded gasoline source. Methylene chloride was also detected in the ground water and its presence was not previously suspected at this location.

**APPENDIX A**

**Photo Logs**



PHOTOGRAPH 1: Viewing Site at Start of Project



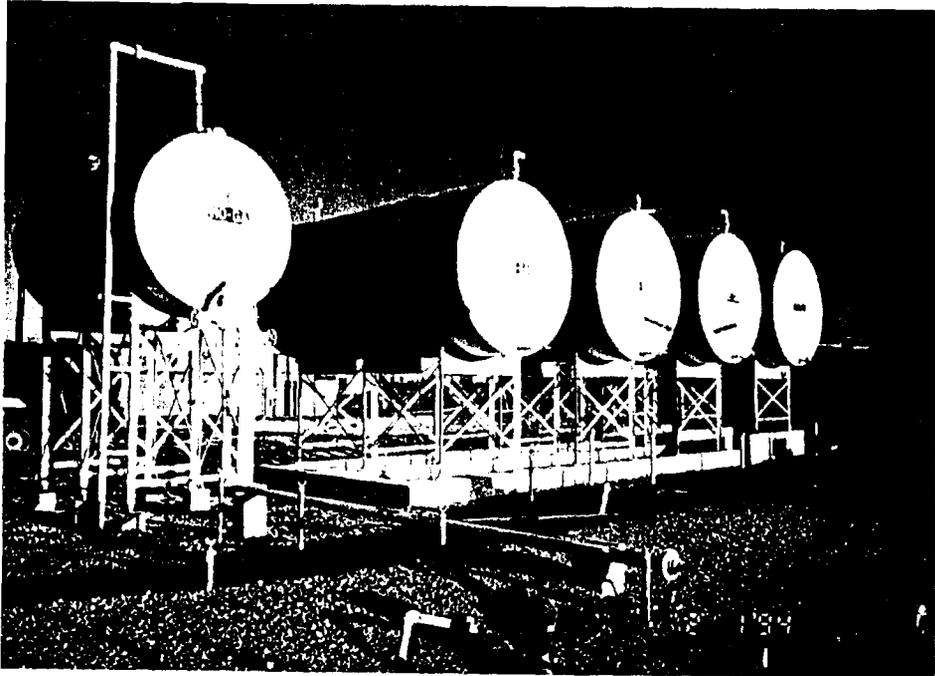
PHOTOGRAPH 2: Spray surfactant in Diesel Tank



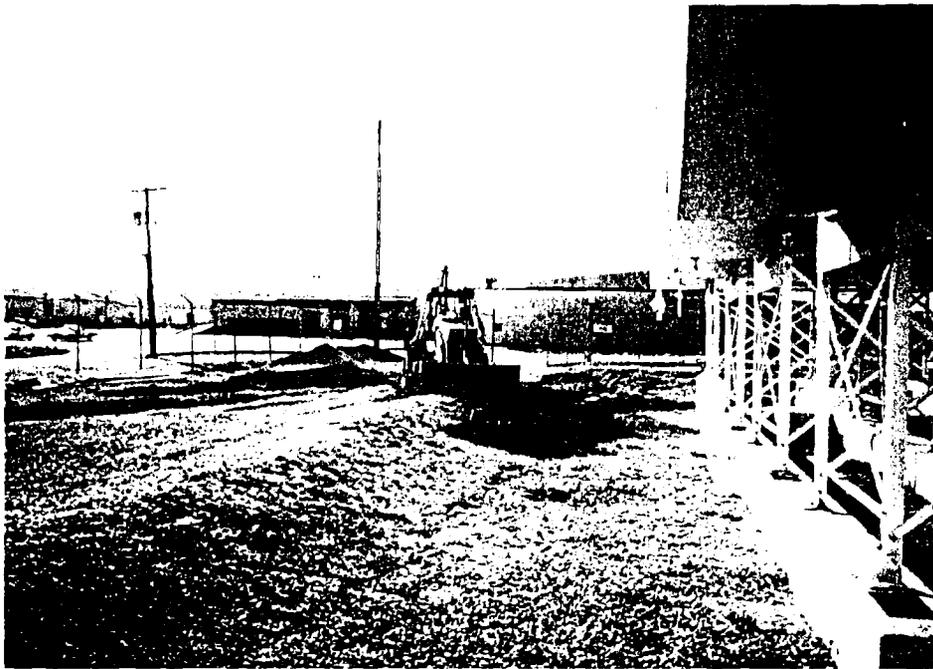
PHOTOGRAPH 3: Steam clean Diesel Tank



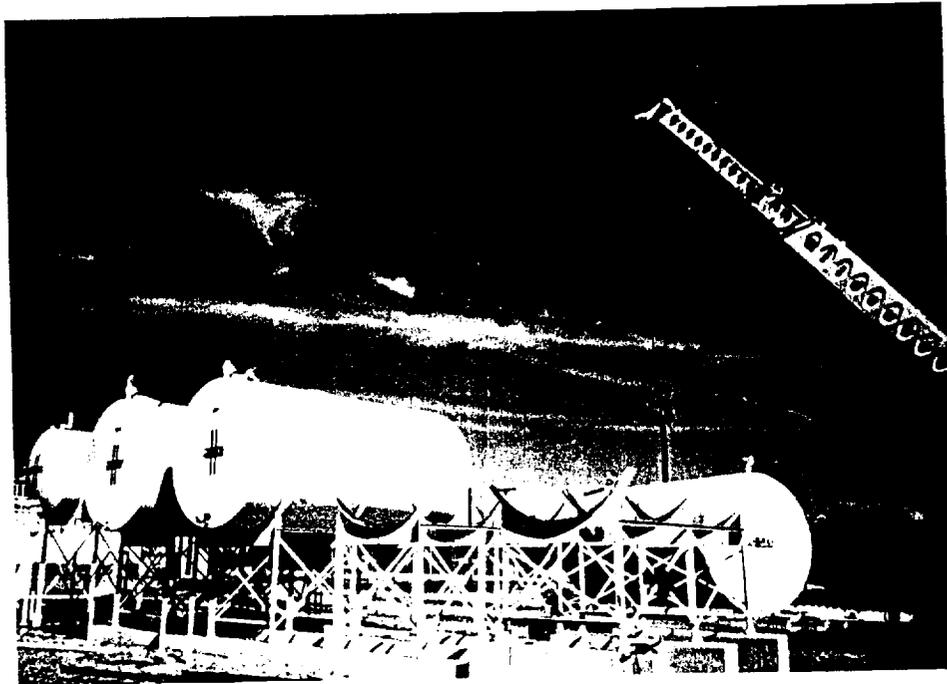
PHOTOGRAPH 4: Pull vacuum on Diesel Tank



PHOTOGRAPH 5: End of day February 1, 1994



PHOTOGRAPH 6: Site preparation prior to tank removal



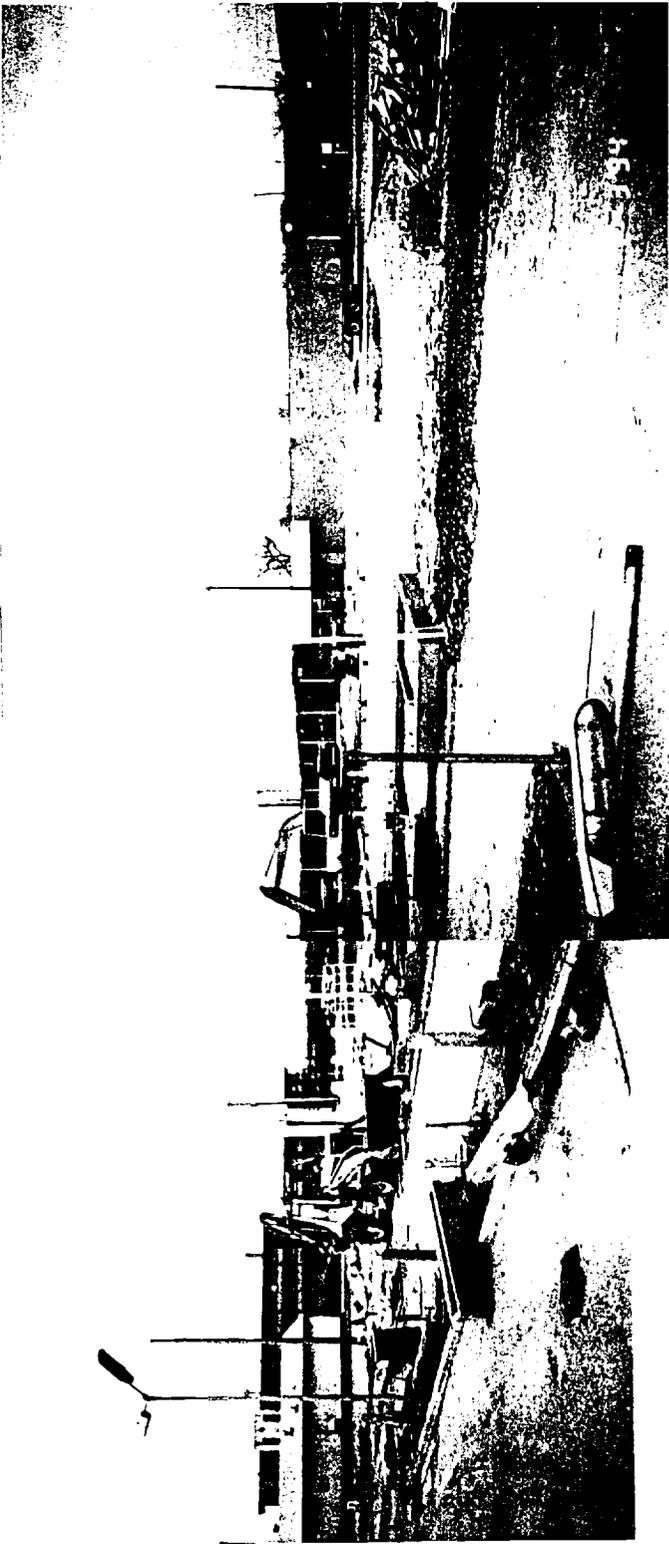
PHOTOGRAPH 7: Tank Removal



PHOTOGRAPH 8: Tank loading



PHOTOGRAPH 9: End of day February 2, 1994



PHOTOGRAPH 10: End of Day February 3, 1994



PHOTOGRAPH 11: Excavation of Pump Island Area



PHOTOGRAPH 12: Excavation of Tank Foundations



PHOTOGRAPH 13: Excavation of Tank Foundations



PHOTOGRAPH 17: End of Job, Compare to Photo 1

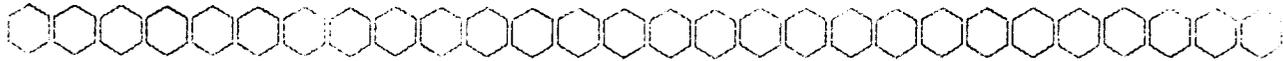


PHOTOGRAPH 18: End of Job. Compare Photos 9 & 10



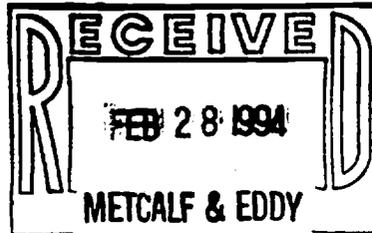
PHOTOGRAPH 19: End of Job. Compare to Photo 11

**APPENDIX B**  
**Analytical Data**



February 25, 1994

Ben Bentkowski  
Metcalf & Eddy  
1201 Peachtree St. N.E.,  
400 Colony Square, Suite 1101  
Atlanta, GA 30361



Re: Thirteen (13) soil samples and Two (2) liquid samples (Project Name: Carswell AFB-AST, PO# P93-012904-002) received on 02/07/94

Dear Mr. Bentkowski:

Attached are the final reports of analysis of the samples referenced above for BTEX by EPA method 8020, Volatiles by EPA method 8260, and Total Lead by EPA method 6010, TPH by ASTM method D3328. Results were calculated per dry weight.

The samples were received in good condition. The cooler temperature was three (3) Degrees Celcius upon receipt.

We appreciate this opportunity to serve Metcalf & Eddy. Please let me, or Linda McKee, know if there is any other way we can help you.

Sincerely,

*Diane Meyer for Larry D. Wallace*

Larry D. Wallace  
Laboratory Director

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

McTear & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000566  
 Project Name: CARSWELL AFB  
 Sample ID: SS-01 GRAB

Time Collected: 1105  
 Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/11 1214	init.	6-5030	NH
BZ8020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
EZ8020S	Ethylbenzene	< 0.010	ppm	6-8020	NH
XLSTLS	Total Xylenes	< 0.030	ppm	6-8020	NH
BTEXTLS	Total BTEX	< 0.060	ppm	6-8020	NH
aaTFTs	aaa-TFT (surr)	81.	%	6-8020	NH
4BFBs	4-BFB (surr)	MI	%	6-8020	NH
DICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'S'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	JH
ICPs	Lead	5.5	mg/kg	6-6010	BW
CLBZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
TPHGAS'D	TPH Gasoline (Date/Time)	02/11 1214	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	18	mg/kg	6-8015	DP
CTPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
TPHSGC'D	TPH Prep (Date/Time)	02/15 1235	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	3.8	mg/kg	1-D3328	SK
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	10.3	%	1-D2216	DPP

COMMENTS: Results calculated per dry weight

*Rev 2/24/94  
 Duane Meyer*

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

McTalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 LANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000567  
 Project Name: CARSWELL AFB  
 Sample ID: SS-02 GRAB

Time Collected: 1115

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/15 1340	init.	6-5030	NH
EL8020S	Benzene	< 4.6	ppm	6-8020	NH
TOL8020S	Toluene	< 4.6	ppm	6-8020	NH
EZ8020S	Ethylbenzene	33	ppm	6-8020	DP
XLSTLs	Total Xylenes	120	ppm	6-8020	DP
BTEXTLs	Total BTEX	< 162.2	ppm	6-8020	DP
aaTFTs	aaa-TFT (surr)	MI	%	6-8020	NH
BFBs	4-BFB (surr)	105.	%	6-8020	NH
DI CPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'SI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
ICPs	Lead	13	mg/kg	6-6010	BW
CLBZs	Chlorobenzene	< 4.6	ppm	6-8020	NH
TPHGAS'D	TPH Gasoline (Date/Time)	02/15 1340	init.	6-5030	NH
PHS'GAS	TPH-Gasoline Fraction	3900	mg/kg	6-8015	NH
CTPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
TPHSGC'D	TPH Prep (Date/Time)	02/16 1054	init.	1-D3328	SK
PHS'GC	TPH - Diesel Fraction	840	mg/kg	1-D3328	SK
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	12.5	%	1-D2216	DPP

COMMENTS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

FOOTNOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Nitcalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: F93-012904-00

Attn: Bentskowski, Ben

Date Collected: 02/05/94

Sample Number: 94000568  
 Project Name: CARSWELL AFB  
 Sample ID: SS-03 GRAB

Time Collected: 1130  
 Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/11 1322	init.	6-5030	NH
B8020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
EZ8020S	Ethylbenzene	.040	ppm	6-8020	NH
LSTLs	Total Xylenes	< 0.030	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 0.090	ppm	6-8020	NH
aaTFTs	aaa-TFT (surr)	110.	%	6-8020	NH
FBs	4-BFB (surr)	82.	%	6-8020	NH
PoICPs	Lead	5.0	mg/kg	6-6010	BW
ICP'S'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'S1'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	11.6	%	1-D2216	DPP
BZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
HGAS'D	TPH Gasoline (Date/Time)	02/11 1322	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	6.2	mg/kg	6-8015	NH
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
HSGC'D	TPH Prep (Date/Time)	02/15 1324	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	11	mg/kg	1-D3328	SK

COMMENTS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

FOOTNOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Analyst: Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
LANTA, GA 30361

Customer#: 321  
Job Number: F93-012904-00

Att: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000569  
Project Name: CARSWELL AFB  
Sample ID: SS-04 GRAB

Time Collected: 1150

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/14 1107	init.	6-5030	NH
B020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	.040	ppm	6-8020	DP
BZ8020S	Ethylbenzene	< 0.010	ppm	6-8020	NH
XLSTLs	Total Xylenes	.46	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 0.520	ppm	6-8020	NH
aaTFTs	aaa-TFT (surr)	98.	%	6-8020	NH
BFBs	4-BFB (surr)	MI	%	6-8020	NH
ICIPs	Lead	24	mg/kg	6-6010	BW
ICIPs'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'S1'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	23.8	%	1-D2216	DPP
LBZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
PHGAS'D	TPH Gasoline (Date/Time)	02/14 1107	init.	6-5030	NH
PHS'GAS	TPH-Gasoline Fraction	28	mg/kg	6-8015	DP
CTPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
PHSGC'D	TPH Prep (Date/Time)	02/16 1120	init.	1-D3328	SK
PHS'GC	TPH - Diesel Fraction	23000	mg/kg	1-D3328	SK

COMMENTS: Results calculated per dry weight

Rev 2/24/94  
Diane Meyer

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
Dilution - Minimum dilution required to allow acceptable quantitation  
ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

McCalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000570  
 Project Name: CARSWELL AFB  
 Sample ID: SS-05 GRAB

Time Collected: 1405

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/11 1342	init.	6-5030	NH
B8020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
EZ8020S	Ethylbenzene	< 0.010	ppm	6-8020	NH
XLSTLs	Total Xylenes	< 0.030	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 0.060	ppm	6-8020	NH
aaTFTs	aaa-TFT (surr)	112.	%	6-8020	NH
FBs	4-BFB (surr)	75.	%	6-8020	NH
PdICPs	Lead	8.9	mg/kg	6-6010	BW
PdICPs'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
P'S1'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	24.4	%	1-D2216	DPP
CBZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
TPHGAS'D	TPH Gasoline (Date/Time)	02/11 1342	init.	6-5030	NH
TPHSGAS	TPH-Gasoline Fraction	3.7	mg/kg	6-8015	NH
TPHGX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
TPHSGC'D	TPH Prep (Date/Time)	02/16 1323	init.	1-D3328	SK
TPHSGC	TPH - Diesel Fraction	5.3	mg/kg	1-D3328	DP

COMMENTS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

FOOTNOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Local & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000571  
 Project Name: CARSWELL AFB  
 Sample ID: SS-06 GRAB

Time Collected: 1410

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/15 1512	init.	6-5030	NH
BZ8020S	Benzene	< 13.0	ppm	6-8020	NH
TOL8020S	Toluene	< 13.0	ppm	6-8020	NH
Z8020S	Ethylbenzene	14	ppm	6-8020	NH
X LSTLs	Total Xylenes	64	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 104.0	ppm	6-8020	NH
aaTFTs	aaa-TFT (surr)	115.	%	6-8020	NH
FBs	4-BFB (surr)	96.	%	6-8020	NH
PbICPs	Lead	8.5	mg/kg	6-6010	BW
ACICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'SI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	20.2	%	1-D2216	DPP
BZs	Chlorobenzene	< 13.0	ppm	6-8020	NH
TPH GAS'D	TPH Gasoline (Date/Time)	02/15 1512	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	2300	mg/kg	6-8015	NH
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
TPHSGC'D	TPH Prep (Date/Time)	02/16 1349	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	28	mg/kg	1-D3328	SK

COMMENTS: Results calculated per dry weight

Rev 2/24/94  
 Duane Meyer

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Local: Calf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000572  
 Project Name: CARSWELL AFB  
 Sample ID: SS-07 GRAB

Time Collected: 1415

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/14 1201	init.	6-5030	NH
BZ8020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
Z8020S	Ethylbenzene	.030	ppm	6-8020	NH
LSTLs	Total Xylenes	.16	ppm	6-8020	DP
BTEXTLs	Total BTEX	< 0.210	ppm	6-8020	DP
atFTs	aaa-TFT (surr)	120.	%	6-8020	NH
FBs	4-BFB (surr)	112.	%	6-8020	NH
PbICPs	Lead	8.7	mg/kg	6-6010	BW
ICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
PSI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	19.3	%	1-D2216	DPP
BZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
HGAS'D	TPH Gasoline (Date/Time)	02/14 1201	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	9.9	mg/kg	6-8015	DP
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
HSGC'D	TPH Prep (Date/Time)	02/16 1430	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	25	mg/kg	1-D3328	SK

COMMENTS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

... calf & Eddy

Reviewed by: DP

F 400 COLONY SQUARE STE 1101  
 SANTA GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000573  
 Project Name: CARSWELL AFB  
 Sample ID: SS-08 GRAB

Time Collected: 1420

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/14 1231	init.	6-5030	DP
BZ3020S	Benzene	< 0.010	ppm	6-8020	DP
TOL8020S	Toluene	< 0.010	ppm	6-8020	DP
Z9020S	Ethylbenzene	< 0.010	ppm	6-8020	DP
XLSTLs	Total Xylenes	< 0.030	ppm	6-8020	DP
BTEXTLs	Total BTEX	< 0.060	ppm	6-8020	DP
aaTFTs	aaa-TFT (surr)	107.	%	6-8020	DP
4BFBs	4-BFB (surr)	92.	%	6-8020	DP
PbICPs	Lead	15	mg/kg	6-6010	BW
ACICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'SI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	JH
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	20.2	%	1-D2216	DPP
BZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
PHGAS'D	TPH Gasoline (Date/Time)	02/14 1231	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	< 1.0	mg/kg	6-8015	NH
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
PHSGC'D	TPH Prep (Date/Time)	02/16 1454	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	< 1	mg/kg	1-D3328	SK

REMARKS: Results calculated per dry weight

Rev 2/24/94  
 Diane Meyer

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Client: calf & Eddy

Reviewed by: DP

Address: 400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000574  
 Project Name: CARSWELL AFB  
 Sample ID: SS-09 GRAB

Time Collected: 1455

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/14 1251	init.	6-5030	NH
BZ8020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
EZ8020S	Ethylbenzene	< 0.010	ppm	6-8020	NH
XSTLs	Total Xylenes	< 0.030	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 0.060	ppm	6-8020	NH
TFTs	aaa-TFT (surr)	109.	%	6-8020	NH
BFBs	4-BFB (surr)	98.	%	6-8020	NH
PbICPs	Lead	6.7	mg/kg	6-6010	BW
ICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
PSI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	14.4	%	1-D2216	DPP
BZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
HGAS'D	TPH Gasoline (Date/Time)	02/14 1251	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	< 1.0	mg/kg	6-8015	NH
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
HSGC'D	TPH Prep (Date/Time)	02/16 1520	init.	1*D3328	SK
TPHS'GC	TPH - Diesel Fraction	< 1	mg/kg	1-D3328	SK

REMARKS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

McCall & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: F93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000575  
 Project Name: CARSWELL AFB  
 Sample ID: SS-10 GRAB

Time Collected: 1450

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/14 1321	init.	6-5030	NH
BL8020S	Benzene	< 0.010	ppm	6-8020	NH
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
Z8020S	Ethylbenzene	< 0.010	ppm	6-8020	NH
XLSTLs	Total Xylenes	< 0.030	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 0.060	ppm	6-8020	NH
aaTFTs	aaa-TFT (surr)	103.	%	6-8020	NH
FBs	4-BFB (surr)	90.	%	6-8020	NH
PoICPs	Lead	4.0	mg/kg	6-6010	BW
PICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
P'S1'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MI ST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	21.1	%	1-D2216	DPP
BZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
HGAS'D	TPH Gasoline (Date/Time)	02/14 1321	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	< 1.0	mg/kg	6-8015	NH
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
HSGC'D	TPH Prep (Date/Time)	02/15 1652	init.	1-D3328	SK
THS'GC	TPH - Diesel Fraction	< 1	mg/kg	1-D3328	SK

REMARKS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Client: Eddy

Reviewed by: TG

400 COLONY SQUARE STE 1101  
 LANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Att: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000576  
 Project Name: CARSWELL AFB  
 Sample ID: SS-11 GRAB

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/14 1411	init.	6-5030	NH
BZ8020S	Benzene	< 0.010	ppm	6-8020	TG
TOL8020S	Toluene	< 0.010	ppm	6-8020	NH
Z8020S	Ethylbenzene	< 0.010	ppm	6-8020	NH
XLSTLS	Total Xylenes	< 0.030	ppm	6-8020	NH
BTEXTLS	Total BTEX	< 0.060	ppm	6-8020	NH
aTFTs	aaa-TFT (surr)	MI	%	6-8020	NH
FBS	4-BFB (surr)	99.	%	6-8020	NH
PbICPs	Lead	7.5	mg/kg	6-6010	BW
DTICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'SI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	18.3	%	1-D2216	DPP
BZs	Chlorobenzene	< 0.010	ppm	6-8020	NH
TPHGAS'D	TPH Gasoline (Date/Time)	02/14 1411	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	< 1.0	mg/kg	6-8015	NH
CTPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
TPHSGC'D	TPH Prep (Date/Time)	02/15 1726	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	< 1	mg/kg	1-D3328	SK

COMMENTS: Results calculated per dry weight

Rev 2/24/94  
 Diane Meyer

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
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5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Sample Name: Eddy

Reviewed by: DP

Address: 400 COLONY SQUARE STE 1101  
 SANTA FE, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Contact: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000577  
 Project Name: CARSWELL AFB  
 Sample ID: SS-12 GRAB

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
ICXSD	BTEX Analysis Prep(Date/Time)	02/15 1537	init.	6-5030	NH
B28020S	Benzene	< 12.0	ppm	6-8020	NH
TOL8020S	Toluene	< 12.0	ppm	6-8020	NH
E8020S	Ethylbenzene	20	ppm	6-8020	NH
XSTLS	Total Xylenes	160	ppm	6-8020	NH
BTEXTLS	Total BTEX	< 204.0	ppm	6-8020	NH
1aTFTs	aaa-TFT (surr)	117.	%	6-8020	NH
4BFBs	4-BFB (surr)	89.	%	6-8020	NH
PBICPs	Lead	120	mg/kg	6-6010	BW
ICDPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
ICP'SI'D	ICP1 Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	19.0	%	1-D2216	DPP
CBZs	Chlorobenzene	< 12.0	ppm	6-8020	NH
TPH GAS'D	TPH Gasoline (Date/Time)	02/15 1537	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	3800	mg/kg	6-8015	NH
TPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
TPHSGC'D	TPH Prep (Date/Time)	02/16 1235	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	4900	mg/kg	1-D3328	SK

COMMENTS: Results calculated per dry weight

*Rev 2/24/94  
 Diane Meyer*

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
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LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

McCall & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000578  
 Project Name: CARSWELL AFB  
 Sample ID: SS-20 GRAB

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
EXS'D	BTEX Analysis Prep(Date/Time)	02/15 1558	init.	6-5030	NH
BZ8020S	Benzene	< 5.0	ppm	6-8020	NH
TOL8020S	Toluene	< 5.0	ppm	6-8020	NH
Z8020S	Ethylbenzene	31	ppm	6-8020	NH
X LSTLs	Total Xylenes	250	ppm	6-8020	NH
BTEXTLs	Total BTEX	< 291.0	ppm	6-8020	DP
aTFTs	aaa-TFT (surr)	MI	%	6-8020	NH
FBS	4-BFB (surr)	97.	%	6-8020	NH
PbICPs	Lead	180	mg/kg	6-6010	BW
ICPS'D	Acid Digestion(Date/Time)	02/15 1100	init.	6-3050	BW
P'SI'D	ICP Analysis(Date/Time)	02/17 1300	init.	6-6010	BW
MOIST'D	Moisture Analysis (Date/Time)	02/15 1430	init.		DPP
MOISASTM	Percent moisture	18.8	%	1-D2216	DPP
BZs	Chlorobenzene	< 5.0	ppm	6-8020	NH
HGAS'D	TPH Gasoline (Date/Time)	02/15 1558	init.	6-5030	NH
TPHS'GAS	TPH-Gasoline Fraction	4100	mg/kg	6-8015	NH
CTPHX'D	TPH Extraction(Date/Time)	02/09 1600	init.	6-3550	PS
HSGC'D	TPH Prep (Date/Time)	02/16 1258	init.	1-D3328	SK
TPHS'GC	TPH - Diesel Fraction	9200	mg/kg	1-D3328	SK

REMARKS: Results calculated by dry weight

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 Diane Meyer*

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
 Dilution - Minimum dilution required to allow acceptable quantitation  
 ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
 init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Location: Eddy

Reviewed by: DP

Address: 400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Contact: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000579  
 Project Name: CARSWELL AFB  
 Sample ID: GW 01 GRAB

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
31W'D	TPH Analysis Prep(Date/Time)	02/09 0830	init.	2-418.1	RR
TLH'W	TPH(Total Petroleum Hydrocarbon	7	ppm	2-418.1	RR
OGFAAW'D	Acid Digestion/GFAA(D/T)	02/10 1045	init.	6-3020	TM
IAAW'D	Metals Analysis(Date/Time)	02/10 1455	init.		TM
PIGFAAW	Lead	57	ug/L	6-7421	TM
V8260'D	Volatile Organics (Date/Time)	02/14 1948	init.	6-8260	MSB
73260W	Benzene	.052	mg/L	6-8260	MSB
3ZW	Chlorobenzene	< 0.005	mg/L	6-8260	DP
12dClBzW	1,2-Dichlorobenzene	< 0.005	mg/L	6-8260	DP
13dClBzW	1,3-Dichlorobenzene	< 0.007	mg/L	6-8260	DP
14dClBzW	1,4-Dichlorobenzene	< 0.005	mg/L	6-8260	DP
E.3ZW	Ethylbenzene	.16	mg/L	6-8260	MSB
ToluenW	Toluene	.074	mg/L	6-8260	MSB
TLTW	Xylenes, Total	.39	mg/L	6-8260	DP
dBrFMetW	dBrFMethane (surr)	83.	%	86-118	MSB
Told8Wsu	Toluene-d8 (surr)	106.	%	88-110	MSB
4BFBWsur	4-BFB (surr)	95.	%	86-118	MSB
omoBzW	Bromobenzene	< 0.012	mg/L	6-8260	DP
BrdClMW	Bromodichloromethane	< 0.002	mg/L	6-8260	DP
BrFormW	Bromoform	< 0.005	mg/L	6-8260	DP

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60 53

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 2

Metcalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: P93-012904-00

Analyst: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000579  
 Project Name: CARSWELL AFB  
 Sample ID: GW 01 GRAB

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
BromaneW	Bromomethane	< 0.025	mg/L	6-8260	MSB
TetClW	Carbon tetrachloride	< 0.002	mg/L	6-8260	DP
EthanW	Chloroethane	< 0.012	mg/L	6-8260	DP
ChlFormW	Chloroform	< 0.001	mg/L	6-8260	DP
1ClHexnW	1-Chlorohexane	< 0.005	mg/L	6-8260	DP
2ClEtVnW	2-Chloroethyl vinyl ether	< 0.025	mg/L	6-8260	DP
ChlMethaneW	Chloromethane	< 0.007	mg/L	6-8260	DP
DiBrClMeW	Dibromochloromethane	< 0.002	mg/L	6-8260	DP
DiBrMethaneW	Dibromomethane	< 0.012	mg/L	6-8260	DP
1,1-DiClEtW	1,1-Dichloroethane	< 0.002	mg/L	6-8260	DP
1,2-DiClEtW	1,2-Dichloroethane	< 0.002	mg/L	6-8260	DP
1,1-DiClEtW	1,1-Dichloroethene	< 0.002	mg/L	6-8260	DP
cis-1,2-DiClEtW	cis-1,2-Dichloroethene	< 0.002	mg/L	6-8260	DP
trans-1,2-DiClEtW	trans-1,2-Dichloroethene	< 0.002	mg/L	6-8260	DP
cis-1,3-DiClPW	cis-1,3-Dichloropropene	< 0.012	mg/L	6-8260	DP
1,2-DiClPW	1,2-Dichloropropene	< 0.002	mg/L	6-8260	DP
trans-1,3-DiClPW	trans-1,3-Dichloropropene	< 0.007	mg/L	6-8260	DP
DiClMethaneW	Methylene chloride	.029	mg/L	6-8260	MSB
1,1,1,2-TetClEtW	1,1,1,2-Tetrachloroethane	< 0.012	mg/L	6-8260	DP
1,1,2,2-TetClEtW	1,1,2,2-Tetrachloroethane	< 0.002	mg/L	6-8260	DP

Rev 2/24/94  
 Diane Meyer

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 3

Metcalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
ATLANTA, GA 30361

Customer#: 321  
Job Number: P93-012904-00

Analyst: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000579  
Project Name: CARSWELL AFB  
Sample ID: GW 01 GRAB

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
tetClEtW	Tetrachloroethene	< 0.002	mg/L	6-8260	DP
111tClEW	1,1,1-Trichloroethane	< 0.002	mg/L	6-8260	DP
EtClEW	1,1,2-Trichloroethane	< 0.002	mg/L	6-8260	DP
111EtW	Trichloroethene	< 0.002	mg/L	6-8260	DP
tClFMeaW	Trichlorofluoromethane	< 0.002	mg/L	6-8260	DP
ClPraW	1,2,3-Trichloropropane	< 0.025	mg/L	6-8260	DP
ClW	Vinyl chloride	< 0.005	mg/L	6-8260	DP

COMMENTS:

FOOTNOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
Dilution - Minimum dilution required to allow acceptable quantitation  
ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
init = date & time initiated BRL = Below Reporting Limit

Separation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
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6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

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Diane Meyer

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 1

Client: Calf & Eddy

Reviewed by: DP

17400 COLONY SQUARE STE 1101  
ATLANTA, GA 30361

Customer#: 321  
Job Number: P93-012904-00

Attn: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000580  
Project Name: CARSWELL AFB  
Sample ID: TB-01 (TRIP BLANK)

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
260'D	Volatile Organics (Date/Time)	02/14 1740	init.	6-8260	MSB
BZ8260W	Benzene	< 0.002	mg/L	6-8260	DP
CLBZW	Chlorobenzene	< 0.002	mg/L	6-8260	DP
1,2dClBzW	1,2-Dichlorobenzene	< 0.002	mg/L	6-8260	DP
1,3dClBzW	1,3-Dichlorobenzene	< 0.003	mg/L	6-8260	DP
1,4dClBzW	1,4-Dichlorobenzene	< 0.002	mg/L	6-8260	DP
EBZW	Ethylbenzene	< 0.002	mg/L	6-8260	DP
ToluenW	Toluene	< 0.002	mg/L	6-8260	DP
XYLTLW	Xylenes, Total	< 0.002	mg/L	6-8260	DP
dBrFMetW	dBrFMethane (surr)	104.	%	86-118	MSB
d8Wsu	Toluene-d8 (surr)	109.	%	88-110	MSB
4BFBWsur	4-BFB (surr)	98.	%	86-118	MSB
BromoBzW	Bromobenzene	< 0.005	mg/L	6-8260	DP
1,2dClMW	Bromodichloromethane	< 0.001	mg/L	6-8260	DP
BrFormW	Bromoform	< 0.002	mg/L	6-8260	DP
BrMeaneW	Bromomethane	< 0.010	mg/L	6-8260	DP
CCl4W	Carbon tetrachloride	< 0.001	mg/L	6-8260	DP
ChloroEthanW	Chloroethane	< 0.005	mg/L	6-8260	DP
ChloroFormW	Chloroform	< 0.0005	mg/L	6-8260	DP
1-ChloroHexnW	1-Chlorohexane	< 0.005	mg/L	6-8260	DP

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60 56

LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 2

Metcalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
 ATLANTA, GA 30361

Customer#: 321  
 Job Number: F93-012904-00

Analyst: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000580  
 Subject Name: CARSWELL AFB  
 Sample ID: TB-01 (TRIP BLANK)

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
2c1EtVnW	2-Chloroethyl vinyl ether	< 0.010	mg/L	6-8260	DP
1MeaneW	Chloromethane	< 0.003	mg/L	6-8260	DP
2c1MeW	Dibromochloromethane	< 0.001	mg/L	6-8260	DP
2c1rMeanW	Dibromomethane	< 0.005	mg/L	6-8260	DP
1dC1EtaW	1,1-Dichloroethane	< 0.001	mg/L	6-8260	DP
1c1EtaW	1,2-Dichloroethane	< 0.001	mg/L	6-8260	DP
1c1EteW	1,1-Dichloroethene	< 0.001	mg/L	6-8260	DP
1c12dC1EW	cis-1,2-Dichloroethene	< 0.001	mg/L	6-8260	DP
12dC1EW	trans-1,2-Dichloroethene	< 0.001	mg/L	6-8260	DP
3dC1PW	cis-1,3-Dichloropropene	< 0.005	mg/L	6-8260	DP
2c1PraW	1,2-Dichloropropane	< 0.001	mg/L	6-8260	DP
13dC1PW	trans-1,3-Dichloropropene	< 0.003	mg/L	6-8260	DP
1MeanW	Methylene chloride	< 0.002	mg/L	6-8260	DP
1tC1EtW	1,1,1,2-Tetrachloroethane	< 0.005	mg/L	6-8260	DP
22tC1EtW	1,1,2,2-Tetrachloroethane	< 0.001	mg/L	6-8260	DP
1tC1EtW	Tetrachloroethene	< 0.001	mg/L	6-8260	DP
1tC1EW	1,1,1-Trichloroethane	< 0.001	mg/L	6-8260	DP
112tC1EW	1,1,2-Trichloroethane	< 0.001	mg/L	6-8260	DP
1c1EtheW	Trichloroethene	< 0.001	mg/L	6-8260	DP
1FMeaW	Trichlorofluoromethane	< 0.001	mg/L	6-8260	DP

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LAB ANALYSIS REPORT

Report Date: FEB. 24 1994

Page # 3

Metcalf & Eddy

Reviewed by: DP

400 COLONY SQUARE STE 1101  
ATLANTA, GA 30361

Customer#: 321  
Job Number: P93-012904-00

Analyst: Bentkowski, Ben

Date Collected: 02/05/94

Sample Number: 94000580  
Project Name: CARSWELL AFB  
Sample ID: TB-01 (TRIP BLANK)

Time Collected: 0000

Date Received: 02/07/94

Test Code	Analyte	Result	Units	Method	Analyst
t, ClPraW	1,2,3-Trichloropropane	< 0.010	mg/L	6-8260	DP
VnClW	Vinyl chloride	< 0.002	mg/L	6-8260	DP

COMMENTS:

NOTES: MI - Surrogate recovery is not reportable due to matrix interferences  
Dilution - Minimum dilution required to allow acceptable quantitation  
ppm = mg/L(Liquid), mg/kg(Solid) ppb = ug/L(Liquid), ug/kg(Soil)  
init = date & time initiated BRL = Below Reporting Limit

Preparation and Analysis Method References:

1. ASTM: American Society for Testing and Materials, 1984.
2. EPA-600/4-79-020, Methods for Chemical Analysis of Water and Wastes, 1978 (revised 1983).
3. EPA-600/4-82-057, Methods for Organic Chemical Analysis of Municipal & Industrial Wastewater, 1982.
4. HACH: Test Methods, accepted by EPA in November, 1983.
5. SM: Standard Methods for the Examination of Water and Wastewater, 17th edition.
6. SW: SW-846, Test Methods for Evaluation of Solid Waste, Third edition.

Rev 2/24/94  
Diane Meyer

## QUALITY CONTROL REPORT

Report To: Metcalf & Eddy  
Terra Laboratories Sample No(s). 94000566 - 94000580

Analyte	Units	Blank	Precision			Accuracy	
			Orig	Dup	RPD(%)	MSR(%)	LCSR(%)
<b>TPH by GC(Batch 021694S)</b>							
Sample No. 94000574	mg/kg	< 1	976	1038	6.2	98	
<b>TPH by GC(Batch 021594S)</b>							
Blank Spike	mg/kg	< 1	1141	1246	8.8	114	
<b>TPH by GC(Batch 021194S)</b>							
Sample No. 94000567	mg/kg	< 1	415	400	3.7	115	
<b>Volatiles 8260(Batch 021894W) Sample No. 94000579 Spike</b>							
1-Chlorohexane	mg/L	< 0.005	52.3	54.6	4.3	105	
<b>BTEX (Batch A021594S) Sample No. 94000567 Spike</b>							
MTBE	ppb	< 10	14	15	7.0	75	
Benzene	ppb	< 10	17	17	0	85	
Toluene	ppb	< 10	18	19	5.0	95	
Ethylbenzene	ppb	< 10	49	52	6.0	105	
Tot. Xylenes	ppb	< 30	164	172	5.0	103	
Chlorobenzene	ppb	< 10	25	25	0	100	
<b>BTEX (Batch 021194S) Sample No. 94000570 Spike</b>							
MTBE	ppb	< 10	19.4	18.6	4	97	
Benzene	ppb	< 10	19.8	18.9	5	98	
Toluene	ppb	< 10	20.3	20.1	1	97	
Ethylbenzene	ppb	< 10	18.9	18.5	2	79	
Tot. Xylenes	ppb	< 30	55.4	57.1	3	84	
Chlorobenzene	ppb	< 10	18.2	17.4	4	91	
<b>Volatiles 8260 (Batch 021694S) Sample No. 94000568 Spike</b>							
Toluene	mg/kg	< 0.01	52.9	52.8	0.2	106	
Chlorobenzene	mg/kg	< 0.01	53.8	55.2	2.6	108	
m&p Xylenes	mg/kg	< 0.02	107.0	106.6	0.4	107	
Ethylbenzene	mg/kg	< 0.01	67.5	76.2	12.1	135	
O-Xylene	mg/kg	< 0.01	52.9	52.8	0.2	106	
Benzene	mg/kg	< 0.01	54.1	52.5	3.0	108	

Rev 2/25/94  
Diane Meyer

### QUALITY CONTROL REPORT

Report To: Metcalf & Eddy  
 Terra Laboratories Sample No(s). 94000566 - 94000580

<u>Analyte</u>	<u>Units</u>	<u>Blank</u>	<u>Precision</u>			<u>Accuracy</u>	
			<u>Orig</u>	<u>Dup</u>	<u>RPD(%)</u>	<u>MSR(%)</u>	<u>LCSR(%)</u>
<b>ICP (Batch 021794S1) Sample No. 94000568 Spike</b>							
Pb	mg/kg	< 1.0	2.063	2.181	5.6	100	104
<b>ICP (Batch A021794S1) Sample No. 94000567 Spike</b>							
Pb	mg/kg	< 1.6	1.954	2.179	10.9	87	97

*Rev 2/29/94*  
*Diane Meyer*

Table 2-3 Practical Quantitation Limits<sup>a</sup>  
Organic Compounds

Parameter/Method	Analyte	Water <sup>b</sup>		Soil <sup>b</sup>	
		PQL	Unit	PQL	Unit
1,2 Dibromoethane (EDB) See SW8260					
Petroleum Hydrocarbons E418.1(W)SW3550/ E418.1(S)(Mod)	(Not recommended for use due to requirement for Freon 113 extraction)	1	mg/L	30	mg/kg
SW5030/SW8015(Mod)	Gasoline	0.1	mg/L	1	mg/kg
SW3550/SW8015(Mod)	Diesel, Jet Fuel	1	mg/L	10	mg/kg
Purgeable Halocarbons SW5030/SW8010 (W&S)	Bromobenzene	5 ✓	µg/L	0.05	mg/kg
	Bromodichloromethane	1 ✓	µg/L	0.005	mg/kg
	Bromoform	2 ✓	µg/L	0.05	mg/kg
	Bromomethane	10 ✓	µg/L	0.01	mg/kg
	Carbon tetrachloride	1 ✓	µg/L	0.005	mg/kg
	Chlorobenzene	2.5 ✓	µg/L	0.005	mg/kg
	Chloroethane	5 ✓	µg/L	0.005	mg/kg
	Chloroform	0.5 ✓	µg/L	0.005	mg/kg
	1-Chlorohexane	5	µg/L	0.005	mg/kg
	2-Chloroethyl vinyl ether	10 ✓	µg/L	0.01	mg/kg
	(Chloromethane)	13	µg/L	0.005	mg/kg
	Dibromochloromethane	1 ✓	µg/L	0.005	mg/kg
	Dibromomethane	5 ✓	µg/L	0.005	mg/kg
	1,2-Dichlorobenzene	2 ✓	µg/L	0.005	mg/kg
	1,3-Dichlorobenzene	3 ✓	µg/L	0.005	mg/kg
	1,4-Dichlorobenzene	2 ✓	µg/L	0.005	mg/kg
	1,1-Dichloroethane	1 ✓	µg/L	0.005	mg/kg
	1,2-Dichloroethane	1 ✓	µg/L	0.005	mg/kg
	1,1-Dichloroethene	1	µg/L	0.005	mg/kg
	cis-1,2-Dichloroethene	1	µg/L	0.005	mg/kg
	trans-1,2-Dichloroethene	1	µg/L	0.005	mg/kg
	cis-1,3-Dichloropropene	5	µg/L	0.005	mg/kg
	1,2-Dichloropropane	1 ✓	µg/L	0.005	mg/kg
	trans-1,3-Dichloropropene	3 ✓	µg/L	0.005	mg/kg
	Methylene chloride	2 ✓	µg/L	0.005	mg/kg
	1,1,1,2-Tetrachloroethane	5	µg/L	0.005	mg/kg
	1,1,2,2-Tetrachloroethane	1 ✓	µg/L	0.005	mg/kg
	Tetrachloroethene	1 ✓	µg/L	0.005	mg/kg
	1,1,1-Trichloroethane	1 ✓	µg/L	0.005	mg/kg
	1,1,2-Trichloroethane	1 ✓	µg/L	0.005	mg/kg
	Trichloroethene	1 ✓	µg/L	0.005	mg/kg
	Trichlorofluoromethane	1 ✓	µg/L	0.005	mg/kg
	Trichloropropane	10 ✓	µg/L	0.01	mg/kg
	Vinyl Chloride	2 ✓	µg/L	0.005	mg/kg

Table 2-3. (Continued)

Parameter/Method	Analyte	Water <sup>b</sup>		Soil <sup>b</sup>	
		PQL	Unit	PQL	Unit
Nonhalogenated Volatile Organics SW5030/SW8015 (W&S)	Diethyl ether	50	µg/L	(c)	mg/kg
	Methyl ethyl ketone (MEK)	50	µg/L		mg/kg
	Methyl isobutyl ketone (MIBK)	50	µg/L		mg/kg
Purgeable Aromatic Volatiles SW5030/SW8020 (W&S)	Benzene	2 ✓	µg/L	0.002	mg/kg
	Chlorobenzene	2 ✓	µg/L	0.002	mg/kg
	1,2-Dichlorobenzene	<del>4</del> 2	µg/L	0.004	mg/kg
	1,3-Dichlorobenzene	<del>4</del> 3	µg/L	0.004	mg/kg
	1,4-Dichlorobenzene	<del>3</del> 2	µg/L	0.003	mg/kg
	Ethylbenzene	2 ✓	µg/L	0.002	mg/kg
	Toluene	2 ✓	µg/L	0.002	mg/kg
	Xylenes	2 ✓	µg/L	0.002	mg/kg
Organochlorine Pesticides & PCBs SW3510/SW8080(W) SW3550/SW8080(S)	Aldrin	0.04	µg/L	0.003	mg/kg
	alpha-BHC	0.03	µg/L	0.002	mg/kg
	beta-BHC	0.06	µg/L	0.004	mg/kg
	delta-BHC	0.09	µg/L	0.006	mg/kg
	Lindane (gamma-GHC)	0.04	µg/L	0.003	mg/kg
	Chlordane	0.14	µg/L	0.009	mg/kg
	4,4'-DDD	0.11	µg/L	0.007	mg/kg
	4,4'-DDE	0.04	µg/L	0.003	mg/kg
	4,4'-DDT	0.12	µg/L	0.008	mg/kg
	Dieldrin	0.02	µg/L	0.01	mg/kg
	Endosulfan I	0.14	µg/L	0.009	mg/kg
	Endosulfan II	0.04	µg/L	0.003	mg/kg
	Endosulfan sulfate	0.66	µg/L	0.04	mg/kg
	Endrin	0.06	µg/L	0.004	mg/kg
	Endrin aldehyde	0.23	µg/L	0.02	mg/kg
	Heptachlor	0.03	µg/L	0.002	mg/kg
	Heptachlor epoxide	0.83	µg/L	0.06	mg/kg
	Methoxychlor	1.76	µg/L	0.1	mg/kg
	Toxaphene	2.4	µg/L	0.2	mg/kg
	PCB-1016	1	µg/L	1	mg/kg
PCB-1221	1	µg/L	1	mg/kg	
PCB-1232	1	µg/L	1	mg/kg	
PCB-1242	1	µg/L	1	mg/kg	
PCB-1248	1	µg/L	1	mg/kg	
PCB-1254	1	µg/L	1	mg/kg	
PCB-1260	1	µg/L	1	mg/kg	

**FINAL PAGE**

**ADMINISTRATIVE RECORD**

**FINAL PAGE**

**FINAL PAGE**

**ADMINISTRATIVE RECORD**

**FINAL PAGE**